FOREST BIODIVERSITY AND CLEARCUTTING PROHIBITION ACT

HEARING

BEFORE THE

SUBCOMMITTEE ON
NATIONAL PARKS, FORESTS AND PUBLIC LANDS

OF THE

COMMITTEE ON
NATURAL RESOURCES
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

ON

H.R. 1164

TO AMEND THE FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974, THE FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976, THE NATIONAL WILDLIFE REFUGE SYSTEM ADMINISTRATION ACT OF 1966, THE NATIONAL INDIAN FOREST RESOURCES MANAGEMENT ACT, AND TITLE 10, UNITED STATES CODE, TO STRENGTHEN THE PROTECTION OF NATIVE BIODIVERSITY AND TO PLACE RESTRAINTS UPON CLEARCUTTING AND CERTAIN OTHER CUTTING PRACTICES ON THE FORESTS OF THE UNITED STATES

HEARING HELD IN WASHINGTON, DC
MAY 5, 1994

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MAY 5, 1994

Additional material submitted for the hearing record—Continued

H.R. 1164, TO AMEND THE FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974, THE FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976, THE NATIONAL WILDLIFE REFUGE SYSTEM ADMINISTRATION ACT OF 1966, THE NATIONAL INDIAN FOREST RESOURCES MANAGEMENT ACT, AND TITLE 10, UNITED STATES CODE, TO STRENGTHEN THE PROTECTION OF NATIVE BIODIVERSITY AND TO PLACE RESTRAINTS UPON CLEARCUTTING AND CERTAIN OTHER CUTTING PRACTICES ON THE FORESTS OF THE UNITED STATES

THURSDAY, MAY 5, 1994

HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATURAL RESOURCES,
SUBCOMMITTEE ON NATIONAL PARKS, FORESTS AND PUBLIC LANDS,
Washington, DC.

The subcommittee met at 10 a.m. in room 1324 of the Longworth House Office Building, Hon. Bruce F. Vento (chairman of the subcommittee) presiding.

STATEMENT OF HON. BRUCE F. VENTO

Mr. VENTO. The Committee on National Parks, Forests and Public Lands will be in order. It is 10, time to move on here.

This morning, of course, we are hearing testimony on an important measure, H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act of 1993, introduced by our colleague from Texas and my friend, Representative John Bryant. This measure would amend several laws that address forest management on federal and Indian lands.

[Text of the bill H.R. 1164, follows:]

103D CONGRESS
1ST SESSION

H. R. 1164

To amend the Forest and Rangeland Renewable Resources Planning Act of 1974, the Federal Land Policy and Management Act of 1976, the National Wildlife Refuge System Administration Act of 1966, the National Indian Forest Resources Management Act, and title 10, United States Code, to strengthen the protection of native biodiversity and to place restraints upon clearcutting and certain other cutting practices on the forests of the United States.

IN THE HOUSE OF REPRESENTATIVES

MARCH 2, 1993

Mr. BRYANT (for himself, Mr. PORTER, Mr. OLVER, Mr. PETE GEREN of Texas, Mr. TORRES, Mr. RAVENEL, Mr. BLACKWELL, Mr. PAYNE of New Jersey, Mr. NADLER, Mr. COLEMAN, Mr. CONYERS, Mr. HAMBURG, Mr. CARDIN, Mr. MACHTLEY, Mr. STARK, Mr. POSHARD, Mr. BERMAN, Mr. FILNER, Mr. DELLUMS, Mr. MORAN, Mr. WALSH, Ms. NORTON, Mr. BEILENSON, Mr. WAXMAN, Mrs. KENNELLY, Mr. HENRY, Mr. ANDREWS of Texas, Mr. FROST, and Mrs. MALONEY) introduced the following bill; which was referred jointly to the Committees on Natural Resources, Agriculture, Merchant Marine and Fisheries, and Armed Services

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A BILL

To amend the Forest and Rangeland Renewable Resources Planning Act of 1974, the Federal Land Policy and Management Act of 1976, the National Wildlife Refuge System Administration Act of 1966, the National Indian Forest Resources Management Act, and title 10, United States Code, to strengthen the protection of native biodiversity and to place restraints upon clearcutting and

certain otl er cutting practices on the forests of the United Staies.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Forest Biodiversity and Clearcutting Prohibition Act of 1993".

SEC. 2. PURPOSES AND FINDINGS.

(a) PURPOSES.—The purposes of this Act are, in all timberland owned or operated by the United States where logging is permitted, to conserve native biodiversity and to protect all native ecosystems against losses that result from clearcutting and other forms of even-age logging.

(b) FINDINGS.—Congress finds the following:

(1) Federal agencies of the United States that engage in even-age logging practices include the Forest Service of the Department of Agriculture, the United States Fish and Wildlife Service, Bureau of Land Management, and Bureau of Indian Affairs of the Department of the Interior, and the Army, Navy, and Air Force of the Department of Defense.

(2) Even-age logging causes a substantial reduction in native biodiversity by emphasizing the production of a limited number of commercial species of trees on each site, generally only one; by manipulating the vegetation toward greater relative

density of such commercial species, by suppressing competing species, and by planting, on numerous sites, a commercial strain that was developed to reduce the relative diversity of genetic strains that previously occurred within the species on the same sites.

(3) Even-age logging kills immobile species and the very young of mobile species of wildlife and depletes the habitat of deep-forest species of animals, including endangered species.

(4) Even-age logging exposes the soil to direct sunlight, impact of rains, disruption of surface, and compaction of organic layers, and disrupts the run-off restraining capabilities of roots and low-lying vegetation, resulting in soil erosion, leaching out of nutrients, reduction in biological content of the soil, and impoverishment of the soil, with long-range deleterious effect on all land resources, even timber production.

(5) Even-age logging decreases the capability of the soil to retain carbon and, during the critical periods of felling and site preparation, reduces the capacity of the biomass to process and to store carbon, with a result of loss of such carbon to the atmosphere, thereby aggravating global warming.

(6) Even-age logging renders the soil increasingly sensitive to acid deposition by causing decline of soil wood and coarse woody debris, reducing site capacity for retention of water and nutrients, increasing soil heat, and impairing the maintenance of protective carbon compounds on the soil surface.

(7) Even-age logging results in increased stream sedimentation, siltation of stream bottoms, decline in water quality, impairment of life cycles and spawning processes of aquatic life from benthic organisms to large fish, thereby depleting the sports and commercial fisheries of the United States.

(8) Even-age logging results in lessening resistance in the plant community, including the commercial tree crop, to insects and diseases, under the ecological principle that as the relative density of a species in a given area approaches totality the population of that species in that area becomes increasingly susceptible to insects and diseases.

(9) Even-age logging increases harmful edge effects, including blowdowns, invasions by weed species, and heavier losses to predators and competitors, from raccoons and hawks to ratsnakes and cowbirds.

(10) Even-age logging decreases recreational diversity, reducing deep, canopied, variegated, permanent forests, where the public can fulfill an expanding need for recreation. Even-age logging replaces such forests with a surplus of clearings that grow into relatively impenetrable thickets of saplings, and then into monotonous plantations.

(11) Human beings depend on native biological resources, including plants, animals, and micro-organisms, for food, medicine, shelter, and other important products, and as a source of intellectual and scientific knowledge, recreation, and aesthetic pleasure.

(12) Reduction in native biodiversity has serious consequences for human welfare as America irretrievably loses resources for research and agricultural, medicinal, and industrial development.

(13) Reduction of biological diversity in Federal forests adversely affects the functions of ecosystems and critical ecosystem processes that moderate climate, govern nutrient cycles and soil conservation and production, control pests and diseases, and degrade wastes and pollutants.

(14) The harm of even-age logging to the natural resources of this Nation and the quality of life of its people are substantial, severe, and avoidable.

(15) By substituting selection management and native biodiversity protection, as prescribed in this Act, for the even-age system, the Federal agencies now engaged in even-age logging would substantially reduce or eliminate devastation to the environment, would maintain vital native ecosystems in Federal forests, and would improve the quality of life of the American people.

(16) Selection logging is more job intensive, therefore providing more employment than even-age cutting for managing the same amount of timber production, and produces higher quality sawlogs.

(17) The court remedies now available for citizens to utilize in the enforcement of Federal forest laws are inadequate, and should be strengthened by providing for actions by citizens for injunctions, declaratory judgments, civil penalties, and reasonable costs of suit.

SEC. 3. AMENDMENT OF RANGELAND AND RENEWABLE RESOURCES PLANNING ACT OF 1974 RELATING TO NATIONAL FOREST SYSTEM LANDS.

(a) CONSERVATION OF NATIVE BIODIVERSITY.—Section 6(g)(3)(B) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604(g)(3)(B)) is amended to read as follows:

"(B) in each stand that is managed or operated for timber purposes, throughout each forested area, provide for the conservation or restoration of native biodiversity except during the extraction stage of authorized mineral development or during authorized construction projects, in which events the Secretary shall conserve native biodiversity to the extent possible;".

(b) COMMITTEE OF SCIENTISTS.—Section 6(h)(1) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604(h)(1)) is amended to read as follows:

"(h) COMMITTEE OF SCIENTISTS.—(1) In carrying out the purposes of subsection (g) of this section, the Secretary shall appoint a committee of scientists who are not officers or employees of the Forest Service nor of any other public entity, nor of any entity engaged in whole or in part in the production of wood or wood products,

and have not contracted with or represented any of such entities within a period of 5 years prior to serving on such committee. The committee shall provide scientific and technical advice and counsel on proposed guidelines and procedures to assure that an effective interdisciplinary approach is proposed and adopted. The committee shall terminate after the expiration of 10 years from the date of enactment of this paragraph.".

(c) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—Section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604) is amended by adding at the end the following:

"(n) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—(1) In each stand that is managed or operated for timber purposes throughout each forested area, the guidelines under subsection (g)(3)(F) shall prohibit any even-age logging and any even-age management after one year after the date of enactment of this subsection.

"(2) On each site already under even-age management, the Secretary shall (A) prescribe a shift to selection management within one year, or (B) cease managing for timber purposes and actively restore the native biodiversity, or permit each site to regain its native biodiversity.

"(3) For the purposes of this subsection:

"(A) The term 'native biodiversity' means the full range of variety and variability within and among living organisms and the ecological complexes in which they would have occurred in the absence of significant human impact, and encompasses diversity, within a species (genetic), within a community of species (within-community), between communities of species (between-communities), within a total area such as a watershed (total area), along a plane from ground to sky (vertical), and along the plane of the earth-surface (horizontal). Vertical and horizontal diversity apply to all the other aspects of diversity.

"(B) The terms 'conserve' and 'conservation' refer to protective measures for maintaining existing native biological diversity and active measures for restoring diversity through management efforts, in order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning, including the viability of populations throughout their natural geographic distributions.

"(C) The term 'within-community diversity' means the distinctive assemblages of species and ecological processes that occur in different physical

settings of the biosphere and distinct parts of the world.

"(D) The term 'genetic diversity' means the differences in genetic composition within and among populations of a given species.

"(E) The term 'species diversity' means the richness and variety of native species in a particular location of the world.

"(F) The term 'group selection' means a form of selection management that emphasizes the periodic removal of trees, including mature, undesirable, and cull trees in small groups, where they occur that way, with a result of (i) creating openings not to exceed in width in any direction the height of the tallest tree standing within 10 feet of the edge of the group cut, and (ii) maintaining different age groups in a given stand. In no event will more than 30 percent of a stand be felled within 30 years.

"(G) The term 'stand' means a forest community with enough identity by location, topography, or dominant species to be managed as a unit, not to exceed 100 acres.

"(H) The term 'clearcutting' means the logging of the commercial trees in a patch or stand in a short period of time.

"(I) The term 'even-age management' means the growing of commercial timber so that all trees in a patch or stand are generally within 10 years of the same age. Except for designated leave trees, or clumps of trees, the patch or stand is logged, completely in any acre within a period of 30 years, by clearcutting, salvage logging, seed-tree cutting or shelterwood cutting, or any system other than selection management.

"(J) The term 'salvage logging' means the felling or further damaging, within any 30-year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or any combination of such trees.

"(K) The term 'seed-tree cut' means a logging operation that leaves one or more seed trees, generally 6 to 10 per acre.

"(L) The term 'selection management' means the application of logging and other actions needed to maintain continuous high forest cover where such cover naturally occurs, recurring natural regeneration of all native species on the site, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and

maintain selection stands are individual-tree and group selection. A goal of selection is improvement of quality by continuously harvesting trees less likely to contribute to the long-range health of the stand.

"(M) The term 'shelterwood cut' means an even-aged silvicultural regeneration method under which a minority of the mature stand is retained as a seed source or protection during the regeneration period. The standing mature trees, usually 10 to 20 per acre, are later removed in one or more cuttings.

"(N) The term 'timber purposes' shall include the use, sale, lease, or distribution of trees, or the felling of trees or portions of trees except to create land space for a structure or other use.

"(4)(A)(i) The purpose of this paragraph is to foster the widest possible enforcement of subsection (g)(3)(B) and this subsection.

"(ii) Congress finds that all people of the United States are injured by actions on lands to which subsection (g)(3)(B) and this subsection apply.

"(B) The provisions of subsection (g)(3)(B) and this subsection shall be enforced by the Secretary of Agriculture and the Attorney General of the United States against any person who violates either of them.

"(C)(i) Any citizen may enforce any provision of subsection (g)(3)(B) and this subsection by bringing an action for declaratory judgment, temporary restraining order, injunction, civil penalty, and other remedies against any alleged violator including the United States, in any district court of the United States.

"(ii) The court, after determining a violation of either of such subsections, shall impose a penalty of not less than $5,000 and not more than $50,000 per violation, shall issue one or more injunctions and other equitable relief and shall award to the plaintiffs reasonable costs of litigation including attorney's fees, witness fees and other necessary expenses.

"(D) The penalty authorized by subparagraph (C)(ii) shall be paid by the violator or violators designated by the court. If that violator is the United States of America or a Federal agency or officer, the penalty shall be paid to the Judgment Fund, as provided by Congress under section 1304 of title 31, United States Code.

"(E) The penalty shall be paid from the Judgment Fund within 40 days after judgment to the person or persons designated to receive it, to be applied in protecting or restoring native biodiversity in or adjoining Federal land. Any award of costs of litigation and any award of attorney fees shall be paid within 40 days after judgment.

"(F) The United States, including its agents and employees waives its sovereign immunity in all respects in all actions under subsection (g)(3)(B) and this subsection. No notice is required to enforce this subsection.

"(5) No roads shall be constructed or reconstructed in any roadless area, as defined in the second United States Department of Agriculture Forest Service Roadless Area Review and Evaluation (RARE II, 1978) or in a land and resource management plan prepared pursuant to this section.

(d) CONFORMING AMENDMENT.—Section 6(g)(2)(F) of the Forest and Rangeland Renewable Resource Planning Act of 1974 (16 U.S.C. 1604(g)(2)(F)) is amended by inserting "in accordance with subsection (g) and" after "National Forest System lands.".

SEC. 4. AMENDMENT OF FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 RELATING TO THE PUBLIC LANDS.

(a) CONSERVATION OF NATIVE BIODIVERSITY.—Section 202(c) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712(c)) is amended—

(1) by redesignating paragraphs (8) and (9) as paragraphs (9) and (10), respectively; and

(2) by inserting after paragraph (7) the following new paragraph (8):

"(8) in each stand that is managed or operated for timber purposes throughout each forested area provide for the conservation or restoration of native biodiversity except during the extraction stage of authorized mineral development or during authorized construction projects, in which events the Secretary shall conserve native biodiversity to the extent possible;".

(b) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—Section 202 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712) is amended by adding at the end the following:

"(g) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—(1) In each stand that is managed or operated for timber purposes throughout each forested area, the Secretary under subsection (c)(8) shall prohibit any even-age logging and any even-age management after one year after the date of enactment of this subsection.

"(2) On each site already under even-age management, the Secretary shall (A) prescribe a shift to selection management within one year, or (B) cease managing for timber purposes and actively restore the native biodiversity, or permit each site to regain its native biodiversity.

"(3) For the purposes of this subsection:

"(A) The term 'native biodiversity' means the full range of variety and variability within and among living organisms and the ecological complexes in which they would have occurred in the absence of significant human impact, and encompasses diversity, within a species (genetic), within a community of species (within-community), between communities of species (between-communities), within a total area such as a watershed (total area), along a plane from ground to sky (vertical), and along the plane of the earth-surface (horizontal). Vertical and horizontal diversity apply to all the other aspects of diversity.

"(B) The terms 'conserve' and 'conservation' refer to protective measures for maintaining existing native biological diversity and active measures for restoring diversity through management efforts, in order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning, including the viability of populations throughout their natural geographic distributions.

"(C) The term 'within-community diversity' means the distinctive assemblages of species and ecological processes that occur in different physical

settings of the biosphere and distinct parts of the world.

"(D) The term 'genetic diversity' means the differences in genetic composition within and among populations of a given species.

"(E) The term 'species diversity' means the richness and variety of native species in a particular location of the world.

"(F) The term 'group selection' means a form of selection management that emphasizes the periodic removal of trees, including mature, undesirable, and cull trees in small groups, where they occur that way, with a result of (i) creating openings not to exceed in width in any direction the height of the tallest tree standing within 10 feet of the edge of the group cut, and (ii) maintaining different age groups in a given stand. In no event will more than 30 percent of a stand be felled within 30 years.

"(G) The term 'stand' means a forest community with enough identity by location, topography, or dominant species to be managed as a unit, not to exceed 100 acres.

"(H) The term 'clearcutting' means the logging of the commercial trees in a patch or stand in a short period of time.

"(I) The term 'even-age management' means the growing of commercial timber so that all trees in a patch or stand are generally within 10 years of the same age. Except for designated leave trees, or clumps of trees, the patch or stand is logged, completely in any acre within a period of 30 years, by clearcutting, salvage logging, seed-tree cutting or shelterwood cutting, or any system other than selection management.

"(J) The term, 'salvage logging' means the felling or further damaging, within any 30-year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or any combination of such trees.

"(K) The term 'seed-tree cut' means a logging operation that leaves one or more seed trees, generally 6 to 10 per acre.

"(L) The term 'selection management' means the application of logging and other actions needed to maintain continuous high forest cover where such cover naturally occurs, recurring natural regeneration of all native species on the site, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and

maintain selection stands are individual-tree and group selection. A goal of selection is improvement of quality by continuously harvesting trees less likely to contribute to the long-range health of the stand.

"(M) The term 'shelterwood cut' means an even-aged silvicultural regeneration method under which a minority of the mature stand is retained as a seed source or protection during the regeneration period. The standing mature trees, usually 10 to 20 per acre, are later removed in one or more cuttings.

"(N) The term 'timber purposes' shall include the use, sale, lease, or distribution of trees, or the felling of trees or portions of trees except to create land space for a structure or other use.

"(4)(A)(i) The purpose of this paragraph is to foster the widest possible enforcement of subsection (c)(8) and this subsection.

"(ii) Congress finds that all people of the United States are injured by actions on lands to which subsection (c)(8) and this subsection apply.

"(B) The provisions of subsection (c)(8) and this subsection shall be enforced by the Secretary of the Interior and the Attorney General of the United States against any person who violates either of the

"(C)(i) Any citizen may enforce any provision of subsection (c)(8) and this subsection by bringing an action for declaratory judgment, temporary restraining order, injunction, civil penalty, and other remedies against any alleged violator including the United States, in any district court of the United States.

"(ii) The court, after determining a violation of either of such subsections, shall impose a penalty of not less than $5,000 and not more than $50,000 per violation, shall issue one or more injunctions and other equitable relief and shall award to the plaintiffs reasonable costs of litigation including attorney's fees, witness fees and other necessary expenses.

"(D) The penalty authorized by subparagraph (C) (ii) shall be paid by the violator or violators designated by the court. If that violator is the United States of America or a Federal agency or officer, the penalty shall be paid to the Judgment Fund, as provided by Congress under section 1304 of title 31, United States Code.

"(E) The penalty shall be paid from the Judgment Fund within 40 days after judgment to the person or persons designated to receive it, to be applied in protecting or restoring native biodiversity in or adjoining Federal land. Any award of costs of litigation and any award of attorney fees shall be paid within 40 days after judgment.

"(F) The United States, including its agents and employees waives its sovereign immunity in all respects in all actions under subsection (c)(8) and this subsection. No notice is required to enforce this subsection.

"(5) No roads shall be constructed or reconstructed in any Bureau of Land Management roadless areas inventoried pursuant to this Act.".

(c) REPEAL.—Subsection (b) of section 701 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 note) is hereby repealed.

SEC. 5. AMENDMENT OF NATIONAL WILDLIFE REFUGE SYSTEM ADMINISTRATION ACT OF 1966 RELATING TO THE NATIONAL WILDLIFE REFUGE SYSTEM.

Section 4 of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd) is amended by adding at the end the following:

"(j) CONSERVATION OF NATIVE BIODIVERSITY.—In each stand that is managed or operated for timber purposes throughout each forested area within the System, the Secretary shall provide for the conservation or restoration of native biodiversity, except during the extraction stage of authorized mineral development or during authorized construction projects, in which events the Secretary shall conserve native biodiversity to the extent possible.

"(k) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—(1) In each stand that is managed or operated for timber purposes throughout each forested area within the System, the Secretary under subsection (j) shall prohibit any even-age logging and any even-age management after one year after the date of enactment of this subsection.

"(2) On each site already under even-age management, the Secretary shall (A) prescribe a shift to selection management within one year, or (B) cease managing for timber purposes and actively restore the native biodiversity, or permit each site to regain its native biodiversity.

"(3) For the purposes of this subsection:

"(A) The term 'native biodiversity' means the full range of variety and variability within and among living organisms and the ecological complexes in which they would have occurred in the absence of significant human impact, and encompasses diversity, within a species (genetic), within a community of species (within-community), between communities of species (between-communities), within a total area such as a watershed (total area), along a plane from ground to sky (vertical), and along the plane of the

earth-surface (horizontal). Vertical and horizontal diversity apply to all the other aspects of diversity.

"(B) The terms 'conserve' and 'conservation' refer to protective measures for maintaining existing native biological diversity and active measures for restoring diversity through management efforts, in order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning, including the viability of populations throughout their natural geographic distributions.

"(C) The term 'within-community diversity' means the distinctive assemblages of species and ecological processes that occur in different physical settings of the biosphere and distinct parts of the world.

"(D) The term 'genetic diversity' means the differences in genetic composition within and among populations of a given species.

"(E) The term 'species diversity' means the richness and variety of native species in a particular location of the world.

"(F) The term 'group selection' means a form of selection management that emphasizes the peri-

odic removal of trees, including mature, undesirable, and cull trees in small groups, where they occur that way, with a result of (i) creating openings not to exceed in width in any direction the height of the tallest tree standing within 10 feet of the edge of the group cut, and (ii) maintaining different age groups in a given stand. In no event will more than 30 percent of a stand be felled within thirty years.

"(G) The term 'stand' means a forest community with enough identity by location, topography, or dominant species to be managed as a unit, not to exceed 100 acres.

"(H) The term 'clearcutting' means the logging of the commercial trees in a patch or stand in a short period of time.

"(I) The term 'even-age management' means the growing of commercial timber so that all trees in a patch or stand are generally within 10 years of the same age. Except for designated leave trees, or clumps of trees, the patch or stand is logged, completely in any acre within a period of 30 years, by clearcutting, salvage logging, seed-tree cutting or shelterwood cutting, or any system other than selection management.

"(J) The term, 'salvage logging' means the felling or further damaging, within a 30-year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or any combination of such trees.

"(K) The term 'seed-tree cut' means a logging operation that leaves one or more seed trees, generally 6 to 10 per acre.

"(L) The term 'selection management' means the application of logging and other actions needed to maintain continuous high forest cover where such cover naturally occurs, recurring natural regeneration of all native species on the site, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and maintain selection stands are individual-tree and group selection. A goal of selection is improvement of quality by continuously harvesting trees less likely to contribute to the long-range health of the stand.

"(M) The term 'shelterwood cut' means an even-aged silvicultural regeneration method under which a minority of the mature stand is retained as a seed source or protection during the regeneration

period. The standing mature trees, usually 10 to 20 per acre, are later removed in one or more cuttings.

"(N) The term 'timber purposes' shall include the use, sale, lease, or distribution of trees, or the felling of trees or portions of trees except to create land space for a structure or other use.

"(4)(A)(i) The purpose of this paragraph is to foster the widest possible enforcement of subsection (j) and this subsection.

"(ii) Congress finds that all people of the United States are injured by actions on lands to which subsection (j) and this subsection apply.

"(B) The provisions of subsection (j) and this subsection shall be enforced by the Secretary of the Interior and the Attorney General of the United States against any person who violates either of them.

"(C)(i) Any citizen may enforce any provision of this subsection by bringing an action for declaratory judgment, temporary restraining order, injunction, civil penalty, and other remedies against any alleged violator including the United States, in any district court of the United States.

"(ii) The court, after determining a violation of either of such subsections, shall impose a penalty of not less than $5,000 and not more than $50,000 per violation, shall issue one or more injunctions and other equitable relief

and shall award to the plaintiffs reasonable costs of litigation including attorney's fees, witness fees and other necessary expenses.

"(D) The penalty authorized by subparagraph (C)(ii) shall be paid by the violator or violators designed by the court. If that violator is the United States of America or a Federal agency or officer, the penalty shall be paid to the Judgment Fund, as provided by Congress under section 1304 of title 31, United States Code.

"(E) The penalty should be paid from the Judgment Fund within 40 days after judgment to the person or persons designated to receive it, to be applied in protecting or restoring native biodiversity in or adjoining Federal land. Any award of costs of litigation and any award of attorney fees shall be paid within 40 days after judgment.

"(F) The United States, including its agents and employees waives its sovereign immunity in all respects in all actions under subsection (j) and this subsection. No notice is required to enforce this subsection.".

SEC. 6. AMENDMENT OF NATIONAL INDIAN FOREST RESOURCES MANAGEMENT ACT RELATING TO INDIAN LANDS.

Section 305 of the National Indian Forest Resources Management Act (25 U.S.C. 4535) is amended by adding at the end the following new subsections:

"(c) CONSERVATION OF NATIVE BIODIVERSITY.—In each stand that is managed or operated for timber purposes in each forested area on Indian lands, the Secretary shall provide for the conservation or restoration of native biodiversity in each stand that is managed or operated for timber purposes in each forested area on Indian lands except during the extraction stage of authorized mineral development or during authorized construction projects in which events the Secretary shall conserve native biodiversity to the extent possible.

"(d) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—(1) In each stand that is managed or operated for timber purposes throughout each forested area on Indian forest lands, the Secretary under subsection (c) shall prohibit any even-age logging and any even-age management after one year after the date of enactment of this subsection.

"(2) On each site already under even-age management, the Secretary shall (A) prescribe a shift to selection management within one year, or (B) cease managing for timber purposes and actively restore the native biodiversity, or permit each site to regain its native biodiversity.

"(3) For the purposes of this section:

"(A) The term 'native biodiversity' means the full range of variety and variability within and among living organisms and the ecological complexes in which they would have occurred in the absence of significant human impact, and encompasses diversity, within a species (genetic), within a community of species (within-community), between communities of species (between-communities), within a total area such as a watershed (total area), along a plane from ground to sky (vertical), and along the plane of the earth-surface (horizontal). Vertical and horizontal diversity apply to all the other aspects of diversity.

"(B) The terms 'conserve' and 'conservation' refer to protective measures for maintaining existing native biological diversity and active measures for restoring diversity through management efforts, in order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning, including the viability of populations throughout their natural geographic distributions.

"(C) The term 'within-community diversity' means the distinctive assemblages of species and ecological processes that occur in different physical

settings of the biosphere and distinct parts of the world.

"(D) The term 'genetic diversity' means the differences in genetic composition within and among populations of a given species.

"(E) The term 'species diversity' means the richness and variety of native species in a particular location of the world.

"(F) The term 'group selection' means a form of selection management that emphasizes the periodic removal of trees, including mature, undesirable, and cull trees in small groups, where they occur that way, with a result of (i) creating openings not to exceed in width in any direction the height of the tallest tree standing within 10 feet of the edge of the group cut, and (ii) maintaining different age groups in a given stand. In no event will more than 30 percent of a stand be felled within 30 years.

"(G) The term 'stand' means a forest community with enough identity by location, topography, or dominant species to be managed as a unit, not to exceed 100 acres.

"(H) The term 'clearcutting' means the logging of the commercial trees in a patch or stand in a short period of time.

"(I) The term 'even-age management' means the growing of commercial timber so that all trees in a patch or stand are generally within 10 years of the same age. Except for designated leave trees, or clumps of trees, the patch or stand is logged, completely in any acre within a period of 30 years, by clearcutting, salvage logging, seed-tree cutting or shelterwood cutting, or any system other than selection management.

"(J) The term, 'salvage logging' means the felling or further damaging, within any 30-year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or any combination of such trees.

"(K) The term 'seed-tree cut' means a logging operation that leaves one or more seed trees, generally 6 to 10 per acre.

"(L) The term 'selection management' means the application of logging and other actions needed to maintain continuous high forest cover where such cover naturally occurs, recurring natural regeneration of all native species on the site, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and

maintain selection stands are individual-tree and group selection. A goal of selection is improvement of quality by continuously harvesting trees less likely to contribute to the long-range health of the stand.

"(M) The term 'shelterwood cut' means an even-aged silvicultural regeneration method under which a minority of the mature stand is retained as a seed source or protection during the regeneration period. The standing mature trees, usually 10 to 20 per acre, are later removed in one or more cuttings.

"(N) The term 'timber purposes' shall include the use, sale, lease, or distribution of trees, or the felling of trees or portions of trees except to create land space for a structure or other use.

"(4)(A)(i) The purpose of this paragraph is to foster the widest possible enforcement of subsection (c) and this subsection.

"(ii) Congress finds that all people of the United States are injured by actions on lands to which subsection (c) and this subsection apply.

"(B) The provisions of subsection (c) and this subsection shall be enforced by the Secretary of the Interior and the Attorney General of the United States against any person who violates either of them.

"(C)(i) Any citizen may enforce any provision of subsection (c) and this subsection by bringing an action for declaratory judgment, temporary restraining order, injunction, civil penalty, and other remedies against any alleged violator including the United States, in any district court of the United States.

"(ii) The court, after determining a violation of either of such subsections shall impose a penalty of not less than $5,000 and not more than $50,000 per violation, shall issue one or more injunctions and other equitable relief and shall award to the plaintiffs reasonable costs of litigation including attorney's fees, witness fees and other necessary expenses.

"(D) The penalty authorized by subparagraph (C)(ii) shall be paid by the violator or violators designated by the court. If that violator is the United States of America or a Federal agency or officer, the penalty shall be paid to the Judgment Fund, as provided by Congress under section 1304 of title 31, United States Code.

"(E) The penalty should be paid from the Judgment Fund within 40 days after judgment to the person or persons designated to receive it, to be applied in protecting or restoring native biodiversity in or adjoining Federal land. Any award of costs of litigation and any award of attorney fees shall be paid within 40 days after judgment.

"(F) The United States, including its agents and employees waives its sovereign immunity in all respects in all actions under subsection (c) and this subsection. No notice is required to enforce this subsection.".

SEC. 7. AMENDMENT OF TITLE 10, UNITED STATES CODE, RELATING TO FOREST MANAGEMENT ON MILITARY LANDS.

(a) IN GENERAL.—Chapter 159 of title 10, United States Code, is amended by adding at the end the following new section:

"§ 2693. Conservation of native biodiversity

"(a) CONSERVATION OF NATIVE BIODIVERSITY.—In each stand that is operated for timber purposes throughout each forested area on a military installation or projects administered by the Army Corps of Engineers, the Secretary concerned shall provide for the conservation or restoration of native biodiversity, except during authorized construction projects in which events the Secretary shall conserve native biodiversity to the extent possible.

"(b) RESTRICTION ON USE OF CERTAIN LOGGING PRACTICES.—(1) In each stand that is managed or operated for timber purposes throughout each forested area on a military installation or reservation and on a project administered by the Army Corps of Engineers, the Secretary under subsection (a) shall prohibit any even-age

logging and any even-age management after one year after the date of enactment of this subsection.

"(2) On each site already under even-age management, the Secretary shall (A) prescribe a shift to selection management within one year, or (B) cease managing for timber purposes and actively restore the native biodiversity, or permit each site to regain its native biodiversity.

"(3) In this section:

"(A) The term 'native biodiversity' means the full range of variety and variability within and among living organisms and the ecological complexes in which they would have occurred in the absence of significant human impact, and encompasses diversity, within a species (genetic), within a community of species (within-community), between communities of species (between-communities), within a total area such as a watershed (total area), along a plane from ground to sky (vertical), and along the plane of the earth-surface (horizontal). Vertical and horizontal diversity apply to all the other aspects of diversity.

"(B) The terms 'conserve' and 'conservation' refer to protective measures for maintaining existing native biological diversity and active measures for restoring diversity through management efforts, in

order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning, including the viability of populations throughout their natural geographic distributions.

"(C) The term 'within-community diversity' means the distinctive assemblages of species and ecological processes that occur in different physical settings of the biosphere and distinct parts of the world.

"(D) The term 'genetic diversity' means the differences in genetic composition within and among populations of a given species.

"(E) The term 'species diversity' means the richness and variety of native species in a particular location of the world.

"(F) The term 'group selection' means a form of selection management that emphasizes the periodic removal of trees, including mature, undesirable, and cull trees in small groups, where they occur that way, with a result of (i) creating openings not to exceed in width in any direction the height of the tallest tree standing within 10 feet of the edge of the group cut, and (ii) maintaining different age groups

in a given stand. In no event will more than 30 percent of a stand be felled within 30 years.

"(G) The term 'stand' means a forest community with enough identity by location, topography, or dominant species to be managed as a unit, not to exceed 100 acres.

"(H) The term 'clearcutting' means the logging of the commercial trees in a patch or stand in a short period of time.

"(I) The term 'even-age management' means the growing of commercial timber so that all trees in a patch or stand are generally within 10 years of the same age. Except for designated leave trees, or clumps of trees, the patch or stand is logged completely in any acre within a period of 30 years, by clearcutting, salvage logging, seed-tree cutting or shelterwood cutting, or any system other than selection management.

"(J) The term, 'salvage logging' means the felling or further damaging, within any 30-year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or any combination of such trees.

"(K) The term 'seed-tree cut' means a logging operation that leaves one or more seed trees, generally 6 to 10 per acre.

"(L) The term 'selection management' means the application of logging and other actions needed to maintain continuous high forest cover where such cover naturally occurs, recurring natural regeneration of all native species on the site, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and maintain selection stands are individual-tree and group selection. A goal of selection is improvement of quality by continuously harvesting trees less likely to contribute to the long-range health of the stand.

"(M) The term 'shelterwood cut' means an even-aged silvicultural regeneration method under which a minority of the mature stand is retained as a seed source or protection during the regeneration period. The standing mature trees, usually 10 to 20 per acre, are later removed in one or more cuttings.

"(N) The term 'timber purposes' shall include the use, sale, lease, or distribution of trees, or the felling of trees or portions of trees except to create land space for a structure or other use.

"(4)(A)(i) The purpose of this paragraph is to foster the widest possible enforcement of this section.

"(ii) Congress finds that all people of the United States are injured by actions on lands to which this section applies.

"(B) The provisions of this section shall be enforced by the Secretary of Defense and the Attorney General of the United States against any person who violates this section.

"(C)(i) Any citizen may enforce any provision of this section by bringing an action for declaratory judgment, temporary restraining order, injunction, civil penalty, and other remedies against any alleged violator including the United States, in any district court of the United States.

"(ii) The court, after determining a violation of this section, shall impose a penalty of not less than $5,000 and not more than $50,000 per violation, shall issue one or more injunctions and other equitable relief and shall award to the plaintiffs reasonable costs of litigation including attorney's fees, witness fees and other necessary expenses.

"(D) The penalty authorized by subparagraph (C)(ii) shall be paid by the violator or violators designated by the court. If that violator is the United States of America or a Federal agency or officer, the penalty shall be paid to

the Judgment Fund, as provided by Congress under section 1304 of title 31, United States Code.

"(E) The penalty should be paid from the Judgment Fund within 40 days after judgment to the person or persons designated to receive it, to be applied in protecting or restoring native biodiversity in or adjoining Federal land. Any award of costs of litigation and any award of attorney fees shall be paid within 40 days after judgment.

"(F) The United States, including its agents and employees waives its sovereign immunity in all respects in all actions under this section. No notice is required to enforce this section.".

(b) CONFORMING AMENDMENT.—The table of sections for chapter 159 of title 10, United States Code, is amended by adding at the end the following new item:

"2693. Conservation of native biodiversity.".

SEC. 8. EFFECTIVE DATE.

The amendments made by this Act shall not apply with respect to any contract to sell timber which was awarded on or before the date of enactment of this Act.

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Mr. VENTO. H.R. 1164's stated purpose is to strengthen the protection of the native biodiversity and to place restraints on clearcutting and certain other cutting practices on the forests of the U.S.

At the onset, for myself, a clearcut is not necessarily aesthetically pleasing. Anyone who has flown across the country and seen the gaping holes in the canopy has to be concerned.

For many years, clearcutting has been the preferred method of timber harvest, because it's fast, efficient and supposedly cost effective, depending upon how you measure costs. Some argue it destroys any semblance of the forest.

For my part, it's pretty obvious that the trees that get removed are the dominant feature in the environment, in the landscape. And, their removal dramatically changes the types of life forms that are present there.

And, I think a recognition of that ought to be foremost and paramount. Clearly, under the 1976 law, it seems that the types of screens, the types of tests that were put in place by one of my mentors, Hubert Humphrey, and others in the Senate that worked on that 1976 law, really thought they were setting, in place a policy path which would result in far less clearcutting and even-aged management, which I am trying to figure out the difference exactly between them. I guess it's smaller areas.

But, I think they thought that they were, in fact, moving towards a different method of managing or addressing the national forests and other public domain lands in which we had a responsibility. But, clearly, the policy path that was followed seemed to be almost uninterrupted by virtue of the 1976 law that was passed.

And, so here we are again, I think, in some respects, trying to put in place a law or a legislative policy or suggest a legislative policy that will deal with the matter in a more definitive manner. We are obviously faced with the increasing information and knowledge concerning forests and forest ecosystems and the way we address them.

As one witness mentioned at an earlier hearing, these systems are so complex that we cannot think that complex. And so, therefore, we have to use various types of cognitive constructs to try and deal with this and with the ongoing policies that, of course, are most important to people.

But, I hope that this hearing will be one step further along the path of forest reform. We have talked about a lot of new ideas.

And, I think it is important that the Committee look at dramatic policy changes like John is suggesting and other matters in terms of our responsibilities with regards to national forests and public domain lands.

Without objection, my entire statement and my oral comments will be made part of the record, as will the statements of other members and of all the witnesses. The witness list is before the members.

And, hearing no objection to that, so ordered.

[Prepared statement of Mr. Vento follows:]

OPENING STATEMENT
CONGRESSMAN BRUCE F. VENTO
HEARING ON H.R. 1164, CLEARCUTTING PROHIBITION ACT
THURSDAY, MAY 5, 1994

THE SUBCOMMITTEE ON NATIONAL PARKS, FORESTS AND PUBLIC LANDS IS MEETING TODAY TO RECEIVE TESTIMONY ON H.R. 1164, THE FOREST BIODIVERSITY AND CLEARCUTTING PROHIBITION ACT OF 1993; INTRODUCED BY OUR COLLEAGUE FROM TEXAS, REPRESENTATIVE JOHN BRYANT. H.R. 1164 WOULD AMEND SEVERAL LAWS THAT ADDRESS FOREST MANAGEMENT ON FEDERAL AND INDIAN LANDS. THE BILL'S STATED PURPOSE IS TO STRENGTHEN THE PROTECTION OF NATIVE BIODIVERSITY AND TO PLACE RESTRAINTS ON CLEARCUTTING AND CERTAIN OTHER CUTTING PRACTICES ON THE FORESTS OF THE UNITED STATES.

LET ME SAY AT THE ONSET, FOR MYSELF, A CLEARCUT IS NOT A PRETTY SIGHT TO BEHOLD. ANYONE WHO HAS FLOWN CROSS COUNTRY TO THE PACIFIC NORTHWEST HAS SEEN FROM THE AIR THE CLEARCUTS ON FEDERAL, STATE AND PRIVATE LANDS. LARGE GAPING HOLES IN THE FORESTS, THEY HAVE COME TO SYMBOLIZE FOR MANY ALL THAT IS WRONG WITH PRESENT FOREST MANAGEMENT. FOR MANY YEARS, CLEARCUTTING HAS BEEN THE PREFERRED METHOD OF TIMBER HARVEST BECAUSE IT IS FAST, EFFICIENT AND COST-EFFECTIVE. SOME ARGUE IT DESTROYS ANY SEMBLANCE OF A FOREST. OTHERS SAY THAT WITH PROPER MANAGEMENT IT IS AN EFFECTIVE FORESTRY TOOL IN ENHANCING BIODIVERSITY, CONTROLLING INSECT INFESTATION AND REGENERATING CERTAIN SPECIES OF TREES.

CONGRESS RECOGNIZED THIS MULTITUDE OF CONCERNS AND VIEWPOINTS IN THE NATIONAL FOREST MANAGEMENT ACT OF 1976, LAYING OUT A SPECIFIC POLICY ON THE USE OF CLEARCUTTING IN NATIONAL FORESTS. UNFORTUNATELY, THAT POLICY DID NOT PROVE EFFECTIVE IN

DEALING WITH ON-GROUND MANAGEMENT AND IN 1992 THEN CHIEF DALE ROBERTSON ISSUED A DIRECTIVE OUTLINING A SUBSTANTIAL REDUCTION IN THE USE OF CLEARCUTS.

THE PURPOSE OF OUR HEARING TODAY IS TO EXAMINE H.R. 1164 IN THE CONTEXT OF THE ADVANTAGES AND DISADVANTAGES THAT EXIST ON USING CLEARCUTTING AS A TIMBER HARVESTING METHOD ON FEDERAL AND INDIAN FOREST LANDS. HOW DOES CLEARCUTTING RELATE TO ECOSYSTEM MANAGEMENT AND FOREST HEALTH ISSUES? WHAT ARE THE IMPACTS ON WILDLIFE AND NON-TIMBER RESOURCES? WHAT ARE THE ALTERNATIVES TO CLEARCUTTING AND WHY HAVEN'T THESE BEEN USED MORE OFTEN? I BELIEVE THESE QUESTIONS RAISE IMPORTANT ISSUES AND APPRECIATE THE INTEREST THAT EXISTS IN THIS MATTER. I LOOK FORWARD TO THE WITNESSES TESTIMONY AND TO A CONTINUED DIALOGUE ON THE DEVELOPMENT AND IMPLEMENTATION OF SOUND FOREST MANAGEMENT PRACTICES.

DO OTHER MEMBERS HAVE OPENING REMARKS?

Mr. VENTO. Mr. Smith.

STATEMENT OF HON. ROBERT F. (BOB) SMITH

Mr. SMITH. Thank you, Mr. Chairman. Those of us who serve on the Agriculture Committee have heard this bell, I think, three times. It's not a new idea. And, it's still a bad one.

I think the Congress is headed down a very dangerous path. Yesterday, we heard testimony, as this Committee has, from Mrs. Maloney, who wants to tie up 16 million acres in the Northern Rockies Wilderness Bill, which basically would put the federal timber program out of business in five states.

Today, we consider a bill that will take away sound silvicultural tools used by the land management agencies to harvest timber. I've also noticed Mr. Bryant is the co-sponsor of the Northern Rockies bill. So, I think we can be assured that he's interested in locking up the lands from timber harvesting, as he is prohibiting the practice of clearcutting.

If we continue the present course, our agencies won't need even-age management, because all the timber in the country will be locked up in park-like areas. And, I often wonder to myself where will preservationists go next.

I think we all know the answer. They are going to go try to regulate private timber harvests.

And, this whole question has to do with the balance between private land holdings and public land holdings, especially in the west. One of the concerns that I continually have as we go headlong down this path to tying up the public timber, we have forgotten the idea of eco-management, because eco-management does not have boundaries. It more allies itself with watersheds.

So, as we are shutting down timber management from public lands and timber harvest from public lands, we are, indeed, tightening the noose around private lands in the west. In fact, because of the shortage of timber and because of the increased price of lumber as a result of this management shrinkage, we are, indeed, clearcutting private lands.

And, it's an action oriented program which I think is dangerous to the ecology of the country. It's dangerous to the environmental standards we all want to support.

In the States of Oregon and Washington, for instance, 60 percent of the land in the State of Washington is forest land, is privately owned. Forty percent is privately owned in the State of Oregon.

While we restrict timber harvest from the 60/40 on the other side, we are compelling private landowners to sell their timber certainly much of it not at a mature state because of the price. And, we are ruining the environment for wildlife, for other environmental concerns that we all are attempting to address.

So, this has a cause and effect question. And, I suggest that those who are so interested in tying up public lands had better look at the whole picture, because what is happening on private lands won't be to your liking.

That said, I offer this concern. When we get through tying up all the land in the west and on public lands, we then will turn to private lands. And, we will begin to restrict, as some want to these days, what can be done with timber from private lands.

Thank you, Mr. Chairman.

Mr. VENTO. Mr. Thomas.

STATEMENT OF HON. CRAIG THOMAS

Mr. THOMAS. Thank you, sir. I am interested in this, of course. And, I am not a special fan of clearcutting, but I am a special fan of managing resources. And, it seems to me that's one of the tools to do that.

So, I am a little interested in and, frankly, concerned about this business of clearcutting being a crime against nature. So, I am glad to be here.

Thank you.

Mr. VENTO. We appreciate the gentleman's presence. We are pleased to welcome our colleague, the principal sponsor of this measure, Congressman John Bryant, from the Fifth District of Texas.

John, welcome. Your statement has been made part of the record. Please, proceed.

STATEMENT OF HON. JOHN BRYANT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BRYANT. Thank you, Mr. Chairman. I appreciate very much your response to our request for a hearing on this bill.

H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act of 1993 has 94 co-sponsors in the House. I want to start by saying, on behalf of all of them, that this bill does not deal with whether to harvest timber on public lands, but how to harvest timber.

For some time, I have been concerned about the federal government's practice of clearcutting in our national forests. The Departments of Agriculture, Defense and Interior are conducting even-age management, that is to say, clearcutting and its variants, on the vast majority of the 57 million acres of available commercial timberland in our national forests, as well as in other federally owned forests.

Under even-age management, loggers clear timber from the site, bulldoze the non-harvestable vegetation, scrape the soil bare and replace the native biodiversity with a crop of commercial tree species. The result is that logging plantations replace the biological diversity of our native forests, eliminating habitat for forest wildlife and destroying recreational opportunities.

The real tragedy here is the fact that clearcutting and the devastation that results from it and other even-age cuts are not necessary for harvesting timber.

Under the environmentally preferable selection management system, harvesters mark individual trees scattered throughout an area and cut them for sale or culling, leaving an ever-improving stand to regenerate new trees naturally in openings created by the cuts. I find it hard to understand how anyone could not view that as a preferable means of harvesting when the alternative is what you see on these pictures over here.

Selection management is used by private foresters from coast to coast for economic reasons and to maintain a healthy natural forest. According to forester Bill Carroll, the Forest Service easily

could abandon clearcutting and shift to selection management within a few months.

The environmental evils of even-age management include soil losses several times worse than under selection management, with nutrient losses sometimes 20 times as bad; sedimentation of streams, causing flooding and decimation of aquatic life; devastation of native biodiversity; drastic impairment of recreational values; increase of susceptibility to insects' disease and acid rain; blowdowns of trees along the edges of clearcut sites and within seed tree and shelterwood cuts; and worsening of the greenhouse effect by reducing carbon-storing, woody biomass for years after logging and by reducing the capacity of soil to hold carbon.

Not only is the selection management system environmentally preferable, but the Forest Service researchers reported in the 1985 Crossett study in Arkansas that selection management is more cost efficient and enjoys a higher benefit/cost ratio than does even-age management. It avoids the high costs of site preparation and planting and produces a higher quantity and quality of sawlogs.

Because this legislation does not attempt to limit logging on federal lands, the agencies managing federal lands remain eligible to log timber under selection management. On June 4, 1992, after the Agriculture Subcommittee on Forests, Family Farms and Energy scheduled a hearing on any 1991 bill to ban even-age logging, the then Chief of the Forest Service, Dale Robertson, issued a directive to reduce clearcutting by 70 percent.

Now, I would point out that that directive was issued after years of the Forest Service's saying that nothing was wrong with the system that it was following at the time. So, after a lot of fanfare, the Forest Service announced that it was going to reduce clearcutting by 70 percent.

But, the directive specifically permitted continued use of seed tree, shelterwood and other variations of even-age logging. The Chief labeled the move "ecosystem management."

So, how did regional forest service foresters respond? Where they made any reductions in clearcutting at all, they merely shifted to seed tree, shelterwood, large group selection, openings for deer and other forms of even-age logging, all of which are merely two-stage clearcuts and just as destructive to the environment.

There were, to be fair, here and there some districts that announced and implemented real changes; a tiny fraction moved to true selection management.

A survey by the Forest Reform Network verifies the statement that I just made.

The Forest Service's new policy of ecosystem management sounds great on paper and in agency testimony to Congress. But, on the ground, it is just one more effort to make Congress believe that the responsible agencies are turning over a new leaf. In reality, federal foresters want to avoid any change, any reform with teeth in it or specific directions.

In recent decades, the Forest Service has depleted this country's biodiversity in nearly 70 percent of our federal commercial timberland through various forms of even-age logging. At its current rate, the agency would convert the remainder of our unprotected stands to even-age before the year 2010.

Instead of varied, biodiverse forests, we will have monotonous timber plantations from coast to coast. I base this estimate on Texas figures of the Forest Service, which I placed in the record of the hearing on June 16th, 1992, and on additional national figures obtained from the Forest Service.

Although clearcutting, as such, is decreasing, other forms of even-age logging are increasing proportionately to the decrease in clearcutting, yielding the same results. There are realistic alternatives.

What remains of our vanishing forest biodiversity is mainly in our federal forests. And, most of that is in the remaining 30 percent of our federal commercial timberland not yet turned into even-age fields.

Even if, by other measures, we preserve millions of acres of the federal timberlands in the Pacific Northwest, only seven of the 48 forest ecosystems found in our national forest system would be protected. Enactment of the Forest Biodiversity and Clearcutting Prohibition Act, however, would save all of the existing forest ecosystems, 48 nationwide, more than seven times as many.

These ecosystems are important to human existence and to survival as sources of foods, fibers, medicines and other products. They also provide valuable research areas.

With every year that they diminish, our forest crisis becomes more alarming. Our future becomes more impoverished.

Three environmental groups won a preliminary injunction against the Forest Service on May 12th of last year to ban even-age logging in the national forests in Texas. Judge Robert M. Parker found that near total even-age practices were likely to impair key resources, in violation of the National Forest Management Act.

I, along with 11 citizen and environmental organizations, have asked our federal government to use this decision as a basis for banning or vastly reducing even-age logging in national forests. Unfortunately, the Forest Service and the Department of Justice chose to appeal Judge Parker's decision to prevent its application anywhere.

Judge Parker's decision acknowledges what the supporters of H.R. 1164, and I have been arguing for years. The federal agencies which are supposed to manage this country's public lands are quick to take advantage of the gigantic loopholes in current federal legislation which allows for the discretion to clearcut "when appropriate."

I am here today to say that our public lands are in peril. Clearcutting and all forms of even-age management are eliminating native biodiversity in this country.

And, it is time to put an end to these destructive logging practices and properly manage those lands which the public mistakenly believes Congress is responsibly protecting. I think we should manage them like they belong to the public, as they do.

There are plenty of private lands today, interestingly enough, that are being managed in the same way that we are advocating here. I submit to you that it is our obligation not to continue to let

our public lands look like that obscene photograph of a clear cut forest over there.

With that, I will complete my opening statement.

[Prepared statement of Mr. Bryant follows:]

Remarks of the Honorable John Bryant
Subcommittee on National Parks, Forests, and Public Lands
May 5, 1994

MR. CHAIRMAN: Thank you for scheduling today's hearing and for giving me this opportunity to discuss the very important issue of even-age management pending before this Subcommittee.

HR 1164, the Forest Biodiversity and Clearcutting Prohibition Act of 1993 has 94 cosponsors.

I want to start by saying that this bill does not deal with whether to harvest timber on public lands but how to harvest.

For some time I have been concerned about the federal government's practice of clearcutting in our national forests. The Departments of Agriculture, Defense and Interior are conducting even-age management (clearcutting and its variants) on the vast majority of the 57 million acres of available commercial timberland in our national forests, as well as on other federally-owned forests.

Under even-age management, loggers clear timber from a site, bulldoze the non-harvestable vegetation, scrape the soil bare, and replace the native biodiversity with a crop of commercial tree species. The result is that logging plantations replace the biological diversity of our native forests, eliminating habitat for forest wildlife and destroying recreational opportunities.

The real tragedy here is the fact that clearcutting and the devastation that results from it and other even-age cuts are not necessary for harvesting timber.

Under the environmentally preferable selection management system, harvesters mark individual trees scattered throughout an area and cut them for sale or culling, leaving an ever-improving stand to regenerate new trees naturally in openings created by the cuts.

Selection management is used by private foresters from coast to coast, for economic reasons and to maintain a healthy natural forest. According to forester Bill Carroll, the Forest Service could abandon clearcutting and shift to selection management within a few months.

The environmental evils of even-age management include soil losses several times worse than under selection management, with nutrient losses sometimes twenty times as bad; sedimentation of streams, causing flooding and decimation of aquatic life; devastation of native biodiversity; drastic impairment of recreational values; increase of susceptibility to insects' disease, and acid rain; blowdowns of trees along the edges of clearcut sites and within seed tree and shelterwood cuts; and worsening of the greenhouse effect by reducing carbon-storing, woody biomass for years after logging and by reducing the capacity of soil to hold carbon.

Not only is selection management environmentally preferable, but Forest Service researchers reported in the 1985 Crossett study down in Arkansas that selection management is more cost efficient and enjoys a higher benefit/cost ratio than even-age management. It avoids the high costs of site preparation and planting and produces a higher quantity and quality of sawlogs. Because this legislation does not attempt to limit logging on federal lands, the agencies managing federal lands remain eligible to log timber under selection management.

On June 4, 1992, after the Agriculture Subcommittee on Forests, Family Farms, and Energy scheduled a hearing on the 1991 bill to ban even-age logging, Chief of the Forest Service Dale Robertson issued a directive to reduce clearcutting by 70%. The Forest Service made a big fanfare over this purported response to public objections. But the directive specifically permitted continued use of seed tree, shelterwood, and other variations of even-age logging. The Chief labeled the move "ecosystem management."

So how did regional forest service foresters respond? Where they made any reductions in clearcutting at all, they merely shifted to seed tree, shelterwood, large-group selection, openings for deer, and other forms of even-age logging -- all merely two-stage clearcuts and just as destructive to our environment.

To be fair, here and there, some districts announced real changes -- a tiny fraction of true selection management. A survey by the Forest Reform Network verified what I am saying.

The Forest Service's new policy of ecosystem management sounds great on paper and in agency testimony to Congress. But on the ground, it is just one more effort by federal bureaucrats to make Congress believe that the agencies are turning over a new leaf. In reality, federal foresters want to avoid any reform with teeth in it.

In recent decades the Forest Service has depleted this country's biodiversity in nearly 70% of our federal commercial timberland through various forms of even-age logging. At its current rate, the agency would convert the remainder of our unprotected stands to even-age before the year 2010. Instead of varied, bio-diverse forests, we will have monotonous timber plantations from coast to coast.

I base this estimate on Texas figures of the Forest Service which I placed in the record of hearing on June 16, 1992, and on additional national figures obtained from the Forest Service. Although clearcutting, as such, is decreasing, other forms of even-age logging are increasing proportionately to the decrease in clearcutting.

There are realistic alternatives.

What remains of our vanishing forest biodiversity is mainly in our federal forests, and most of that is in the remaining 30% of our federal commercial timberland not yet turned into even-age fields. Even if, by other measures, we preserve millions of acres of the

federal timberlands in the Pacific Northwest, only seven of the 48 forest ecosystems found in our national forest system would be protected. Enactment of the Forest Biodiversity and Clearcutting Prohibition Act, however, would save all of the existing forest ecosystems -- 48 nationwide -- more than seven times as many.

These ecosystems are important to human existence and survival. They are sources of foods, fibers, medicines, and other products. They also provide valuable research areas. With every year that they diminish, our forest crisis becomes more alarming. Our future becomes more impoverished.

Three environmental groups won a preliminary injunction against the Forest Service on May 12, 1993, to ban even-age logging in the national forests in Texas.

Judge Robert M. Parker found that near-total even-age practices were likely to impair key resources, in violation of the National Forest Management Act. I, along with eleven citizen and environmental organizations, asked the U.S. Government to use this decision as a basis for banning or vastly reducing even-age logging in national forests. Unfortunately, the Forest Service and the Department of Justice chose to appeal Judge Parker's decision to prevent its application anywhere.

Judge Parker's decision acknowledges what I and the supporters of HR 1164 have been arguing for years. The federal agencies which are supposed to manage this country's public lands are quick to take advantage of the gigantic loopholes in current federal legislation which allows for the discretion to clearcut "when appropriate."

I am here today to say that our public lands are in peril. Clearcutting and all forms of even-age management are eliminating native biodiversity in this country. It is time to put an end to these destructive logging practices and manage those lands which the public mistakenly believes Congress is responsibly protecting. manner.

Mr. VENTO. Well, thanks, John. I know that you have to go.

Let me just get a couple of questions in. Perhaps others have a question or two. I would just make a few points.

This is not a new issue. As my staff was pointing out to me, in 1971 then Senator Frank Church was holding hearings on this very issue.

And, of course, the 1976 law provides, and the members have this in the background material before them, five different criteria that need to be followed if clearcutting is going to be used. So, as you look through that, it would be interesting to see what the answers of the Forest Service and BLM might be with regards to that issue.

But, it's clear to me that less than 10 percent of the harvest goes on or, in many instances, less than 5 percent actually other than either through even-age management or some other derivation of clearcutting, plain and simple. I don't know but most of us thought, there was a change here.

There is an evolution going on in terms of moving away from this. But the figures I have in front of me are only up to 1991.

So, I can't see any change in that. So, it would be interesting to see what further information we have for 1993 or 1994 insofar as it exists, especially for 1993.

We have got some conjunctive matters that are effecting these issues. But, your effort here, of course, goes well beyond just this.

In other words, you have measures in here with citizen suits to enforce it. What is the basis for that?

Do you feel that in the absence of the ability to have standing that there wouldn't be a proper analysis or rigor in terms of enforcing the law?

Mr. BRYANT. There is nothing in our recent history to indicate that we can count on the federal agencies with responsibility for public forests to responsibly take care of this property; that is to say, in the way in which my bill requires. And, if we don't have the possibility of citizen suits to force it to happen, I think there is a high likelihood that it will not happen.

Clearly, it has not happened in the past. You know, these are politically-charged decisions in the regions where they occur, because the local interests are affected by them.

And, there is a natural tendency on the part of the local authorities to not want to be unpopular. Somebody has to make these decisions, however. And, if they are not going to be made by the authorities with the responsibility, then citizens lawsuits in order to make sure the law is followed, must be allowed.

Mr. VENTO. We also have the issue in terms of roadless areas in which you articulate a view that if areas are roadless they ought not to be roaded. You suggest in your opening statement that this bill is not whether we are going to deal with harvesting but how we are going to do it.

But, obviously roading is a concern of yours. So, you are suggesting, in absence of that, what, aerial lift lines or what in terms of harvesting on a selective basis?

Mr. BRYANT. That's one alternative. But, Mr. Chairman, that is a response to the fact that there is a long history of road building in areas where no roads were needed.

There is a long history also, not to mention the roads, of harvesting when there was no need to be selling timber. Timber was being sold at below market costs at a loss to taxpayers.

I am sure you've heard that before.

Mr. VENTO. Oh, that deficit timber sale issue is a big matter. There are obviously various arguments about looking at what the total benefits are in costs, as we have all heard before.

But, I just want to point out that one other area that your bill touches on—I know you have to leave, and this will be my last question—is the Scientific Committee. One of the concerns that sort of comes out here, to me, is that, for a long time working in this role, we try to treat the Forest Service, the other land managers, as professionals and I think that throughout the period that I've served that there is a strong core of professionalism in the land management agencies obviously trying to free it up so that the science and the most advanced professionalism and knowledge is applied on the ground.

It's not always easy, because you've got a lot of political decisions that enter into it. So, I'm concerned though that in having a Scientific Committee, which is completely outside, it sort of makes the presumption that there are not professionals and that we basically end up creating a self-fulfilling prophecy.

And, that, I think, would be a concern. So, it's more a concern I am stating to you on that basis than—there is not—as having a committee or having groups outside, obviously they would consult and they wouldn't directly control. There is no real power.

But, I think the presumption is, at least, that reading that is coming out of it on the part of some of the agencies, that they have no ability within to——

Mr. BRYANT. Well, the bill was written on the basis of a very strong skepticism based on experience that the agencies are not going to make the tough decisions. You have got to remember that a lot of the people involved in these things live in the areas where the biggest outcry comes from the people that they see everyday that are in the business of going in there perhaps and doing the things that we think they should not be doing.

I mean, recognizing that, we are just simply trying to be——

Mr. VENTO. No, that's really one of the dilemmas of all the land managers, is they are working close to a local situation in which they are trying to represent a national consistency in terms of policy, whether it's Alaska or Minnesota.

I just want you to recognize, I think, that there are some that cross over that line. But, there are many that work very hard to maintain it.

And, to put in place mechanisms that suggest that they are not, you know, that they really aren't representing a different point of view might, in fact, attain that goal or may push them in that direction. So, I think we really want to be careful about that. I agree with you, though, that there is a real risk here on this matter.

Mr. Smith, did you have any questions for our colleague?

Mr. SMITH. Thank you, Mr. Chairman. I do. For the information of the Committee, I have numbers here for percentage of clearcuts in Region 6, which is Oregon and Washington.

In 1991, it was two percent. In 1993, it was one percent.

Mr. VENTO. If the gentleman would look at—the figures we have are attached to the material. Did you see it? It's with the background material.

Mr. SMITH. That's what I have, for 1991 and 1992.

Mr. VENTO. I don't know.

Mr. SMITH. Well, here, I will submit this for the record. We don't have to argue about it.

Mr. VENTO. Okay.

[The information follows:]

Forest Service Data on Acres of Regeneration Harvests in the National Forests, 1984-1991 (area in thousands of acres)

	1984	1985	1986	1987	1988	1989	1990	1991	AVG.
National Forest System Total									
Clearcut	243	250	236	257	283	257	229	187	**243**
Removal[a]	119	133	74	71	105	148	120	115	**111**
Selection	39	28	28	25	30	29	35	48	**33**
Total	400	410	338	353	418	434	384	349	**386**
Region 1 -- Montana and northern Idaho									
Clearcut	8.2	10.1	14.1	18.8	16.6	27.6	25.8	20.2	**16.7**
Removal[a]	9.1	6.9	7.7	5.9	6.8	11.3	7.8	8.2	**8.0**
Selection	3.1	2.7	2.1	1.9	1.0	.8	.8	.7	**1.6**
Total	20.4	19.7	23.9	26.6	24.3	39.7	34.5	29.2	**27.3**
Region 2 -- Colorado and Wyoming									
Clearcut	1.9	2.7	2.9	3.8	4.9	5.8	7.9	6.5	**4.6**
Removal[a]	2.6	2.1	3.0	2.1	4.2	6.3	10.7	12.4	**5.4**
Selection	.6	.1	.5	.3	.7	1.1	.9	.8	**.6**
Total	5.1	5.0	6.4	6.2	9.9	13.2	19.5	19.7	**10.6**
Region 3 -- Arizona and New Mexico									
Clearcut	.3	.2	.0[b]	.0	.0[b]	.4	.2	.4	**.2**
Removal[a]	14.0	13.3	12.9	4.3	4.4	21.1	12.5	16.0	**12.3**
Selection	.9	.1	.0	.0	.0[b]	.1	.9	.4	**.3**
Total	15.2	13.6	13.0	4.3	4.5	21.6	13.6	16.8	**12.8**
Region 4 -- Utah, Nevada, and southern Idaho									
Clearcut	2.5	1.2	2.6	2.8	1.9	1.5	9.3	11.3	**4.1**
Removal[a]	6.2	.8	1.0	1.3	4.5	3.2	2.6	2.0	**2.7**
Selection	9.1	.9	3.3	6.3	1.0	1.6	2.9	2.0	**3.4**
Total	17.9	2.8	6.9	10.4	7.4	6.3	14.8	15.2	**10.2**

[a]Final harvest acres in the specified year from even-aged silvicultural systems other than clearcutting.

[b]Fewer than 50 acres.

	1984	1985	1986	1987	1988	1989	1990	1991	AVG.
Region 5 -- California									
Clearcut	14.4	22.0	12.9	18.5	35.8	11.1	12.4	12.0	**17.4**
Removal*	21.5	34.0	4.8	5.8	20.2	19.7	10.8	10.7	**15.9**
Selection	9.8	11.1	2.2	2.7	6.7	3.7	3.9	3.5	**5.5**
Total	45.8	67.1	19.9	27.0	62.8	34.5	27.1	26.2	**38.8**
Region 6 -- Oregon and Washington									
Clearcut	42.5	41.3	42.1	51.4	68.5	81.5	59.5	49.7	**54.6**
Removal*	47.8	61.3	33.9	42.1	58.7	80.1	68.0	59.6	**56.4**
Selection	6.3	5.7	11.8	4.6	13.3	11.1	11.6	22.5	**10.9**
Total	96.6	108.3	87.9	98.0	140.5	172.6	139.1	131.9	**121.9**
Region 8 -- The South									
Clearcut	106.9	108.7	97.8	97.0	90.3	66.2	55.1	34.1	**82.0**
Removal*	13.6	10.8	8.5	6.2	3.6	2.5	3.9	2.6	**6.5**
Selection	.0	.0	.0	.0	.6	1.3	4.5	6.6	**1.6**
Total	120.5	119.6	106.2	103.3	94.5	70.0	63.4	43.3	**90.1**
Region 9 -- The North and East									
Clearcut	59.4	54.8	54.7	56.1	55.2	50.0	44.9	41.6	**52.0**
Removal*	4.1	3.6	2.4	3.4	3.0	3.8	3.8	3.3	**3.4**
Selection	7.8	7.0	8.1	9.0	6.7	9.7	9.6	11.3	**8.6**
Total	71.3	65.4	65.3	68.5	64.9	63.1	58.3	56.2	**64.8**
Region 10 -- Alaska									
Clearcut	8.6	8.6	6.8	8.9	9.8	13.5	14.0	10.7	**10.1**
Removal*	.0	.0	.0	.0	.0	.0	.0	.0	**.0**
Selection	.3	.2	.8	.2	.0[b]	.0	.0	.0	**.2**
Total	7.6	8.9	8.8	9.0	9.8	13.5	14.0	10.7	**10.3**

* Final harvest acres in the specified year from even-aged silvicultural systems other than clearcutting.

[b] Less than 50 acres.

Source: U.S. Dept. of Agriculture, Forest Service. *Reply to: 2490 Records and Reports -- Subject: National Forest System, Reforestation and Timber Stand Improvement Report for Fiscal Year 1991.* Memorandum to: Regional Foresters and Station Directors. Washington, DC: Feb. 6, 1992. 1 p., plus attachments.

Mr. SMITH. Mr. Bryant, I have a letter here from John Lowe, who is a regional forester from Region 6. In discussing this whole idea of even-age management, he recalls that just the opposite occurred from your testimony.

And, that is that nature, in itself, has resulted in even-age management over the years. And, if these forests were never entered or never harvested, nature would provide for even-age management.

In fact—and I want to ask you your thoughts about this. In fact, his letter indicates that because of even-age management, in Region 6—and I know that Dallas doesn't have any trees except in the park, but up in the northwest in Region 6, because of even-age management, openings have developed for the production of big game forage, the elk population has exploded as a result.

Strip clearcuts were used to provide cross-country ski trails. Snowmobile play areas were created by even-age cutting.

The Deschutes National Forest in Oregon uses visual diversity along the highways, which normally there are stands of lodgepole pines, mostly dead and converted to rain trees. Wildlife forage habitat has been improved.

The Fremont National Forest has opened up opportunities for big game habitat quality. Even-age methods have been created.

The point is that the Forest Service, I think, is using its efforts in management for recreation, for wildlife, for diversity. Is that wrong? I'm listening to you now, a gentleman who I have great respect for, on the one side of this issue and the silviculturist on the other.

Now, who am I to believe?

Mr. BRYANT. Well, let me ask you this question. If clearcutting was such a good idea, why did the Forest Service issue a directive in 1992 to reduce it by 70 percent?

Mr. SMITH. Well, I have no idea, except I assume that public pressure, like yours, has indicated that they want to use smaller clearcuts. I know they are trying to do that.

It's not for the benefit, however, of the resource. It's merely for the benefit of folks like you who raise this issue.

The resource is managed better in their methods. But, public pressure, I'm sure, has brought their decision.

Mr. BRYANT. So, you are saying that clearcutting was a good idea in the first place and that the Forest Service shouldn't be cutting back on it and is only doing so in response to political pressure?

Mr. SMITH. That's correct. That's what I am saying. And, the point is, in my part of the country, in fact, you know, in the Doug fir region of the rain forest, if you don't clearcut you can't grow trees. You can't grow a tree under a tree.

And, if you do and those forests are so thick, if you try to selectively cut in those kinds of forests, you destroy many trees trying to get to the tree you want to take out. If you want to go to aerial kinds of harvesting, then you make it a below cost timber sale and you and others would criticize low cost timber sales.

Mr. BRYANT. You and I have had this dialogue twice before during other Committee hearings. And——

Mr. SMITH. We have.

Mr. BRYANT [continuing]. We could almost go get the record and just offer it here.

To complain about selection management because it's going to destroy trees so that you can, instead, have a clearcutting system, which gives you what that picture right over there shows, is perfectly ridiculous. I don't wish to be impolite.

I should perhaps not be so strong in my comment. But, I think the Committee ought to make a decision based on what it thinks the science says and the real experience of loggers and then establish a policy here.

And, I am quite willing to live with the science——

Mr. SMITH. That's exactly what I want to do.

Mr. BRYANT. But, if the source for your science is going to be one of those people who have pursued the policy of clearcutting for many, many years and then comes forward to tell us, as the letter you read indicates, that cutting down all the trees somehow makes the wildlife more plentiful and produces all types of natural benefits, I really think we've got to ask questions about the ability of that person to leave his prejudices behind and go on the basis of science.

Mr. SMITH. That's fair. I just want to add that the National Wild Turkey Federation or the Ruffed Grouse Society people, who have turkeys, and maybe you hunt turkeys—I love to—they say. "Even-age management prescription such as clearcut harvest operations are essential to the regeneration of these birds."

Mr. BRYANT. Well, all I can say is it's a free country. You can say what you choose.

It certainly defies logic however.

I sat in a hearing two weeks ago in the Energy and Commerce Committee and heard the seven presidents of the tobacco company say cigarettes are not addictive.

I mean, you can hear whatever you want to. [Laughter.]

Mr. SMITH. Well, evidently we disagree on both of these issues. [Laughter.]

Thank you very much.

Mr. VENTO. I think you are taking on a bigger job there, Bob. It might have been easier to deal with the Doug fir than stick with the wood. Stick with the wood. [Laughter.]

Mr. BRYANT. I would like to add one thing about a comment referring to the amount of clearcutting going on.

The Committee ought to be aware that because clearcutting is so unpopular, the Forest Service and I suppose some of the other agencies as well, have employed other harvesting techniques which are, in effect, the same thing. It's even-age management.

They don't call it clearcutting. Instead, it's shelterwood cut, seed tree cut, group selection and that kind of thing.

Mr. VENTO. I think that sort of begs the question. And, I think, Bob's statement when he was talking about, in fact, some of the alternative type of smaller clearcuts, I guess the point is, what do you want when you get done.

Do you want elk, turkey? I mean, is this to develop a hunting regime or what do we want? Those are the sort of questions that I was hearing when you were going back and forth.

Congressman Hinchey, did you have any questions of our colleague, this morning?

Mr. HINCHEY. No, Mr. Chairman.

Mr. VENTO. Congressman Thomas, do you have any questions?

Mr. THOMAS. Very brief. I suppose there are—certainly, everyone has a different view. There are different techniques in different places.

Now, the ones I am familiar with in Wyoming don't look like that at all. They are relatively small.

Often they are for more forage for wildlife. And, there does make some sense.

There were 10 sales in the western Black Hills. Each of them was challenged in the court by the environmentalists.

Do you feel, because of your language in here, that there isn't enough opportunity for citizen suits?

Mr. BRYANT. Well, this would not change, I think, in any way what you were talking about. All it says is that we will put into effect a policy of trying to guarantee native biodiversity in our forests by eliminating clearcutting and its variants as a means of managing the forest lands which the people own and the government manages.

Now, it doesn't effect private lands. It allows the citizens to——

Mr. SMITH. I'm not talking about private lands. I am talking about the——

Mr. BRYANT. I know.

Mr. SMITH [continuing]. Continuous challenge of any sort of a sale under the legal system now. And, do you need more of that?

Mr. BRYANT. The provisions in this bill would allow citizens to bring a lawsuit to make sure that this bill, if it passed, would be enforced.

Mr. SMITH. Well, at any rate, I would be interested in the 48 ecosystems. What did you call them?

Yeah, ecosystems. How did you define those?

Who defined the 48? I guess I am not familiar with 48. It's in your statement.

Mr. BRYANT. Well, it came from the book on clearcutting, to which I think one of you referred in your opening statement.

Mr. SMITH. I did. Oh, that's where it comes from?

Mr. BRYANT. That's right.

Mr. SMITH. Okay. Do you know what an ecosystem is?

Mr. BRYANT. I probably know it as well as you do.

Mr. SMITH. Would you define it for me, please?

Mr. BRYANT. I would accept your definition.

Mr. SMITH. Well, I am asking you. You are the one who is being questioned, aren't you?

Mr. BRYANT. Yes. An ecosystem is a natural system of biological entities that feed off of one another and that depend on one another to survive.

And, there is a definition between different ecosystems which is primarily geographical.

Mr. SMITH. So, would it be that a native biodiversity means the full range of variety and variability within and among living orgasms [sic] and ecological complexes in which they would occur? That's the damnedest thing I've ever seen.

Who is going to interpret that?

Mr. BRYANT. Organisms. [Laughter.]

Mr. SMITH. You interpret it your way. [Laughter.]

I just think it's really tough to let something like that out and then say, "Well, we are going to let the court interpret it." At least, we need to be a little more specific about what it is you are seeking.

Mr. BRYANT. That might be true. And, I am not unsympathetic with your impatience with all the lawsuits.

The emphasis here, though, is to try and put down a new federal policy for managing the lands that the government owns for the people and to ensure that it is not doing to the public's lands what is depicted in that photograph over there.

Mr. SMITH. I understand. And, I don't think you will find anybody that would argue with that.

But, that is a little overstated in terms of, at least, my experience in Wyoming. But, I don't want to argue with it, but that isn't the way clearcuts are done in most places, in any event.

I appreciate your time.

Mr. VENTO. Congressman LaRocco, did you have any questions of Congressman Bryant?

STATEMENT OF HON. LARRY LaROCCO

Mr. LAROCCO. I apologize to the author of this legislation for being late. But, I am following this issue very carefully, Mr. Chairman.

And, I don't want to take away management tools from the Forest Service that are, you know, judicially and prudently given to them. I look back at the work that Senator Church did back in 1971 when he held five days of hearings on this very issue.

And, I think actually the result of those hearings found their way into NFMA. And, we have been using them ever since.

It is always helpful to take another look at these things. And, I appreciate, the author's interest in this, because it certainly affects me out in Idaho.

But, I have not been an advocate of random acts of clearcutting. And, I certainly take a close look at it because of the watershed concerns out in my district.

But, I thank our colleagues for being here. And, I thank you, Mr. Chairman.

Mr. VENTO. Thanks, John, for your participation. We are pleased to welcome our colleague from California, Wally Herger.

Wally, did you have a statement that you wanted to make?

STATEMENT OF HON. WALLY HERGER, REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HERGER. I do, Mr. Chairman. And, I thank you for allowing me an opportunity to testify before your hearing on this piece of legislation which would effect very dramatically my district in Northern California.

I have the privilege of representing a district which is dominated by seven national forests. They include parts or all of the Six Rivers, the Tahoe, the Shasta–Trinity, the Klamath, the Modoc, the Lassen and the Plumas National Forests.

The abolition of all even-aged management techniques on public lands that H.R. 1164 advocates would have a severely detrimental effect on the future health of our national forests. It is for this reason that I come before this Committee today in strong opposition to H.R. 1164.

This legislation would severely limit the availability of even-aged management techniques which are essential to the maintenance of healthy forests and, therefore, would actually degrade our forests. The fact is, clearcutting more effectively reproduces Douglas fir and other shade intolerant species than other types of timber harvesting techniques. Thus, it is used to promote the healthy regeneration of these types of trees.

As you may know, the days of using even-aged management techniques as a primary harvesting tool are gone forever in my State of California. Instead, clearcutting is only used for important forest health needs such as insect and disease problems, weather related damage, recreation and the creation of wildlife habitat.

Since 1989, the overall percentage of harvested timer that is clearcut in California has been reduced by two-thirds. When it is practiced, which is less and less these days, the average clearcut on public lands in California is only 16 acres even though, by law, it is allowable to clearcut up to 60 acres on Douglas fir forest lands.

The forests of Northern California are extremely susceptible to fire, disease and infestation due to its warm, dry climate. Without the ability to use even-aged maintenance techniques, it is highly likely that our pristine forests in Northern California would end up destroyed or irreparably damaged.

There are other instances where even-aged management techniques are necessary to protect the environment. Most importantly, the use of clearcutting is sometimes necessary to control or eradicate insects and diseases which can destroy entire forests if left unchecked.

Also, this management tool can be used to increase forage for wildlife in certain areas of the forest. Through the use of even-aged management techniques, we have created areas which provide increased forage for such mammals as deer and elk.

The Forest Service handbook, Wildlife Habitat in Managed Forests in the Blue Mountains of Oregon and Washington, edited by Jack Ward Thomas said, and I quote. "Deer and elk have been reported to use manmade openings in the forest more than natural openings. Information in the Blue Mountains indicates that elk readily use clearcuts."

It should be pointed out that the Clinton Administration has come out on record opposed to an outright abolition of even-aged management techniques. In addition, the Administration is supportive of retaining this critical tool as part of ecosystem management to promote healthy forests where you can mimic nature and, when used in limited instances, enhances biodiversity.

By opposing this legislation, no one is saying that there have never been abuses in clearcutting or other even-aged management techniques. On the contrary, I have worked with both environmental and industry groups to reduce clearcutting on national forest land in my own Northern California district.

However, a blanket prohibition will adversely impact the health of our forests by limiting the broad array of techniques necessary for proper forest management.

Mr. Chairman, I am afraid H.R. 1164 would do the exact opposite of what it is supposed to accomplish. Instead of promoting biodiversity in our national forests, H.R. 1164 will result in destruction and lead to fires and diseases running rampant through these beautiful lands.

Clearly, nobody here today wants to see this happen. Therefore, I urge this Subcommittee to do what's best for the health of our forests and reject this well-intentioned but misguided legislation. Thank you.

[Prepared statement of Mr. Herger follows:]

Statement of the Honorable Wally Herger
On H.R. 1164
The Forest Biodiversity and Clearcutting Prohibition Act
May 5, 1994

Mr. Chairman, I want to thank you for holding this hearing this morning to review H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act. I also greatly appreciate your willingness to allow me to testify before this Subcommittee for this important hearing.

This legislation would have a profound impact on my constituents in northern California. California's Second Congressional District, which I have the privilege of representing, is dominated by seven national forests. They include parts or all of the Six Rivers, Tahoe, Shasta-Trinity, Klamath, Modoc, Lassen, and Plumas National Forests. The abolition of all even-aged management techniques on public lands that H.R. 1164 advocates would have a detrimental effect on the future health of our national forests.

It is for this reason that I come before this committee today in strong opposition to H.R. 1164. This legislation would severely limit the availability of even-aged management techniques which are essential to the maintenance of healthy forests, and therefore would actually degrade our forests. The fact is, clearcutting more effectively reproduces Douglas fir and other shade intolerant species than other types of timber harvesting techniques. Thus, it is used to promote the healthy regeneration of these types of trees.

As you may know, the days of using even-aged management techniques as a primary harvesting tool are gone forever in my state. Instead, clearcutting is only used for important forest health needs such as insect and disease problems, weather related damage, recreation, and the creation of wildlife habitat. Since 1989, the overall percentage of harvested timber that is clearcut in California has been reduced by two-thirds. When it is practiced, which is less and less these days, the average clearcut on public lands in California is only 16 acres even though by law it is perfectly allowable to clearcut up to 60 acres on Douglas Fir forest lands.

The forests of northern California are extremely susceptible to fire, disease, and infestation due to its warm dry climate. Without the ability to use even-aged management techniques, it is highly likely that our pristine forests in northern California would end up destroyed or irreparably damaged.

There are other instances where even-aged management techniques are necessary to protect the environment. Most importantly, the use of clearcutting is sometimes necessary to

control or eradicate insects and diseases which can destroy entire forests if left unchecked.

Also, this management tool can be used to increase forage for wildlife in certain areas of the forest. Through the use of even-aged management techniques, we have created areas which provide increased forage for such mammals as deer and elk. The Forest Service handbook Wildlife Habitat in Managed Forests in the Blue Mountains of Oregon and Washington edited by Jack Ward Thomas said, "...deer and elk have been reported to use man made openings in the forest more than natural openings. Information in the Blue Mountains indicates that elk readily use clearcuts..."

It should be pointed out that the Clinton Administration has come out on record opposed to an outright abolition of even-aged management techniques. In addition, the administration is supportive of retaining this critical tool as part of ecosystem management to promote healthy forests where you can mimic nature and, when used in limited instances, enhance biodiversity.

By opposing this legislation, no one is saying that there have never been abuses in clearcutting or other even-aged management techniques. On the contrary, I have worked with both environmental and industry groups to reduce clearcutting on National Forest land in my own northern California district. However, a blanket prohibition will adversely impact the health of our forests by limiting the broad array of techniques necessary for proper forest management.

Mr. Chairman, I am afraid H.R. 1164 would do the exact opposite of what it is supposed to accomplish. Instead of promoting biodiversity in our national forests, H.R. 1164 will result in destruction and lead to fires and diseases running rampant through these beautiful lands. Clearly, nobody here today wants to see this happen. Therefore, I urge this subcommittee to do what's best for the health of our forests and reject this well intentioned but misguided legislation. Thank you.

Mr. VENTO. Thanks, Wally. I just wanted to point out that there are some different numbers here than what Congressman Smith had.

I think it has to be different, because we are looking at numbers from the Forest Service in 1984 to 1991. In 1991, of the total national forest system, which is reflective of almost all of the units, all Regions 1 through 10, with the exception of 7, which isn't reported here in the CRS report and National Forest Service data. We don't have BLM data. They may have similar data.

But, it indicates that 354 thousand acres were either used in clearcut or removal techniques such as even-aged silvicultural systems other than clearcutting. So, that and then 33 thousand acres did not use that.

It's clear that less than 10 percent of the areas are really—there is some other system selection type of system being used in terms—so, clearcutting really is, at least in 1991—now, maybe that has dramatically changed in 1993. It may be even more dramatically changed in 1994.

Maybe those words in the last paragraph about the limited use of clearcutting and even-age management by the Clinton Administration that you quoted, Wally, are occurring. But, it's pretty clear, that, at least, through the decade of the 80s that that type of method that is being contested and challenged by Congressman Bryant's bill was the case.

Now, there are a lot of other mechanisms in this bill, like the citizen suits and proper enforcements, Scientific Committees and other matters. But, at the heart of this, and I think what John is focusing on and what really has our attention, is the forest management technique in terms of clearcutting.

So, obviously, you have concerns that if other than clearcutting or even-aged management techniques are used that it has a big impact on the seven forests that you represent. And, you are very concerned about that.

We get into all of these questions about elk and whatever managing game preserves and why we are doing this. We don't have any woodland caribou in Minnesota anymore because they used clearcut or even-age management.

I don't know that they even had thought up those terms then. I don't think they were thinking too much about ecosystems or other cognitive constructs at that time.

But, the fact is that we don't have some of that. It has been permanently changed.

The whole environment in northern Minnesota and the areas where we had softwoods has been changed. Other changes have occurred because of farming and other practices where they have cleared the land.

So, in any case, we know what we are doing. Obviously we know what we are doing.

If we make some choices here, it's fine. I think that in areas where we have a chance, we should be taking a closer look and be, at least, aware of where that policy path leads us.

And, that's the purpose of the hearing. So, we appreciate your input.

Mr. HERGER. Well, Mr. Chairman, if I could comment on that.

Mr. VENTO. Congressman Herger.

Mr. HERGER. I think—I agree with Mr. Bryant, at least, in one respect. And, that is, he indicated that he is willing to use current science and what is currently the practices.

Now, you mentioned during the 80s. Now, our practices in forest, health—and I might be even more specific, our forest practices in the State of California, which have historically been far more stringent than other states—and I'm not speaking for other states, but I think it's important to look at what we are doing today.

Again, I want to reemphasize that since 1989, a state that has used limited clearcutting to begin with, not nearly as extensively as they have in some of the other states. Even in California, we are down some two-thirds.

This last point, and this is a crucially important one, Mr. Chairman and members, is that we now, in California, are in our seventh drought year of the last eight. What this means is that the normal moisture, which is moving sap up through the trees which normally is what expels insects, we have trees that we are seeing entire areas that are dying and where there are insect infestations.

And, unless we can go in and clear out, at least, these areas and do it when they are small and not wait until they are grown and encompass the entire forest, we end up killing trees that otherwise would not have been killed. And, therefore, to remove a tool that we can go, particularly in Northern California which is very different than northern Oregon and Washington, in that limited rainfall there, I think would be a travesty.

So, again, I want to just close on saying that I would request and, indeed, that we would look at current science. We would also be aware of the very major changes in forest practices that we are practicing today in 1994 as opposed in the early part of the 80s when we make our decisions.

Mr. VENTO. I think maybe other members may have a comment or two. Mr. Smith?

Mr. SMITH. Thank you, Mr. Chairman. Wally, I think I want to underline one very important point you make. And, that is, disease control.

The Bryant bill has no exception for any kind of undertaking that would eliminate trees if they are diseased. And, as the gentleman knows, his district borders mine between Oregon and Washington.

He has seen the fact that we have three million acres of dead trees, three billion board feet of timber standing dead because of insect problems. I am not suggesting that we clearcut three million acres.

And, we are not going to cut any of it, because the same people that offered this bill have us in court, because you can't harvest even dead timber in Oregon. So, the point is, should this bill ever become law, which it won't, the facts are that we could never go in and try to take care of dead, diseased timber in order to save green, live timber.

That's the way I understand it. Is that the way you understand this bill?

Mr. HERGER. Well, that's exactly the case. And, again there is very limited use of clearcutting or even-age management, again in California becoming less and less.

But, it is a tool. And, I would like to urge and I have an invitation, which I have invited the Chairman before, to come out to an annual woods tour we have and actually fly over these forests.

And, you can look down and see the spots where we can see three, four, five, six dead trees on one area and where that increases. And, if we take pictures from one year to the next, we can see how that infestation has grown.

And, the point that the gentleman from Oregon, Mr. Smith, is making is completely accurate.

Mr. VENTO. There has been some controversy about salvage sales. But, I think this issue here in terms of selection in terms of harvest would be workable for these particular purposes.

In fact, again it's a question of the economics of doing so today. And, very often, you know, unfortunately that doesn't permit to get at this early on.

Are there other questions of members of the Committee of Congressman Herger?

[No response.]

Mr. VENTO. If not, thanks very much.

Mr. HERGER. Thank you very much, Mr. Chairman and members of the Committee.

Mr. VENTO. We are pleased to welcome the first panel today. And, that is Janice Bezanson of the Federal Forest Reform; Brock Evans from the National Audubon Society; and, Carl Ross from Save America's Forests.

I might say that, one of the issues here and earlier mentioned was the NREPA bill. And, one of the reasons there is such an aggressive effort in that bill to designate much more wilderness is because the presumption is that the Forest Service, if given lands to manage, will not manage them in the way that is consistent with the views of those that want better care of the national forest lands.

So, there are two ways to approach it. To put it in the wilderness, I suppose, is one approach.

There is another approach in terms of reforming what the Forest does. I think that the members of the Committee—at least, I know this member feels that the Forest Service can manage these lands in a way that is consistent.

So, whether this bill is the answer or something like LaRocco is proposing is the answer or other measures, I would urge members to think about this management issue side of it as opposed to sort of the view of taking and classifying the land as wilderness, which is not the appropriate way to treat the land in terms of its classification system.

So, I would say this about the Bryant bill. You may disagree with various parts of it, but I think it's pretty well written as compared to other bills we've had before us.

You may disagree with it, but I think it's a pretty well written bill. So, I want to compliment him on that in terms of accomplishing what he wants to do.

If you don't agree with the purpose——

Mr. VENTO. No, no. That's fine. But, I think it is helpful——

Mr. THOMAS. And, I don't know that I don't. But, just because it's well written doesn't make it acceptable.

Mr. VENTO. No, but it shows a little more—I think there is a lot of thought that has been put into some of the aspects of it. That's what I'm trying to say.

For those of us who have worked in this process for a while, it's good to see a product that is done in a way that represents the sponsor in a way that, I think, is helpful rather than something that is not well written.

PANEL CONSISTING OF JANICE BEZANSON, FEDERAL FOREST REFORM; BROCK EVANS, VICE PRESIDENT FOR NATIONAL ISSUES, NATIONAL AUDUBON SOCIETY; AND, CARL ROSS, CODIRECTOR, SAVE AMERICA'S FOREST

Mr. VENTO. We are pleased to welcome this panel. And, your statements are made a part of the record.

We would like you to take about five minutes to summarize your statement. And, then we will come back with a few questions, I am sure. And, I hope I am pronouncing your name correctly.

Ms. BEZANSON. You are.

Mr. VENTO. Please, proceed.

STATEMENT OF JANICE BEZANSON

Ms. BEZANSON. Thank you, Mr. Chairman, members of the Subcommittee. My name is Janice Bezanson. And, I represent Federal Forest Reform.

I want to thank you very much for holding this hearing this morning and for allowing us to come and talk with you. I am a forest activist.

I have visited federally-owned forests in most regions of the country. I haven't made it to Alaska yet, but most regions of the country. I have inspected how they are being managed there.

I have also looked at private forests that are being managed under selection management in several eco regions of the country. I've talked with numerous experts in forestry, ecology, economics and many other disciplines relevant to our questions today.

And, what I have come to tell you, Mr. Chairman, is that selection management works. Much has been said—Mr. Bryant was talking about the evils of clearcutting and other even-age techniques. And, certainly there is a lot that can be said about that.

But, not often enough do we discuss the fact that there is a highly desirable option other than clearcutting. Selection managed forests are managed all over the country on private lands.

Landowners are using selection management, because it is economically efficient. It produces a healthy forest that has many other values besides simply growing timber.

If selection management is done properly, you can protect the native biodiversity of the forest, maintain the soil nutrients that are needed to sustain logging over a long period of time, avoid the erosion problems of even-age management and support abundant wildlife. Besides which, selection managed forests are beautiful.

They look like forests. They don't look like, first, a clearing and then a bunch of young trees all the same age and all the same spe-

cies and then look like a few bigger trees all the same age and the same species.

They are recreationally valuable. They are wildlife valuable. And, they maintain the native biodiversity.

There is also not any reason not to use selection management. We've had people come back to us and say, "Well, you have to use clearcutting in lodgepole pine forests," or recently mentioned, Douglas fir forests. Aspen forests are often mentioned.

And, yet, we know people who are private landowners managing their own forests under selection management in all these ecosystems and in all the other ecosystems. The comment was made that you have to have openings for grouse and for other specific species.

Actually, we have a Dr. Zahner, who is a forest ecologist, who says grouse love old growth forests. Even if we do need openings for these species, which I disagree with, but even if we did, we've got—you know, all of our private lands are being clearcut.

We have got open fields and open clearings coming out of our ears all over the country. What we don't have is the forests which protect the animals that need deep forests, need closed canopy forests to survive.

We are not talking about those species. And, those species are important, too.

People keep saying, "Well, we need to keep even-age management as a management tool." But, it's not being used that way.

It's being used as the predominant method, as Mr. Vento was saying just a few minutes ago. It has been 90 percent of our forest harvesting on it on the part of our national forest and other lands that are logged.

And, that's the only thing we are talking about here. We are not talking about preservation.

We are talking about the commercially available timber land, what the Forest Service calls suitable timber, and areas on other federal forests that are already being logged. And, that's all we are talking about.

There is a growing body of science that shows that even-age management destroys the native biodiversity and destroys the health of native forests. My written testimony, Mr. Bryant's written testimony and, I'm sure, that of my colleagues will contain, attached to them, some of these studies that have been done.

We didn't have enough time to get a number of experts here this morning. But, we will be submitting written testimony from a number of the experts, including some, Mr. Vento, from Minnesota who are particularly interested in your aspen question.

As long as federal agencies are continuing to use even-age management abusively on federal forests, we need Congress to tell them to stop doing that. And, that's why I am here, Mr. Vento, to urge you to tell them to stop doing that.

And, the way to do that is to pass H.R. 1164. Thank you.

[Prepared statement of Ms. Bezanson and attachments follow.]

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STATEMENT TO THE SUBCOMMITTEE
ON NATIONAL PARKS, FORESTS, & PUBLIC LANDS
NATURAL RESOURCES COMMITTEE
MAY 5, 1994

BY JANICE BEZANSON

Mr. Chairman, I am Janice Bezanson, representing Federal Forest Reform, a committee of grassroots leaders from all over the country. We very much appreciate your holding this hearing on HR 1164, The Forest Biodiversity and Clearcutting Prohibition Act.

I want to begin by expressing my unqualified support for HR 1164. I have inspected federal forests in many regions of the country where even-age management predominates. I have also seen numerous examples of private lands being productively managed under the selection system. Well-managed selection forests maintain biological diversity, protect watersheds, and provide recreational opportunities not available in even-age stands.

Congress attempted to place severe limits on even-age management on national forests when they passed the National Forest Management Act in 1976. But the forest Service has continued rampant clearcutting and conversion of native mixed forests to even-age, usually single-species timber crops.

More than 60% of the 56 million acres of commercially available

timberland on national forests have already been converted to even-age, sacrificing native biodiversity, increasing erosion, and eliminating recreational values. Millions more acres could be designated as commercially available at any time. At the current rate of conversion, all the native biological diversity on loggable national forest lands will be gone in 15 to 20 years.

In addition, roughly ten million acres of other federal lands are being subjected to even-age management techniques.

Even-age management is not necessary. Private landowners all around the country, in all types of ecosystems, are using selection management, for economic reasons and to maintain a healthier forest.

Under selection, loggers mark and remove individual trees, scattered through the forest, opening up small clearings to increase sunlight and stimulating natural regeneration without planting. The roads built to bring the trees out are lower-impact roads than those needed for the heavy machinery of clearcutting and site preparation.

The Forest Service does not acknowledge the biggest expense of clearcutting -- interest charges. They invest a lot of money for site preparation and planting and do not receive most of their returns until the timber sale from 40 to 120 years later. This involves a heavy charge for the use of money. For example, at the time when the Forest Service did its only study on the economics of even-age vs. selection, the going interest rate was roughly 7 1/2%, but the F.S. researchers used a much lower figure, 4%.

According to forester-economist Randal O'Toole, when a realistic interest rate is applied, the costs of even-age exceed the returns in

almost all national forests.

Selection logging is different. It does not involve site preparation and planting (a major saving in itself). It involves a harvest every five to twenty years. Pre-commercial thinning is done at the same time, reducing that cost. Once sustained yield is established in a stand, the expenses forever after are mostly in the same year as the harvest, and altogether in the same decade or so. The interest charges are minimal.

A Forest Service study conducted in Arkansas indicated that selection management is more cost efficient and has a higher benefit to cost ratio than even-age. Dr. James B. Baker, director of the Forest Service Experiment Station at Monticello, Arkansas, compared the economics of selection and even-age over a fifty-year period. He reported a cost efficiency of "conventional" selection at 143.2 board feet of sawlogs produced per dollar of costs, compared to 55.2 for an even-aged plantation, a 2 1/2 to 1 advantage. Adding pulp and poles to the picture, the advantage decreased to about 20%. But our national forests are mainly in the sawlog business.

In addition, selection management is more labor-intensive, employing foresters to individually mark trees for cutting as well as loggers to remove them. Since as much timber can be harvested under selection as under even-age management, it incurs no job losses in the timber products industry.

Selection management has been variously criticized as (1) being inapplicable in certain forest ecosystems, notably aspens and lodgepole

pines, and (2) requiring a larger road system, and greater on-the-ground disturbance than even-age.

Foresters are using selection logging throughout the country, in all types of ecosystems, including aspen and lodgepole pines. In his attached testimony, professional forester Tim Foss describes selection-management as "practical" and cites examples of private landowners who are successfully managing their forests under selection. In the attached affidavit, forest-ecologist Dr. Robert Zahner describes scientifically how selection techniques can successfully be used in aspen forests, calling it "in many respects, a better system". Both foresters refute the accusation that selection requires more roads. Mr. Foss explains that in his experience, with careful planning, there is neither greater ground disturbance nor more residual stand damage with selection than with even-age. He also points out that by emphasizing removal of those species most susceptible to insects and disease, and, if needed, by planting resistant species, a forester can use selection to minimize losses from insects and disease.

In a letter to your constituent Ray Fenner, Mr. Chairman, you expressed concern that the Forest Service continues to use clearcuts even though it has a directive prohibiting them except when no other method will work. We assume you mean the Chief's directive of June 4, 1992. You further explained that the directive applies to future sales, and that at least some of the continuing clearcuts were already planned. Perhaps some were, but I can cite a specific case in Texas where the Forest Service has planned a new even-age cut, *even though*

under a court injunction against even-age sales. [Compartments 86-87 and 94, Sam Houston National Forest, National Forests in Texas.]

Although the Forest Service routinely claims to have reduced clearcutting by 70%, a survey of forest activists around the country indicates that in most cases the Service has simply shifted from actions they call clearcutting, using a very limited definition, to heavy salvage and two- and three-stage clearcuts under the name of seed tree, shelterwood, and large group selection.

On February 4, Edward Fritz, Coordinator of the Forest Reform Network, wrote to Chief of the Forest Service, Jack Ward Thomas, (letter attached) asking for specifics on how many acres are being logged under each method on national forests. He has yet to receive a response of any kind. We would request that this Subcommittee support us in our efforts to obtain this information.

Mr. Chairman, you have suggested that HR 1164 is not based on good science. But the growing body of evidence is that even-age management is what is not based on good science.

In the June 1992, issue of *Conservation Biology* (copy attached), Duffy and Meier conclude from their study of Appalachian cove hardwoods that recovery of the herbaceous understory cover of forests that have been clearcut "requires at least several centuries, longer than the present logging cycle of 40-150 years" and that "there is the possibility that secondary herbaceous communities in mature secondary Appalachian forests will never return to primary conditions."

In a recent issue of *Science* (copy attached), Phillips and Gentry found that the turnover rates were increasing in tropical forests all

over the world, coinciding with an accelerating buildup of carbon dioxide in the atmosphere. Earlier studies, cited in an attached fact sheet, indicate that even-age management techniques aggravate global warming, acid deposition, and nitrogen loss. In contrast, selection leaves most of the canopy, continuing the atmospheric services of the forest.

Also attached is a recent article from the magazine, *Wilderness*. Although primarily addressing the need for an old-growth component in forests, it supports HR 1164 in several ways. It refutes the oft-repeated argument that clearcutting mimics damage done by hurricanes, quoting Forest Service staffer Bill Martin as saying, "If you go by Hurricane Hugo", (a once in a century event) "we could have rotation lengths of 100 years." The article points out that this " assumes a storm of exactly the same place at exactly the same interval to inflict exactly the same level of damage every hundred years - not much of a likelihood." The article adds that "even such large natural disturbances as hurricanes and fires are much more variegated in their consequences than clearcutting."

And it mentions other studies that address the harmful affects on the ecosystem of current logging practices, including one that estimated that clearcutting killed 14 million salamanders in western North Carolina in one year. Such species are vanishing globally.

The Forest Service has tacitly admitted the evils of clearcutting by bragging to the world that they've reduced clearcutting by 70%. But much of that 70% reduction has been semantic - shifting from what they call clearcutting to other forms of even-age with virtually the same

loss of native biological diversity and forest health.

We urge Congress to pass HR 1164 to close the loopholes by which the Forest Service and other federal agencies continue to reduce our public forests to even-age, usually single-species timber crops.

Tim Foss
HC 60, Box 10160
Cle Elum, Wa. 98922

My name is Tim Foss. I am a professional forester with approximately 15 years experience in timber management in the state of Washington.

I have spent the last few years visiting people who are successfully practicing selection management on their own land, and learning how they do it. I have seen successful examples in most forest types of the Northwest, including mature Douglas-fir/ western hemlock, second-growth Douglas-fir/ western hemlock, mixed-age ponderosa pine, and second-growth mixed conifers. The landowners I've observed have been harvesting for 20-50 years and have successfully developed an all-age stand in which selection harvesting can continue ad infinitum. This has convinced me that selection management is practical if the landowner is willing to learn from the forest, and exercise care in all phases of the operation. I see no reason it won't work in any forest type with which I'm familiar, even lodgepole pine.

For example, Merve Wilkinson, a landowner on Vancouver Island, has been practicing selection management for 50 years in his mature Douglas-fir stand. To date, he has made nine complete harvests- about one every five years. He has removed as much volume as was in the original stand, and still has a healthy all-age forest. Not only will his forest continue to produce products, but it appears to maintain the ecological niches of the original forest. As proof, Merve still sees all the same wildlife as when he first bought the place, except for a few, such as bear and cougar, that require a larger range than his 140 acres provide. What I find particularly interesting is that Forest Service Silviculturist Leo Isaac "proved" in the 1950's, that selection management wouldn't work in this forest type, and yet it obviously does in Merve's case. This tells me that selection management is possible and practical even when the common wisdom says otherwise. It does seem, though, that the landowner must be committed to making it work. If the landowner is only interested in short-term gain, or is impatient, any attempt at selection management can easily degenerate into a high-grade. High-grading, which is sometimes confused with selection management by those unfamiliar with the system, is the practice of cutting the best trees and leaving the poorer ones with little thought to the future. In a properly-done selection harvest, however, the future is paramount. The landowner cuts only those trees that will contribute the <u>least</u> to a healthy forest now and in the future.

Selection management is also sometimes criticized because of the common belief that it requires a more extensive road network, results in more ground disturbance, and causes more residual stand damage. My experience is that, in a properly done operation, none of this is true. A well-thought-out logging plan and careful logging will minimize these factors with selection, just as with any other silvicultural system. The same goes for insect and disease problems. The landowner can influence the mix of tree species on the site by emphasizing removal of those species most susceptible to insects and disease and, if needed, by planting resistant species for the future stand.

In summary, the selection system requires a careful, professional approach on the part of the manager, as well as commitment, patience,

and willingness to learn from the land. Given these factors, it has been my experience that the system can work in most, if not all, Northwest forest types. It provides a viable system for producing timber, while at the same time maintaining an intact forest ecosystem.

Timothy G. Foss

Timothy G. Foss
Forester

AFFIDAVIT
Concerning Unevenaged Management in the Aspen Forest Type

by Robert Zahner
Professor Emeritus, Clemson University

I feel I am qualified to make the statement below because of my education and professional experience in the fields of forestry and ecology. I have an undergraduate degree in plant ecology, a masters degree in forest management, and a Ph.D. degree (Duke University, 1953) in forest ecology. I have been a forest research scientist for the U.S. Forest Service (1953-1959), and I have been a professor of forestry at the University of Michigan (1959-1974), the University of Tennessee (1979), and Clemson University (1980-1989). These research and teaching positions, over the past 40 years, have placed me in the forefront of forest management and forest ecology activities. I am a life member of the Society of American Foresters, receiving in 1971 the Society's highest award for professional contributions in forest ecology. I am a Fellow in the American Association for the Advancement of Science, and I am a registered forester.

Statement. During the 15 years (1959-1974) that I was on the forestry faculty at the University of Michigan, I and my graduate students conducted much research in northern Michigan, Wisconsin, Minnesota, and Canada. Most of our studies were concerned with the aspen forest type of the Lake States region, and included such subjects as forest stand structure, forest soil productivity, and silvicultural systems for regenerating the aspen type. My graduate students published over 15 masters and doctoral theses on these subjects, and I published in professional and scientific journals over 20 articles concerned with the aspen forest type.

I am limiting my present statement to the question of managing aspen forests in the Lake States region. Evenaged management, employing the silicultural technique of clearcutting for obtaining aspen reproduction over large forested areas, has been the preferred system used by the U.S. Forest Service for the past several decades. Evenaged management was adopted because reproduction of the three species of aspen, Populus temuloides, Populus grandidentata, and Populus balsamifera, is classified as being intolerant of overstory shade and therefore young stands are regenerated in open areas. Large open areas, such as clearcuts, are not necessary for such regeneration.

Young aspens regenerate as root sprouts from the roots of harvested older trees, appearing immediately in any size opening wherever one or more mature trees are cut. Prolific sprouting occurs even in small openings wherever overstory aspen trees are cut. Only a few of these sprouts are required to restock the openings; the remainder serve as a food source for wildlife.

Clearcutting to obtain large acreages of aspen regeneration is the preferred system, but it is not the only system that works in this forest type. Group selection techniques offer, in many respects, a better system, both ecologically and silviculturally. The harvesting of small groups of mature aspen, creating openings

in the canopy of a width equal to no more than twice the height of the surrounding trees, provides several advantages over the creation of large blocks of clearcut forest. The distribution of young aspen sprouting in openings throughout the forest, for example, provides far better distribution of food for deer and grouse than in large clearcuts because animals can ultilize entire openings and retain the benefit of surrounding forest cover. In clearcuts, these wildlife species utilize edges but do not venture far from forest cover into the middle of very large openings. For wildlife, new clearcuts or new group selection openings should be provided every ten years in each compartment.

By definition, the "group selection" technique is a regeneration method that creates and maintains an unevenaged forest with the essential requirement that there be at least three reproduction cuttings during one rotation. The aspen forest type is generally grown on rotations of between 40 and 60 years for pulpwood and between 80 and 100 years for saw timber. National Forest rotations tend to be the longer because quality veneer logs are the optimum products.

Properly planned, a series of small group selection openings, harvested at intervals of about 10 years, can create in a 60-year old evenaged aspen forest a completely unevenaged forest in 40 years. At that time, most of the residual oldest age class of 100 years (rotation age) can be regenerated, and the middle age classes will be 40, 30, 20, and 10 years. Such a forest structure can be perpetuated in-definitely, gradually becoming more diverse in age classes with each entry. More frequent harvest entries will speed up the process.

Group selection harvesting does not require more roads than clearcutting. Small groups are not accessed by truck, only by skidders which do not require roads. Timber sales with group selection harvesting can be packaged for bidding by small local contractors, rather than by the large equipment contractors required for clearcutting.

In closing, I can recommend uneven-aged management, maintained with group selection silvicultural techniques, for the aspen forest type. Many forest values are preserved by such management, including wildlife (game and non-game species), biological diversity, high quality timber supplies, recreation potential, and important esthetic values.

Respectfully submitted,

Robert Zahner — 10/6/91 (date)

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Forest Reform Network

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Edward C. Fritz
Coordinator

February 4, 1994

Dr. Jack Ward Thomas, Chief
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Dear Jack:

I appreaciate your meeting with some of us forestry reformers January 31 and February 2. Tell us how we can help on a progressive project, like promoting native biodiversity through a shift from even-age practices, and some of us, at least, will be your partners.

At your conference room, the subject arose about a shift away from clearcutting. In order to enable us to quantify and to analyze this shift are you willing to send us the best figures you can quickly muster on these items for FY 1988 through 1993?

1. a. Acres and b. revenues made by forest and region, for each timber sale category: (1) clearcuts, (2) seed tree cuts, (3) seed tree removals, (4) shelterwood cuts, (5) shelterwood removals, (6) salvage cuts subsequently planted, (7) salvage cuts not to be planted (8) other cuts of patches (or groups) larger than 1/2 acre each (9) group cuts smaller than 1/2 acre each, (10) industrial clearcuts, (11) cuts of single species only.

2. Same as 1, but covering compartment prescriptions (decisions), instead of timber sales.

3. Acres; by (a) forest and by (b) region, in each category:
(1) Plantations:
(a) clearcut, (b) seed tree, (c) shelterwood, (d) salvage, (e) patch or "group" over 1/4 acre, (f) group under 1/4 acre, (g) individual tree selection.
(2) Natural regeneration successfully accomplished:
(a) clearcut, (b) seed tree, (c) shelterwood, (d) salvage, (e) patch or "group" over 1/4 acres, (f) group under 1/4 acre, (g) individual tree selection.

4. Analysis of comparative results of operation under items 1 and 3, (a) nationally, (b) by forest, and (c) by sale area.

Please send answers as soon as possible. If you have the answers available to one category before the others, please do not delay the first ones but send them when ready, and the others later.

If our categfories differ from some data that your agency has readily available, please send what you have, now, and our categories later.

Don't you agree that the Forest Service should have compiled some or all of this material on hand already?

Sincerely,

Edward C. Fritz, Coordinator

ECF:edf
cc: Beth Johnson
George Russell
Hon. John Bryant, Attn: Scheleen

Do Appalachian Herbaceous Understories Ever Recover from Clearcutting?

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Abstract: *Life history characteristics of many herbaceous understory plants suggest that such species recover slowly from major perturbations such as clear cutting. We examined herbaceous cover and richness in the understories of nine primary ("old-growth") forests in the southern Appalachian Mountains and of nine comparable secondary forests, ranging in age from 45 to 87 years since clear cutting. Neither cover nor richness increased with age in the secondary forests. This suggests three possibilities: (1) that recovery is so slow or variable among sites that 87 years is insufficient time to detect it; (2) that such forests will never recover to match remnant primary forests because climatic conditions are different today than when the forests became established; or (3) that herbaceous plants colonize pit and mound microtopography caused by the death of trees, so that recovery must await the growth, death, and decomposition of the trees of the secondary forest. Whatever the mechanism, herbaceous understory communities in the mixed-mesophytic forests of the Appalachians appear unlikely to recover within the present planned logging cycles of 90–150 years, suggesting a future loss of diversity of understory herbaceous plants.*

Resumen: *Las características del período de vida de numerosas plantas herbáceas, sugiere que estas especies se recuperan lentamente de grandes perturbaciones como la tala de bosques. Nosotros examinamos la cubierta herbácea y abundancia en el sotobosque de nueve bosques primarios (antiguo crecimiento) en los Montes Apalaches del Sur, y los comparamos con nueve bosques secundarios que no han sido talados por períodos que van de 45 a 87 años. La riqueza y la abundancia no han aumentado con el tiempo en el bosque secundario. Esto sugiere tres posibilidades: (1) que la recuperación es tan lenta o variable entre sitios, que 87 años resultan insuficientes para detectarla, (2) que este tipo de bosques nunca se recuperará al nivel de los bosques primarios originales, ya que las condiciones climáticas actuales son diferentes a las existentes cuando los bosques fueron originariamente establecidos, o (3) que plantas herbáceas colonizan la microtopografía del suelo que ha sido removido a causa de la descomposición de los árboles muertos, y por consiguiente la recuperación debe esperar el crecimiento, muerte y descomposición de los bosques secundarios. Cualquiera sea el mecanismo, la cubierta herbácea de las comunidades de bosques mesofíticos mixtos en los Apalaches, no parece estar recuperándose dentro del ciclo previsto para la tala de árboles que es de 90 a 150 años. Esto sugiere una pérdida futura en la diversidad de las plantas que conforman la cubierta herbácea.*

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Introduction

"Old growth," "virgin," or primary forests in the United States have attracted scientific and cultural interest as examples of communities with high biological diversity (Whitney 1987). These forests have been much reduced in extent through clearing for wood products, farming, and urbanization; the fate of the remainder has generated considerable controversy (Norse 1989; Williams 1989).

Preservationists argue that once primary forests are harvested the resulting secondary forests lack the biodiversity of primary forests, while harvesters argue that sustainable yields of timber are compatible with maintenance of biodiversity and that sufficient areas of primary forest will remain following exploitation (Norse et al. 1986; Nyberg et al. 1987).

Most research on the effects of the exploitation of forests has focused on trees and wildlife (Wilderness Society 1986; Jackson 1989), but herbaceous understory plants of primary forests may be among the forest organisms most sensitive to clear-cutting or other forms of massive disturbance.

Recolonization of secondary forests by herbaceous species is likely to be slow (Thompson 1980). Sexual reproduction is often limited by small crops of seeds with poor dispersal by gravity or ants (Handel 1976; Beattie & Culver 1981) and low germination (Struik 1965). Herbaceous plants of primary forests typically have vegetative extension growth rates of less than 1.0 meter per decade (Whitford 1951; Sobey & Barkhouse 1977). Growth to first reproduction can take up to a decade (Bierzychudek 1982). Also, at least in the initial stages of forest regrowth, browsing by herbivores such as white-tailed deer (*Odocoileus virginianus*) may prevent seedling establishment (Alverson et al. 1988).

Studies of individual forests indicate slow recovery by herbaceous species. Hardwood forests in New Brunswick showed little evidence of recovery of late-successional herbaceous species several decades after disturbance (MacLean & Wein 1977). Following landslides in the White Mountains of New Hampshire, 72-year-old herbaceous communities had only 78% species overlap with communities in adjacent 200-plus-year-old forest (Flaccus 1959). An herbaceous community in Michigan was still recovering from a major disturbance event that had occurred 150 years earlier (Brewer 1980).

These studies suggest that the 40–150 year harvesting cycles used in southeastern deciduous forests (U.S. Department of Agriculture/Forest Service [U.S.D.A./F.S.] 1986) may not allow sufficient time for the recovery of herbaceous communities. If recovery is occurring, we predict that herbaceous communities in secondary forests should show increasing species richness and cover with age, becoming more similar to primary communities. We tested this prediction by examining one-square-meter plots of herbaceous understory plants at nine primary forest sites in the southern Appalachian Mountains and comparing them with plots in nine secondary-successional sites with similar latitudes, elevations, exposures, slopes, soil types, and geologies. We present several scenarios for forest recovery, suggested by our findings.

Methods

Terminology

Numerous terms have been used to describe forests such as *ancient, old, old-growth, over-mature, original, primary, primeval,* and *virgin,* on the one hand, and *recent secondary* and *second-growth,* on the other. Older secondary forests have been called *mature, over-mature,* and even *old-growth.* Unfortunately, several of these terms have opposite meanings when used by scientists of different disciplines or regions (see Rackham 1980; Norse 1989). Here, we use *primary* to describe forests that have never been clear cut and that have little or no evidence of past human activity. Such forests may have been grazed, they may have experienced limited exploitation of valuable tree species, and their floors may have been burned by Amerinds and European pioneers. Primary forests contain abundant downed timber in varying states of decay, standing dead trees, and live trees in a range of sizes. *Secondary* forests are those that have developed after the previous forest was extensively logged or clear cut. We use *mature* to refer to secondary forests that have existed longer than the normal harvesting rotation practiced by foresters on that particular forest type. A *mature secondary* forest may have the large trees of a primary forest but does not necessarily have the same species composition, age distribution, or community processes.

Study Sites

We examined nine sets of primary and matching secondary mixed-mesophytic forest, an ecosystem described by Braun (1950) as structurally complex, with a highly diverse species composition. The characteristic trees are *Liriodendron tulipifera, Tsuga canadensis, Fagus grandifolia, Quercus alba, Q. velutina,* and *Q. prinus* in the overstory, with *Cornus florida, Tilia heterophylla, Fraxinus americana, Ostrya virginiana,* and *Aesculus octandra* in the understory. The sites were as follows:

1. *Joyce Kilmer–Slickrock Wilderness Area,* Graham County, North Carolina. The wilderness area includes a primary stand, the Joyce Kilmer Memorial Forest on Little Santeetlah Creek, and a secondary forest on adjacent Horse Creek, dating from 1938

(U.S. Forest Service, unpublished data). Both areas are on moist, north-facing slopes at approximately 1000 m elevation. Kilmer has apparently never been cut and there is no evidence of fire scars on trees or of charcoal in the soil within the cove (Lorimer 1980).

2. *Porter's Flat*, Greenbriar Cove area, Great Smoky Mountains National Park (GSMNP), Tennessee. The primary forest, at approximately 750 m elevation on a southwest-facing slope, has never been logged, but grazing may have occurred prior to the mid-1930s (Hicks 1980). The forest has been described by Whittaker (1956, 1966) and the herbaceous community by Bratton (1976) and Hicks (1980). The secondary forest site, on the east bank of the Little River near Elkmont, GSMNP, at 800 m elevation, was established after 1926 (R. S. Lambert 1958, GSMNP, unpublished report).
3. *Upper Porter's Creek*, Greenbriar Cove area, GSMNP, Tennessee. The primary forest site is located on a southwest-facing slope at 1000 m elevation along Porter's Creek. The secondary forest site is located on Sweet Ridge, at one thousand meters elevation, on the eastern bank of the Little River near Elkmont, GSMNP; it was established after 1926 (Lambert report).
4. *Ramsey Cascade*, Greenbriar Cove area, GSMNP, Tennessee. A primary forest on a north-facing slope at 950 m elevation, this may be one of the least anthropogenically disturbed areas in the entire park (S. P. Bratton, personal communication), and the stand falls within the region described by Pyle (1986) as "high in virgin forest attributes." The secondary forest site is located at Timber Ridge, at 950 m, on the Middle Prong of the Little River. After clear cutting in the 1930s, the forest began to regrow in 1939 (Lambert report).
5. *Sosebee Cove Scenic Area*, Union County, Georgia. A primary forest of only 10 ha, the stand was "sanitized" in the 1950s by removal of snags and downed or poorly-formed trees (U.S. Forest Service records, Blairsville, Georgia). The secondary forest site is immediately adjacent to the primary forest and was established after 1903 (U.S. Forest Service, unpublished data).
6. *Lilley Cornett Woods*, Letcher County, Kentucky. This site is located in the eastern portion of the Cumberland Plateau in the center of the mixed-mesophytic forest described by Braun (1950). The primary forest site, Big Everidge Hollow, 52 ha, is described as "near-virgin," with some removal of dead trees and grazing of cattle but without logging of live trees (Martin 1975). An adjacent cove, Pollbranch Hollow, 89 ha, was harvested in 1945 (Muller 1982).
7. *Walker Cove*, Buncombe County, North Carolina. This is an upper cove site at 1300 m with numerous large sugar maples (*Acer saccharum*) and some buckeyes (*Aesculus octandra*). The date of clear cutting of the adjacent second-growth site was 1932 (U.S. Forest Service, unpublished data). This date was confirmed by coring a sugar maple of about 55 years of age.
8. *Ramp Cove*, Townes County, Georgia. This is also an upper cove (1000 m) with large, old-growth buckeyes; it is named for its population of ramps (*Allium tricoccum*). The second-growth site in Dismal Cove became reestablished during 1915–22 (Brasstown Ranger District, U.S.D.A./F.S., unpublished data).
9. *Thumpin' Dick Cove*, University of the South, Sewanee, Franklin County, Tennessee. At 460–500 m elevation, this 40 ha cove is located on the western slope of the Cumberland Plateau (Cameron & MacCrady 1967). There is no evidence of logging, and the only apparent disturbance is a dirt road constructed through the forest in 1965 (McGee 1986). The secondary site, Bennett Cove, appears, based on tree diameters, to be a two-aged stand with cutting around 1920 and 1980. Since we were unable to determine the chronology of exploitation, we excluded this site from analyses involving time.

Sampling Methods

Primary and matching secondary sites (100 m × 100 m, except Upper Porter's Creek, which was 100 m × 50 m) were sampled within thirty hours of each other at each location. We used random samples consisting of 10 to 24 one-m^2 quadrats in each of the primary and secondary sites, based on the size of the sample area (Table 1). We also avoided sampling in areas with *Rhododendron maximum* understories, as they have little groundcover and verge on the impenetrable. A modification of the Daubenmire cover-scale that separates the 0%–5% cover class into 0%–1% and 1%–5% cover classes (Bailey & Poulton 1968) was used to estimate cover for each species within the quadrats. We excluded woody shrubs from our cover measurements because many woody species still had only bare stems at the time of sampling.

Ages of secondary succession sites ranged from 45 to 87 years. We used number of species per 1 m^2 plot as an index of the species richness at each site, and total herbaceous cover as an index of abundance.

Analysis

Cover and number of species per quadrat for each pair of matching sites were compared using one-tailed, unpaired *t*-tests. We plotted mean cover and species rich-

Table 1. Means and standard errors for species richness of primary and matching secondary sites.

Site	Primary	Secondary	DF	P	Age of second growth
Thumpin' Dick Cove	11.20 ± 0.67	7.25 ± 0.49	38	<0.0001	10,*0*
Lilley Cornett	9.00 ± 0.43	7.35 ± 0.42	57	0.0047	45
Ramsay Cascade	9.95 ± 0.30	8.75 ± 0.63	38	0.0475	51
Kilmer Memorial	14.53 ± 0.67	6.04 ± 0.59	37	<0.0001	52
Walker Cove	10.40 ± 0.53	7.30 ± 0.50	38	<0.0001	56
Porter's Flat	11.60 ± 0.43	4.94 ± 0.51	56	<0.0001	64
Upper Porter's Creek	11.36 ± 1.12	2.50 ± 0.67	19	<0.0001	64
Ramp Cove	10.65 ± 0.39	7.45 ± 0.31	38	<0.0001	68
Sosebee Cove	9.55 ± 0.41	7.55 ± 0.36	38	0.0003	87

* *See text for details.*

ness per quadrat against stand age of the secondary sites in an effort to detect any trends toward primary forest values. When comparing average cover and species-richness values, we used one-tailed paired *t*-tests.

The second-growth cove sites occurred at different latitudes, elevations, exposures, and slopes, so that the spring flowering season occurred earlier at some sites than at others. Earlier-flowering sites might appear more diverse than later-flowering sites sampled at the same time. Similarly, sites measured late in the season would appear to have greater cover values than sites sampled earlier, before full emergence of leaves. To adjust for these problems, we developed a similarity ratio where the cover and species-richness values for each second-growth site were divided by the matching values for the corresponding primary site.

Results

Mean species richness in primary forest ranged from 9.0 to 14.5 species per m^2, all significantly greater than in secondary sites with a range of 2.5–8.75 species per m^2 (Table 1). The average in primary forest was 10.9 species per m^2, and in secondary forest 6.6 species per m^2 ($P = 0.0011$, DF = 8, one-tailed paired *t*-test). Total cover values in primary forest ranged from 22.5% to 87%, whereas in secondary forests cover ranged from 10.5% to 42.5% (Table 2). Average cover in primary forest was 53% but only 21% in secondary sites ($P = 0.0001$; DF = 8; one-tailed paired *t*-test). Areas of extensive cover in secondary forests tended to be restricted to more mesic sites. Secondary forest also appeared to have more woody brush than primary sites.

We found a negative, but not significant relationship ($r^2 = 0.314$; $p = 0.148$) between the age of secondary forest stands and total herbaceous cover. In part, this was influenced by the high cover value of the youngest second-growth stand, Pollbranch Hollow, the match for Lilley Cornett Woods, which was measured late in the growing season. Species richness ($r^2 = 0.009$) and the ratios for cover ($r^2 = 0.013$) and richness ($r^2 = 0.002$) showed no trend toward recovery with age. These data provide no support at all for the hypothesis that cover and species richness of herbaceous communities in secondary forests increase with age.

Discussion

Our results suggest that even 50 to 85 years following deforestation, succession of herbaceous understory plants in secondary mixed-mesophytic forests of the southern Appalachian Mountains resulted in only half the species richness and one-third the total cover measured in primary forests. Neither community characteristic showed any trend toward recovery with age; if anything, both richness and cover appeared to be decreasing. Such decreases might be caused by the gradual loss of early-succession herbs as the tree canopy closes, reducing available light (Horn 1974).

While our data are sufficient to discount any rapid, isotonic return of secondary herbaceous communities to primary-like conditions, the period of successional time sampled (up to 87 years after perturbation) may simply be too short to distinguish between three longer term scenarios.

Table 2. Means and standard errors for cover of primary and matching secondary sites.*

	Primary	Secondary	P
Thumpin' Dick Cove	38.0 ± 3.2	10.5 ± 1.7	<0.0001
Lilley Cornett	66.6 ± 3.8	42.5 ± 2.9	<0.0001
Ramsay Cascade	66.0 ± 3.9	23.0 ± 3.1	<0.0001
Kilmer Memorial	53.0 ± 4.2	15.7 ± 2.6	<0.0001
Walker Cove	42.5 ± 3.5	12.25 ± 3.5	<0.0001
Porter's Flat	87.0 ± 1.9	27.6 ± 5.0	<0.0001
Upper Porter's Creek	62.0 ± 7.8	21.5 ± 7.7	0.0008
Ramp Cove	42.5 ± 2.9	21.3 ± 2.4	<0.0001
Sosebee Cove	22.5 ± 1.9	11.7 ± 1.2	<0.0001

* *Sites are arranged by increasing age of the secondary sites (Table 1).*

First, the rate of recovery may depend more on the type and severity of initial disturbance and on the ecological characteristics of each site than on time since disturbance. Our nine sites, despite all being in mixed mesophytic forest, may simply have too disparate histories to allow analysis of temporal trends.

Second, herbaceous cover and species richness may continue to decline with time until trees become large and old enough to die, fall, and decay. The resulting pit and mound micro-topography of fallen tree trunks and bare soil would provide a continual source of unvegetated areas for colonization. Gaps and pit and mound effects maintain herb diversity in primary forest (Struik & Curtis 1962; Falinski 1978; Beatty 1984; Moore & Vankat 1986); they may also initiate it. This pattern would be similar to that already proposed for trees in secondary-succession forests (Bormann & Likens 1979; Peet & Christensen 1980) only on a much longer time scale: an initial increase in species richness and cover during early succession, a decrease during mid-succession, followed by an increase once again during late succession to a mature secondary equilibrium.

Finally, there is the possibility that secondary herbaceous communities in mature secondary Appalachian forests will never return to primary conditions. This appears to be the case in British mature secondary woodlands originating as early as 1600 B.P. (Peterken & Game 1984). The original Appalachian forests may have become established under cooler and moister conditions than occur at present (Delcourt & Delcourt 1987). In addition, conditions during future climate change, even several centuries into the future, might become sufficiently unfavorable to prevent complete secondary succession following present-day clear cutting (Solomon 1986).

Conclusion

Whatever the long term dynamics of herbaceous understory communities in mixed-mesophytic forests following logging or other massive disturbances, the data presented here strongly suggest that recovery requires at least several centuries, longer than the present logging cycles of 40–150 years for Appalachian cove hardwoods. Management of fully-functioning forest herbaceous communities to maintain biological diversity as mandated by the 1976 National Forest Management Act may require greatly lengthened tree harvest cycles, extraction methods less damaging to herbs, intensive management and planting of herbaceous species to speed up secondary succession, and the maintenance of sufficient primary forest to sustain intact herbaceous communities and to serve as sources for recolonization. Research is needed to address the relative ecological and economic efficiencies of these three strategies.

Acknowledgments

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Increasing Turnover Through Time in Tropical Forests

O. L. Phillips and A. H. Gentry*

Tree turnover rates were assessed at 40 tropical forest sites. Averaged across inventoried forests, turnover, as measured by tree mortality and recruitment, has increased since the 1950s, with an apparent pantropical acceleration since 1980. Among 22 mature forest sites with two or more inventory periods, forest turnover also increased. The trend in forest dynamics may have profound effects on biological diversity.

Since the mid-20th century, a substantial body of data has been gathered on rates of tree mortality and recruitment ("turnover") in humid tropical forests. Turnover rates in mature tropical forests correlate with estimates of net productivity, as gauged by rates of basal area increment and mortality (*1*–*3*). Humid tropical forests are highly productive (*4*, *5*), so proportional increases should be easier to detect in those systems than in temperate systems. Tropical forest study sites are also relatively secure from certain forms of anthropogenic atmospheric change such as acid precipitation (*6*), and their diversity buffers them against pathogen epidemics that can afflict temperate forests (*7*). Also, tropical forest inventory plots typically have no history of clear-felling or extractive logging; few temperate forests are old growth. Therefore, tropical forest turnover data may provide a novel test of the hypothesis that global forest productivity is increasing (*8*).

We compiled data on rates of tree turnover in tropical forests using logarithmic models to estimate annual mortality and recruitment rates (*2*). The evidence for directional change through time in tropical forest dynamics was evaluated by two methods. First, we used all forest dynamics data with ≥4 years of continuous measurement (mean, 13.3; median, 11.0; range, 4 to 38 years) and an area of ≥0.2 ha (mean, 2.7; median, 1.2; range, 0.2 to 23.5 ha) (Table 1) (*9*). Only forests known to have suffered mass mortality by deforestation, cyclones, drought, or flooding were excluded. The first long-term inventory that satisfied the criteria began in 1934, and measurements from the last were made as recently as 1993. The time between successive inventories of each plot was always >1 year; therefore, within each monitoring period we allocated the period's annualized turnover rate to each of the years included in the monitoring period. Using these estimates, we then compared turnover rates across all mature tropical forests through time and then separately for neotropical and paleotropical forests. Then, individual sites that have two or more successive inventory periods were used to test for temporal change within individual forests.

There has been a significant upward trend in average measured rates of turnover of tropical forest trees ≥10 cm in diameter since at least 1960 (*10*). One possible confounding factor is the tendency for early sites to be mostly paleotropical and for recent sites to be mostly neotropical. Within our data set, neotropical sites are more dynamic than paleotropical ones (*11*). Yet, when graphed separately both neotropical and paleotropical data sets continue to show significant increases in

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*1945–1993

turnover through time, with marked accelerations in turnover in the 1980s (Fig. 1) (12). Although highly suggestive, these data do not prove that turnover rates have increased, because possible unequal sampling of forest types across time could skew the results within each hemisphere.

Mature forests inventoried for two or more successive periods (equal to at least three successive inventories) provide a more rigorous test of the hypothesis that tropical forests have become more dynamic, because they permit the analysis of change within sites (Table 2). These forests have also been followed longer (mean, 17.0;

Table 1. Mature tropical forests with tree dynamics data [neotropical (21) and paleotropical* (17) sites], where Lat. and long. = latitude and longitude in degrees and minutes, Elev. = elevation above mean sea level in meters; Rain = mean annual rainfall in millimeters, Plot area = area of each individual plot in that forest in hectares, Time = length of total inventory period in years, and Trees = mean number of trees ≥10 cm in diameter at breast height (DBH) per hectare. Mortality, recruitment, and turnover listed here are for trees ≥10 cm DBH, derived from survivorship and ingrowth between the first inventory and the final inventory. The logarithmic models used to estimate annual tree mortality (mort.) and recruitment (rect.) are cited in the text. Dashes represent data not recorded.

Locality, code	Lat., long.	Elev. (m)	Rain (mm)	Plot area (ha)	Time (years)	Trees (ha^{-1})	Inventory period	Mortality (% per year)	Recruitment (% per year)	Turnover (mean of mort. and rect.)
Tambopata, Peru (swamp) T1	12°49'S, 69°43'W	255	2350	0.6	7	713	83 to 90	0.70	0.94	0.82
Tambopata, Peru (alluvial) T2	12°49'S, 69°43'W	255	2350	0.95	7.75	523	83 to 91	1.84	2.83	2.33
Tambopata, Peru (old floodplain) T3	12°49'S, 69°43'W	255	2350	1	7.75	546	83 to 91	2.84	2.37	2.61
Tambopata, Peru (clay) T4	12°49'S, 69°43'W	260	2350	1, 0.4	11.7	575	79 to 91	1.97	1.96	1.96
Tambopata, Peru (sandy-clay) T5	12°49'S, 69°42'W	270	2350	1, 1	7.75	546	83 to 91	2.69	2.25	2.47
Manú, Peru (alluvial) M1	11°45'S, 71°30'W	400	2028	0.94	15.5	649	74 to 90	2.29	1.81	2.05
Manú, Peru (old floodplain) M2	11°45'S, 71°30'W	400	2028	0.3, 0.3, 1	15	669	74 to 89	2.79	2.32	2.55
Yanamono, Peru (old floodplain) YA	3°16'S, 72°54'S	140	3500	1	9.75	574	83 to 93	2.81	2.32	2.56
Mishana, Peru (sandy) MI	3°47'S, 73°30'W	140	3500	0.95	7.58	841	83 to 90	1.62	1.23	1.43
Añangu, Ecuador (floodplain) A1	0°32'S, 76°26'W	250	3244	1	8.5	417	82 to 90	3.08	—	3.08
Añangu, Ecuador (upland) A2	0°32'S, 76°26'W	315	3244	1.1	8.5	728	82 to 90	1.88	—	1.88
Añangu, Ecuador (upland) A3	0°32'S, 76°26'W	370	3244	1	4.92	734	86 to 90	1.89	1.80	1.85
Jatun Sacha, Ecuador (clay) JS	1°04'S, 77°40'W	450	4100	1	5	724	87 to 92	1.46	1.63	1.54
San Carlos de Rio Negro, Venezuela (sandy) SC	1°56'N, 67°03'W	119	3500	1	10.3	744	75 to 86	1.14	1.43	1.29
Belem, Brazil (clay) BE	1°30'S, 47°59'W	30	2760	2	15	572	56 to 71	1.84	0.81	1.33
Reserva Ducke, Brazil (clay) RD	~3°15'S, 60°W	110	2186	1, 1, 1, 1, 1	5	647	81 to 86	1.16	0.91	1.04
Nr Manaus, Brazil (clay) N1	~3°S, 60°W	~100	2186	0.64	4	—	74 to 78	1.13†	—	1.13†
Nr Manaus, Brazil (clay) N2	2°38'S, 60°10'W	~100	2000	4, 4, 4	5	—	80 to 85	1.48‡	1.50‡	1.49‡
La Selva, Costa Rica (alluvial clay) LS	10°26'N, 83°59'W	44	3994	4, 4, 4, 4	15.5	444	69 to 85	2.03	2.01	2.02
Los Tuxtlas, Mexico (upland) LT	18°36'N, 95°05'W	200	4600	0.36	7	—	75 to 83	1.06§	—	1.06§
Barro Colorado Island, Panama (clay) BC	9°10'N, 79°51'W	150	2656	2	5	414	75 to 80	1.06¶	—	1.06¶
Sepilok, Sabah (sandy) S1	5°10'N, 117°56'E	40	3150	1.61	12	655	56 to 68	1.11	1.42	1.26
Sepilok, Sabah (alluvial) S2	5°10'N, 117°56'E	15	3150	1	9.16	435	57 to 66	1.92	1.53	1.72
Lambir, Sarawak (sandy, clay) LA	4°11'N, 114°E	114	2874	0.6, 0.6, 0.6, 0.6	20.2	670	66 to 86	1.48	1.25	1.36
Mersing, Sarawak (clay) ME	2°33'N, 113°04'E	264	3005	0.6, 0.6, 0.6, 0.6, 0.6	21	478	64 to 85	1.25	1.43	1.34
Semengoh, Sarawak (upland) SE	1°36'N, 112°E	—	4167	—	21		60 to 81	0.89‖	—	0.89‖
Sungei Menyala, Malaysia (alluvial) SM	2°28'N, 101°55'E	30	2376	2	38	496	47 to 85	2.05	1.96	2.00
Pasoh, Malaysia (clay) PA	2°35'N, 102°19'E	90	2000	8	13	530	71 to 84	2.07	1.71	1.89
Bukit Lagong, Malaysia (ridge) BL	3°25'N, 101°42'E	505	2481	2	36	515	49 to 85	1.40	1.15	1.29
Pinang Pinang, Sumatra (andesite) PI	0°50'S, 100°20'E	550	4764	1	6.25	626	81 to 87	0.95	1.92	1.44
Gajabuih, Sumatra (shale) GA	0°50'S, 100°20'E	550	4764	0.91	7	541	80 to 87	3.27	3.36	3.32
Papua New Guinea, site 14, PN	7°40'S, ~147°E	1700	—	2	20		57 to 77	0.90#	—	0.90#
Queensland, Australia (granite) Q1	17°02'S, 145°37'E	730	1800	0.41	32.2	857	52 to 84	0.67	0.40	0.53
Queensland, Australia (granite) Q2	17°07'S, 145°36'E	945	1750	0.2	15.7	534	69 to 84	1.35	0.96	1.15
Queensland, Australia (metamorphic) Q3	16°47'S, 145°38'E	380	2030	0.2	12	796	69 to 81	1.11	0.68	0.89
Queensland, Australia (granite) Q4	17°05'S, 145°34'E	850	2300	1.68	17.33	616**	63 to 80	0.65**	—	0.65**
Kade, Ghana (clay) KA	6°19'N, 0°55'W	133	1640	1, 1	17	552	70 to 87	1.98	1.92	1.95
Akure, Nigeria (upland) AK	7°15'N, 5°5'E	~400	1500	23.5	25	—	34 to 60	0.67	—	0.67

*Including BC pre-drought data, excluding Bako (Sarawak), and Queensland site 5 postdisturbance data. †Trees ≥ 15.0 cm DBH. ‡Trees ≥25 cm DBH. §*Astrocaryum mexicanum* only (recruitment into adult class, mortality of adults). ‖Trees ≥ 19.1 cm DBH. ¶Moraceae only, trees ≥ 16.1 cm DBH. #*Araucaria hunsteinii* only. **Trees ≥10.7 cm DBH.

median, 15.0; range, 6.25 to 38 years, n = 22). Three candidate sites were excluded from statistical analyses—two that may have been affected by drought or other severe conditions before establishment (BA and Q5) and one that was heavily affected by drought during the inventory period (BC) (13). The remaining 19 sites are well distributed geographically (eight neotropical, eight Southeast Asian, two Australian, and one African), were established as early as 1947 and reinventoried as recently as 1993, and span most of the range of the climatic and substrate variation within the humid tropical forest biome.

We scored sites by whether annual averaged mortality and recruitment rates were higher or lower during the second inventory period than during the first. When investigators reported three or more inventory periods, we combined results from successive periods to create just two periods with as similar lengths as possible. Overall, forests experienced significantly more turnover during the second inventory period than during the first (Fig. 1). Of the 19 sites, turnover increased in 14 and decreased in 5; the magnitude of change in 4 of the decreasing sites was very small. New inventory data for large lianas and stranglers hint of a recent trend in tropical forest structure and a possible mechanism to explain the increase in turnover: In five out of six forests, liana and strangler density has increased since 1983 (Table 3) (15); lianas are known to contribute to host-tree mortality (16).

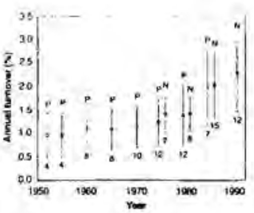

Fig. 1. Annual mean and standard deviation of all known mature tropical forest turnover rates versus year, where simultaneous n ≥ 4 (shown below each point). Abbreviations: P, paleotropical sites (Australia, Southeast Asia, and Africa); N, neotropical sites (Central and South America). Data are for years 1952, 1955, 1960, 1965, 1970, 1975, 1980, and 1985 for paleotropical sites and 1975, 1980, 1985, and 1990 for neotropical sites. Paleotropical and neotropical data for 1975, 1980, and 1985 are plotted slightly apart to distinguish them. Numbers under the error bars correspond to the number of sites being monitored in that hemisphere during that year. See (9) for data sources, and see text for the calculation of turnover rates.

Humid tropical forest plots have clearly become more dynamic, suggesting a worldwide causative factor. Below, we briefly explore some candidates, related to inventory methodology and environmental change. This exploration is preliminary and speculative, but the strong signal justifies some discussion. One methodological cause of the trend might be adverse effects on tree survival from tree tagging and collecting and from soil compaction. We would expect similar time periods to elapse before any such effects were manifested; therefore, given the wide range in plot start dates, the monotonic nature of the trend indicates that this possible cause is not decisive. Some plots were deliberately located in "good-looking" forest, and an unusual predominance of large trees might be expected to show increasing turnover through time. Yet, small plots that were explicitly chosen to avoid gaps (17) actually slowed slightly (LA and ME), and almost all sites that were sampled randomly accelerated (for example, A1, A2, M1, M2, and SC).

Environmental change is a more likely cause. Candidates include progressively more extreme weather (for example, drought, strong wind, and temperature changes), adjacent deforestation altering local environmental conditions, and elevated productivity as a result of increased atmospheric CO_2. Although detailed site-

Table 2. Turnover of trees ≥ 10 cm in diameter, tropical forests with three or more inventories, where dyn = mean of measured mortality and recruitment, during x (first inventory period), and y (second inventory period).

Site	Plot area (ha)	Number of inventories	Time span (years)	x, y	dyn_x	dyn_y	ln(dyn_y) ln(dyn_x)	Rank (absolute change)
BC*	2.0, 50.0	2, 3	15	75 to 80, 82 to 93	1.06	2.73	0.95	1
T4	1.0	5	11.67	79 to 87, 87 to 93	1.07	2.74	0.94	2
M1	0.94	4	15.5	71 to 84, 84 to 90	1.53	2.81	0.60	3
Baker Sarawak†	0.6, 0.6, 0.6, 0.6	5	21	65 to 75, 75 to 85	0.94	1.71	0.59	4
A1	1.0	3	8.5	82 to 85, 85 to 93	2.05	3.63	0.57	5
M2	0.3, 0.3, 1	3, 2	15	74 to 84, 84 to 89	1.81	3.08	0.53	6
BL	2.0	14	36	49 to 63, 71 to 85	1.04	1.49	0.36	7
YA	1.0	4	8.75	85 to 89, 89 to 93	2.18	3.06	0.34	9
KA	1, 1	6	17	70 to 82, 82 to 87	1.76	2.44‡	0.33	10
SM	2.0	14	38	47 to 61, 71 to 85	1.59	2.13	0.29	11
GA	0.9	7	7	80 to 84, 84 to 87	2.80	3.51	0.23	12
LS	4, 4, 4.4	3	15.5	69 to 82, 82 to 85	2.02	2.50	0.21	13
SC	1.0	3	10.33	75 to 80, 80 to 86	1.17	1.40	0.18	14
Queensland site 5†	0.49, 0.28	6, 6	31.9	51 to 63, 63 to 83	0.62	0.74	0.17	15
A2	1.1	3	8.5	81 to 85, 85 to 90	1.75	1.98	0.12	16
Q3	0.2	4	12.0	69 to 76, 76 to 81	0.85	0.94	0.11	17
PI	1.0	7	6.25	81 to 84, 84 to 87	1.34	1.43	0.07	19
Q1	0.41	12	32.2	52 to 69, 69 to 84	0.51	0.51	−0.00	22
ME	0.6, 0.6, 0.6, 0.6, 0.6	5	21	64 to 74, 74 to 85	1.28	1.26	−0.02	21
S2	1.0	4	9.16	57 to 61, 61 to 66	1.76	1.70	−0.03	20
LA	0.6, 0.6, 0.6, 0.6	5	20.33	66 to 76, 76 to 86	1.44	1.31	−0.10	18
S1	1.81	5	12	56 to 62, 62 to 68	1.33	0.94	−0.34	8

*El Niño–Southern Oscillation drought 1982 to 1983; first inventory of trees ≥ 19.1 cm DBH, second inventory of trees ≥ 30 cm DBH. †The author infers a major exogenous disturbance decades before plot establishment. ‡1982 to 1987 dynamism calculation based on differences between published 1970 to 1987 and 1970 to 1982 data.

Table 3. Available dynamics data for lianas and non-self-supporting stranglers ≥10 cm in diameter in mature tropical forests.

Site	Area (ha)	Inventory period	Liana stems recruited	Liana stems died	Liana stems [start (end)]	Lianas: proportion of tree stems [start (end)] (%)
T1	0.6	83 to 90	4	0	3 (7)	0.71 (1.64)
T2	1	83 to 91	6	4	8 (10)	1.50 (1.73)
T4	1.4	83 to 91	10	1	17 (26)	2.10 (3.11)
T5	2	83 to 91	13	6	31 (38)	2.64 (3.58)
YA	1	83 to 93	11	10	28 (29)	4.88 (5.34)
MI	1	83 to 90	0	4	18 (14)	2.16 (1.74)

by-site meteorological data needed to test for weather effects on turnover are unavailable, current trends in deforestation and atmospheric change may lead to lower precipitation, increased seasonality, and more frequent extreme weather events in the tropics (*18*). Therefore, the possibility exists that tropical climate change contributed to the trend, although sites with known severe weather perturbations were dropped before analysis. Forest microclimates are also sensitive to adjacent deforestation (*19*), but short-term data only show direct biological consequences at <1 km (*20*). In contrast, ≥5 sites with accelerating turnover are >50 km from major deforestation fronts (SC, A1, A2, M1, and M2). Furthermore, it is unclear if average distances between forest plots and deforestation fronts are less now than before, because study sites have always combined primary forest status with accessibility. Therefore, edge-effect environmental change appears to be an unlikely cause of the turnover increase.

The accelerating increase in turnover coincides with an accelerating buildup of CO_2 (*21*). Increasing CO_2 concentrations may have already altered plant morphology and raised growth rates (*22*), but ecosystem effects are hard to predict. Experiments on the effects of controlled environmental change at cellular, physiological, and whole-plant levels cannot be easily extrapolated to higher level phenomena like forest dynamics (*23*). For example, any effect on tree turnover by rising atmospheric $[CO_2]$ could result as much from stimulated liana growth as from tree growth. Thus, vines show greatly enhanced growth with elevated $[CO_2]$ (*24*) and are highly productive (*25*) "structural parasites" (*26*) known to affect tree-fall rates (*16*, *27*), most tropical forests have a high liana density (*28*).

Whichever factor is most critical, the evidence suggests that even "intact" tropical forest has been affected by recent climatic and atmospheric changes. The trend to accelerated turnover has implications for global change, with likely effects on tropical biodiversity and possible unexpected links between the global carbon cycle and tropical forests. If forest turnover rates continue to increase, primary forests may become more characterized by climbing plants and gap-dependent tree species, best positioned to benefit from increased disturbance and atmospheric CO_2. Accelerating dynamics in western Amazonia (A1, A2, M1, M2, SC, T4, and YA) indicate that even the largest areas of tropical forest could become inadequate to conserve samples of the biome without the rapid reduction of carbon emissions. Although faster turnover may create a more heterogeneous forest environment, and hence enhance species richness at local scales, large-scale biodiversity levels could decline. Eventually, extinctions are possible among the slowest growing shade-tolerant tree species and among tropical forest organisms with life cycles tied to these trees. Lianas and fast-growing trees have less dense wood than shade-tolerant species (*29*). Therefore, if populations of gap-dependent species increase, primary tropical forests may increasingly become a net carbon source, rather than a sink as assumed in most recent global circulation models (*30*). Such a process would constitute an unexpected synergism between CO_2 emissions from industrialized and tropical countries.

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10. This is confirmed by a *t* test comparison of estimated 1990 turnover rates versus estimated 1960 turnover rates ($t = 3.87$, df = 19, $P < 0.001$ (one tailed test)).
11. Statistical values: $t = 1.96$, df = 38, $P = 0.059$ (two tailed test).
12. Within-hemisphere *t* test comparisons of estimated annual turnover confirm that forest plots in both hemispheres have become more dynamic [paleotropical: $t = 2.69$, 1985 versus 1960, df = 13, $P = 0.009$ (one tailed test); neotropical: $t = 2.64$, 1990 versus 1975, df = 17, $P = 0.008$ (one tailed test)].
13. This procedure was conservative. Forest turnover at all three sites accelerated, especially at BC and BA (Table 2).
14. Wilcoxon matched-pair signed-rank test: $z = 2.31$, df = 18, $P = 0.010$ (one-tailed test). At the only site with a marked decrease in turnover (S1), it appears likely that recruitment in the final inventory period was incompletely recorded. If this site is discounted, $z = 2.87$, df = 17, $P = 0.004$ (one tailed test). If sites last recorded before 1981 are discounted, $z = 2.52$, df = 16, $P = 0.006$ (one tailed test).
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Forest Reform Network

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September 25, 1990

FACT SHEET

EVEN-AGE MANAGEMENT AGGRAVATES GLOBAL WARMING
ACID DEPOSITION, AND NITROGEN LOSS

Three recent scientific reports show that even-age logging has these results:

1. Conversion of old-growth forests to young plantations adds substantial carbon to the atmosphere. "Effect on Carbon Storage of Conversion of Old-Growth Forests to Young Forests," Mark E. Harmon, et al. 9 Feb. 1990, Science, p. 699

2. Site preparation causes decline of soil wood and coarse woody debris, reduces the site retention capacity for water and nutrients, increases soil warmth, impairs the maintenance of protective carbon compounds on the soil surface, and makes the soil "increasingly sensitive to acid deposition." Monitoring--Preventing the Decline of North America's Temperate Forest Ecosystems. Eric Beckwitt, March 13-16, 1989. United States Forest Service National Workshop on Soil and Water Quality Monitoring.

3. Burning of woods and other vegetation, as in even-age site preparation and vegetation manipulation emits high amounts of nitrogen compounds into the air, causing a net loss in many ecosystems. Max Planck Chemical Institute, Germany, Nature, August 9, 1990

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WILDERNESS

"The loss of the forests of yesterday reverberates through the forests of today."

CHRISTINA BOLGIANO

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[illegible]

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COVER: Opal Creek, Willamette National Forest, Oregon. [illegible]

It once stretched almost unbroken from the shores of the Atlantic to the banks of the Mississippi. Now [illegible] battle to save the remnants— [illegible] sometimes, with a mix of [illegible]ness, rage, and hope, we speak [illegible]storation.

[illegible] Christina Bolgiano

[illegible]age is not the politically correct emotion to feel in an old growth forest. Awe, veneration, respect, humility— these are expected. But I want to pummel the furrowed bark with my fists, stamp my feet on the moldy ground, [illegible] into the dappling canopy. I want to weep. [illegible] thought of the forests lost, fragmented, and de[illegible] throughout the east only an eyeblink ago, [illegible] the logging booms of the nineteenth and early [illegible] centuries is overwhelming. It's not that [illegible] on this rocky Blue Ridge mountaintop in [illegible] North Carolina are huge and imperial, the [illegible]matic megafloral equivalents of bears and wolves. [illegible] contrary. They are stunted white oaks, forty [illegible] and eighteen inches in diameter, yet they [illegible]en documented at 350 to 450 years old. Their [illegible]pple sideways like braided hair undone; their [illegible] are hirsute with mosses. From them emanates [illegible]terious life of which we know almost nothing. [illegible] perfect biologi[illegible] Once [illegible] such trees [illegible]

[illegible] sense of what [illegible] be [illegible] in such still-protected [illegible] spruce-fir forest in [illegible] Smoky Mountains National Park. DAVID MUENCH

If protected, the national forests of North Carolina could make "a world-class reservoir of biodiversity," botanist Karen Heiman says. Left, an ovenbird; right, a maple-oak forest in Nantahala National Forest, North Carolina.
LEFT: BOB SIMPSON. RIGHT: DAVID MUENCH

places like it, far more than we have any right to expect, far less than there should be, are all that's left of the original Great Forest, the immense expanse of eastern woodland through the canopies of which it was said a squirrel could travel from the Atlantic to the Mississippi without ever touching ground. Nearly four centuries of cutting for settlement, agriculture, and timber extraction has reduced it to a fraction of its glory, leaving little more than tiny primeval islands in an otherwise manmade landscape.

In ways we don't yet know how to measure, this loss of the forests of yesterday reverberates through the forests of today. The mere fact that large tracts of trees once again billow green across the landscape through much of the East doesn't mean that eastern forests have fully recovered from the assault of earlier decades. Too many species of forest plants and animals are rapidly declining, and disease, pest, and regeneration problems are too widespread and persistent. As research on the remaining virgin woodlands of the Pacific Northwest continues to reveal the stunning complexity of ecological functions performed by old growth, scientists are beginning to wonder whether managed forests anywhere in the world can sustain long-term productivity without a complement of old growth. New understanding of the role of old growth in a forest ecosystem mandates a new look at the remnants and the potential restoration of the once great eastern forest.

"The first thing is to identify what's left," Bob Zahner says as we stand beneath the white oaks. Long and lanky, with white hair swept back from a thin face, Zahner looks the academic he is, albeit a renegade. Retired now from a career of training Ph.D candidates in silviculture, he has rejected the manipulative approach of professional forestry and become a leading figure in the burgeoning grassroots movement to preserve eastern old growth. "There are more differences than similarities between western and eastern old growth," he tells me. "Tree species are far more varied and tend to be smaller and shorter lived in the East. Also, there are quantitative differences in such things as the amount of deadwood and canopy layers. In particular, eastern old growth has a greater richness of herbaceous species and their insect pollinators." Zahner and other biologists have worked out a general definition of eastern old growth that encompasses about a dozen characteristics. As the dwarfed white oaks proved, huge tree sizes are not a determining factor. Age, however, is, although "old growth" doesn't refer to the age of individual trees but to the long-term undisturbed nature of the forest community. Charles Cogbill, a forest ecologist in Vermont, suggests that half the dominant trees in a stand should have reached at least half of the longevity expected for their species (in itself a complex and variable figure). Long periods of time without catastrophic disturbances allow the canopy to be nicked by random windthrows, lightning strikes and insect infestations, which generally kill a small number of trees at a time.

Like the sporadic twinkling of lightning bugs against a summer night, but on a longer time scale, these sudden bursts of light form a changing pattern through the forest. Wildflowers, shrubs, and subdominant trees swiftly fill the sunny spaces, resulting in a population of trees of all ages (called "uneven aged") and a complex understory. Deadwood is abundant. Trees that have blown over often pull their roots from the ground, mixing mineral soils with leaf humus and giving the terrain a texture called "pit and mound topography." Soil is otherwise undisturbed and so buffered from erosion that streams draining from ancient woods are among the purest waters ever tested. These are relatively simple external criteria, nutrient cycling and other ecological processes are so intricate that they are not yet and may never be fully understood, much less defined.

Using these external criteria, old-growth sleuth Bob Leverett has been able to find dozens of previously undocumented stands in nearly a decade of searching. A computer consultant in Massachusetts, Leverett has been enamored of forests since boyhood and claims to hold the national record for falling down in old growth. "I wouldn't be surprised if we end up finding close to a million acres," he says. Once believed virtually extinct except for a few famous showcases like Joyce Kilmer Memorial Forest in North Carolina, the surprising extent of ancient-forest remnants throughout the East was first documented in 1990 by Earth First! activist Mary Davis, who painstakingly contacted dozens of resource agencies to publish a state-by-state compilation. The list ran to 23 pages and totaled more than 300,000 acres—and in 1993 Davis produced an expanded version. In the introduction, Leverett listed the Great Smoky Mountains National Park, Michigan's Upper Peninsula, Adirondack State Park, northern Minnesota, private timberlands in northern New England, and parts of the Arkansas Ozarks as the locations of the largest remaining acreages of old growth.

Davis and Leverett concentrate their efforts on forests that were already established when white settlers

However, people have been at work in these forests for so long that the term "virgin forest" is problematical. But as the scene (right) in the Cranberry Wilderness of Monongahela National Forest indicates, "antiquity" and "beauty" definitely still apply. Below, a gray fox.

[illegible]

arrived and that managed to survive with relatively little change. This is the kind of eastern old growth to which the term "ancient forests" might properly be applied, but "relatively" is the key word. Even where the timber wasn't valuable enough for commercial cutting, every acre of eastern forest was affected by human influences: piecemeal logging, arson, grazing, and the extermination of native elk, bison, wolves, mountain lions, passenger pigeons, and Carolina parakeets. We'll never know what shade-loving shrubs, what secretive salamanders, were obliterated in the rush, just as unnamed species are being lost everywhere today. Introduced pests and diseases, of which the chestnut blight is merely the best known, caused and are still causing dramatic shifts in forest composition. Fire suppression has favored shade-tolerant red maples over shade-intolerant oaks. Air pollution is damaging many species; Orie Loucks, an ecologist at Miami University in Ohio, believes that the grand hardwood forests of West Virginia and eastern Kentucky are literally—and quickly—dying from it.

In short, the term "virgin," which connotes a total lack of human influence, can't be applied to any eastern forest, and some argue that millennia of Native American burning and foraging would obviate the word even if Columbus had never landed. Nonetheless, old-growth remnants remain our most invaluable [illegible]

of the [illegible] Old growth [illegible] Peter White [illegible] Great Smoky [illegible] that [illegible] the [illegible] loss of [illegible] landowners [illegible] bers without [illegible] the fact that [illegible] are [illegible] turies ago [illegible] be best off protecting the small amount left for scientific study, because old growth could teach us how to have sustainable logging."

Old growth in national parks is protected, of course, at least from direct human impacts like logging. Similarly protected are old-growth bits and pieces on some other public lands: the federally owned Boundary Waters Canoe Area Wilderness in Minnesota, and Adirondack State Park in New York [illegible]

found huge trees—sugar maples, northern red oaks, hemlocks—all in a row from the linear womb of a nurse log and now grown as thick and stout as prominent citizens. Herman stepped almost unconsciously over her way to touch the largest of them in passing. Since her dismissal from the Forest Service, she has made the preservation of Big Ivy a personal crusade. "It's unique, a world-class reservoir of biodiversity," she declared.

Big Ivy's special characteristics also attracted the attention of Dan Boone, an ecologist for The Wilderness Society in the early 1990s. To analyze the Pisgah National Forest Plan, Boone used Big Ivy as a case study and projected fifty years of management activities proposed for the area. The current management plan would reduce old-growth conditions to small patches, he noted, so that species that need old growth may be relegated to areas too small to sustain them. Some species would definitely be imperiled. The lack of consideration for old growth, as well as other deficiencies, prompted The Wilderness Society (in conjunction with the Sierra Club and the North Carolina Wildlife Federation) to submit a thorough critique of the plan.

Sensitized to old-growth controversy by bitter experience in the West, the Forest Service recognized an emerging issue. Through a 1991 cooperative agree-

When left naturally undisturbed, the old-growth forests of the East can maintain a celebration of diversity. Below, a line of southern cypress annotates a log in Congaree Swamp; right, mountain laurel buds in Shenandoah National Park; far right, an eastern screech owl.

BELOW, JALMA R. LEWIS; RIGHT, PAUL REZENDES; FAR RIGHT, BOB SIMPSON

ment with The Nature Conservancy, which has built a large library of plant community classifications, the Forest Service acquired broad descriptions of thirty-five eastern woodland communities, with references to more than 100 subtypes. Here are vignettes from every part of the Great Forest, from the rustling beech-maple-basswood woodlands that swept from Minnesota to New England to the assemblages of river birch, sycamore, cottonwood and elm that shadowed the banks of major waterways, from the cypress-tupelo swamps along the southeastern coast and the Mississippi River that harbored baldcypress trees more than a thousand years old to the fragrant pine-oak forests that graced dry, shallow soils almost everywhere. The most widespread communities were the grassy woodlands of longleaf pine, with their handful of trees per acre and low understories of forty species per square meter; they once covered 92 million acres of coastal plain and piedmont from Virginia to Texas. The group of surviving white oaks that tapped my reservoir of anger at ancestors that afternoon on the Blue Ridge were remnants of one of the dry oak forests that grew on well drained and upland soils south of the Adirondacks. Most diverse were the forests from the central and southern Appalachians westward to the Ozark and Ouachita Mountains. With their dozens of tree species and a thousand kinds of shrubs, herbs and forbs, these were some of the richest temperate forests in the world.

For each of these communities, precise definitions of what constitutes old growth—such as number of snags per acre, percentage of the canopy in gaps, and size and spacing of trees—are being written by Forest Service scientists and academic researchers. This will mostly be an exercise in literature review, because so few functioning old-growth ecosystems are available for field verification. Where no data are detailed in the literature and no examples exist in the field, there will be blank spaces on the tables of old-growth attributes. A project underway at Great Smoky Mountains National Park to describe oak and hemlock old-growth stands, before their inevitable alteration by gypsy moths and hemlock woolly adelgids (two introduced insects), may fill in some of the blanks, but others can be completed only as time makes old growth available for study.

It is this matter of old growth to come—the potential for a new Great Forest—that adds a decisive twist to the issue of eastern old-growth. Decades after the worst of the logging, large tracts of eastern forest are aging toward old growth. Many of the maturing trees are held in private woodlots, but these plots are generally too small and disjunct to function as full-fledged ecosystems. Besides, unless social priorities are significantly reordered, market incentives will tend to eliminate them just as they have in the West, where precious little old growth remains on private land. It is mainly the national forests that are expansive enough to overcome two great obstacles to the development of an ancient forest ecosystem: the distortion of edge effect (the invasion of light, wind, predators, and parasites along the perimeters of any disturbance larger than about half an acre) and the need for habitat connections (such as wide swaths of forests along streams and across open spaces) to link woodlands for the dispersal of plants and animals necessary to avoid the inbreeding of populations. "We need to be thinking about old-growth landscapes, not old-growth stands," says Dan Boone. "It's a matter of scale." Old-growth on a landscape scale raises the same questions that bedevil forest managers in the West: How much is enough? Where should it be?

This is a hallucination," Bob Zahner quipped as a family of ruffed grouse exploded from the undergrowth. "Grouse aren't supposed to use old growth." We were on a hillside above a stream, upwind and downslope from the ancient white oaks on the Blue Ridge. Looking into the hollow, the world was an airy, spacious, green and gold place, with sun gleaming on brown trunks. The almost unbearably sweet, melting notes of a wood thrush flowed from some hidden place in the greenery. "For years foresters and hunters have said that grouse can live only in young forests, but grouse eat acorns," Zahner said. "Oak trees don't even start to produce good crops until they're around eighty years

old. Grouse love old growth." So do dozens of other forest creatures, from deer to deermice, who feed on nuts. Mature oaks, hickories, and beeches capable of dropping heavy crops have gained tremendous value since the nutritious chestnuts died.

Aging forests also offer niches unavailable elsewhere. Dams of fallen branches form pools that serve as refugia for various fishes, and catch nutrients for aquatic organisms. Downed logs harbor the small mammals that eat and disperse mycorrhizal fungi, without which young trees can't survive. The deeply fissured bark of very old trees provides the only habitat for dozens of lichen species. Trees big and hollow enough to fulfill a black bear's preference for a den fifty feet high take centuries to form. A soil deeply littered enough for salamanders takes nearly that long. A lithe and exquisite lifeform, salamanders often weigh in as the most abundant group of vertebrates in mature woods, and play a crucial role in the food chain. As for invertebrates, they are so poorly known in old growth that new species are being discovered even in the otherwise overcollected East: a possible new millipede in Virginia, new mites and other arthropods in the Great Smoky Mountains National Park. Any megafauna wholly dependent on old growth is probably extinct—the last such species was probably the ivory-billed woodpecker, which disappeared in the 1940s with the last of the original oak-gum forests—so the spotted owl of the East might be a more, not the most charismatic of creatures.

As in the West, concern for wildlife in old growth has focused on birds. The red-cockaded woodpecker is barely hanging on in the last pine-grass forests of the South. Neotropical migrating songbirds are showing steep, continuing declines that were first blamed on deforestation of their winter habitat in Latin America, but strong evidence is now pointing to forest fragmentation across the East.

Jane Holt is helping to gather that evidence. She began her career as an ornithologist on the Highlands Plateau, a four-thousand-foot high plain at the corner of Georgia, North Carolina, and South Carolina that hosts the greatest diversity of songbirds in the Southeast. In the late 1950s, and again in the 1970s, Holt resurveyed the same forest stands that pioneering ecologist Eugene Odum censused in the 1940s. When I met her at an old-growth conference in Asheville (where she teaches at the University of North Carolina), she was working on getting permission to do her third survey. Shy and soft spoken, with an air of gentle Southern formality, Holt ticked off three species of warblers—black-and-white, black-throated blue,

[illegible]

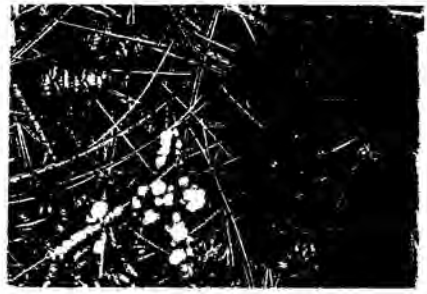
and blackburnian—as well as wood thrushes, rosebreasted grosbeaks, and ovenbirds as the species most rapidly disappearing. Each of these fast-vanishing birds gleans insects from a very specific structural element of the forest, like the leaves at a certain canopy level, or tips of branches, or bases of trees. The multilayered vegetation of old growth supports the most birds and the most different species. Holt told me, "We have our generalists, but it's the forest interior species that are suffering. The strongest thing we can do for songbirds is promote old growth."

[illegible] Peter Kirby, [illegible] Southern [illegible] Appalachian [illegible]

[illegible] in 1992 sponsored a [illegible] called Partners in Flight. Representatives from all federal land-management agencies [illegible] university researchers, timber-industry managers, and members of conservation groups, [illegible] over the next couple of years to formulate recommendations for the national forests on size and age of wooded tracts needed to halt the decline in summer migrants. The idea is that these advisory recommendations will be folded into the planning process that produces a new land-use plan for every national forest at least once a decade.

At right, a cave salamander, one of many salamander species that live—and too often die—in old growth. In many eastern forests, clearcutting kills millions of them annually. BOB SIMPSON

It can take centuries for enough leaves, wood and detritus to decompose to support viable populations of salamanders and other creatures that live in the moist and fecund darkness of the forest floor. Below: slime mold and huckleberry in White Mountains National Forest, New Hampshire. MICHAEL FRYE



It is through this planning process that a new Great Forest—if there is to be one—will be achieved. A few national forests whose plans are coming due for revision are bandying about the figure of 5 percent as a sufficient allocation of land for the regeneration of old growth. The figure comes from Larry Harris' influential 1984 book, The Fragmented Forest, although he used it merely as an arbitrary starting point for envisioning old growth landscapes (it's now said he rues the day he ever mentioned the figure). Bob Zahner advocates a minimum of 20 percent and talks of whole national forests managed by "benign neglect." Whatever percentage is mentioned, national-forest planners usually consider that it can be found on land classified as unsuitable for timbering, which often comprises 30 to 60 percent of a national forest. But lands too steep, dry, or thin-soiled to grow harvestable trees can hardly be expected to produce highly diverse old growth. And since the designation "unsuitable" can be revoked whenever a forest plan is revised, whatever richer sites might have been included are vulnerable to market whims and political whimsy. Logically enough, the best growing sites can be expected to produce the most luxuriant old growth as well as the most lucrative timber, a fact noted with concern by Dan Boone, who worries that the drive to eliminate below-cost timber sales will concentrate Forest Service cutting on the most productive sites, endangering the best old growth.

Bill Martin, a Forest Service staffer charged with coordinating the Southern Region's old-growth definitions, also noted the incipient conflict between timber and old growth. "One of the benefits of mature trees is high-quality saw timber and veneer logs," he said during an interview in his office. "Hardwoods get bigger the older they get, up to a certain point when they start to have rot spots." (And it is precisely at this point that old-growth attributes begin to form.) Martin emphasized that he wasn't a policy maker, and cheerfully admitted that he wasn't an expert on old growth. A couple of personal touches in his office testified to his real expertise: A cross-stitched sampler of a man with an ax spelled out "Timber Bill," and a model of a log skidder hulked on a countertop. To his credit, Martin at least did not refer to old growth as "decadent," the traditional term many foresters use to describe a stand that no longer produces the maximum amount of wood usable by humans (in their view, the primary "purpose" of the forest). Old trees use about as much energy to maintain themselves through respiration as to build new wood, and foresters prefer the economic benefits of younger, faster-growing trees. But the rededication of good growing sites from timber to old growth would have far less economic impact in the East than the preservation of old growth is having in the Pacific Northwest. Far less than 10 percent of the timber supply in the thirty-two states that comprise the two eastern Forest Service regions comes from national forests—except in Michigan, where it is 35 percent—and only nine communities are classified as economically dependent on national-forest timber extraction.

Martin did downplay the effects of clearcutting and talked about rotation lengths, the time span between one cutting and the next in the same site. "If you go by Hurricane Hugo," he said, referring to a huge, forest-wrecking storm on the South Carolina coast that was labeled a once-in-a-century event, "we could have rotation lengths of 100 years." This assumes a storm of exactly the same severity showing up exactly the same size at exactly the same interval to inflict exactly the same level of damage every hundred years—not much of a likelihood. Besides, even such large natural disturbances as hurricanes and fires are much more variegated in their consequences than clearcutting, the results of which we know all too well. With few exceptions, however, rotation cycles in national forests throughout the East are planned for 40 to 150 years, and there is an underlying idea that one 150-year-old stand can be cut when another reaches the 150-year mark. Given the complexity of old growth and the fact that many trees are just reaching maturity (much less old growth) at 150 years, one stand simply can't substitute for another.

A recent comparison of cut and uncut forests in the Southern Appalachians showed that one of the glories of those mountains, the bountiful herbaceous under-

"I tried to focus on future possibilities and wished that growth could be accelerated by the sheer force of love. But I continue to be haunted by the ravages of the recent yet forever unrecoverable past."

story, had not recovered 85 years after cutting, and gave few signs that it ever would. Another recent study estimated that clearcutting in western North Carolina killed nearly 14 million salamanders a year and that fifty to seventy years were required for local populations to rebuild. Woodland salamanders are another of the treasures of the cool, moist forests of the Southeast, occurring in more varied forms there than anywhere else in the world. Scientists worry that genetic diversity is being impoverished by chronic reduction of regional populations to the tune of a quarter of a billion salamanders. Where are the animal rights people when you need them?

Despite the Forest Service's obligation to manage for biodiversity and the knowledge, long held, that the Southern Appalachians are a globally important site of salamander diversity, no one had previously monitored the impact of timber harvesting on salamanders. "This is all new to us," I was told by Marilyn Robertson, wildlife ecologist for the Forest Service's southern region. "We're just beginning to realize the ecological importance of microhabitats, and the impacts of fragmentation on different species." Robertson works closely with botanist Susan Hooks and called her to join the interview. They were a jocular pair, but bantering ceased when old growth was mentioned. Neither was much involved with it because the forests in the region hadn't yet asked for their aid, but Robertson anticipated "a major impact on our jobs when they do, because they will be asking for help in selecting Management Indicator Species related to old growth. Our knowledge and experience with such species is limited." These species are supposed to do exactly what their name implies—indicate the impacts of management on the health of the forest. Salamanders and neotropical songbirds are obvious choices, although habitat changes in Latin America must be factored in for avian migrants. But it doesn't matter what Management Indicator Species are chosen if they aren't monitored and there is no standard methodology for collecting, recording, or utilizing data about them. Hooks agreed that this was an astonishing procedural gap, and hoped, as a member of a national working group on monitoring, to coordinate things, at least in the southern region.

Far greater challenges of coordination will be required to stitch together an old-growth landscape from today's chaotic quilt. Few management guidelines on size, location, or connections of old-growth sites currently apply from one national forest to the next, much less between the two regions "because," says Ann Bartuska, director of the Forest Service's new office of ecosystem management, "there is a legal requirement resulting from the National Forest Management Act for every forest to develop its own plan." There could be strategic guidance at the regional level, Bartuska admits, but she does not support the idea of declaring that an arbitrary percentage of land be set aside for the nurturing of old growth across the whole region. "That is unreasonably inflexible," she says. "We don't know what the original amount of old growth in the various forests of the East was. The best we can do is to provide a mix of tree ages and species across the landscape in a way that reflects the natural communities and long-term capability of the land." This sounds alarmingly like the mosaic of "fragments and edges" that the Forest Service has been touting for decades—to very mixed reviews from environmentalists. Although in other ways Bartuska seems to look forward rather than back—mentioning, for example, that "a great deal of thought and some action" is being devoted to harvesting methods that mimic small natural disturbances and discussing the complexities of restoring natural-fire regimes in landscapes dominated by people—it remains to be seen what ecosystem management will mean for the Great Forest.

At the end of our hike in the Blue Ridge, Bob Zahner took me to an overlook, where we seemed to swim above an ocean of mist, with mountains swelling up one after another like waves frozen in place. For the most part, it was a cutover landscape that would not produce old growth in *my* lifetime. As I took in the scene, I tried to focus on future possibilities and wished that growth could be accelerated by the sheer force of love. But I continued to be haunted by the ravages of the recent yet forever unrecoverable past, and by an infuriating sense of loss. Rage is as real as love.

CHRISTINA BOLDIANO, whose "The Fall of the Wild" appeared in our Spring 1992 issue, has written numerous environmental articles for such publications as *American Forests* and *Defenders*, was well as travel articles for *The Washington Post* and *The New York Times*. Her first book—tentatively entitled *The Unnatural History of the Mountain Lion*—will be published by Stackpole Books in 1995.

Mr. VENTO. Thank you, Janice. We will invite now Brock Evans to submit or make his statement in about five minutes.

Brock, welcome.

STATEMENT OF BROCK EVANS

Mr. EVANS. Thank you, Mr. Chairman. I am pleased to be here on behalf of the National Audubon Society to support H.R. 1164.

In our view, the goals of the legislation are admirable goals which should be applied as soon as possible to our entire national forest system. And, I say that, because for some time our organization has been deeply disturbed about the alarming and rapid loss of biodiversity across our national forests, especially the loss of those species which depend upon relatively large blocks of intact interior forest for their survival.

In our view, H.R. 1164, whether it's clear prohibition of the so often abused practice of clearcutting and its requirement for substitution of selection logging practices, would be, if enacted, one of the strongest steps yet that our country could take toward true reform of forest practices in our public forests. If the Forest Service honestly implements it then, Mr. Chairman, we think it could show the way for a true ecosystem based forestry across the rest of the nation and be a model for foresters across the world.

Personally, Mr. Chairman, I have been intimately involved with and have researched the question of clearcutting and its benefits and drawbacks for about 30 years now. I first became aware of the massive destructive impact of clearcutting in my years when I lived in the Pacific Northwest in the 1960s and 1970s.

There, I witnessed the destruction of soils and wildlife and watersheds firsthand. But, even more than that, Mr. Chairman, the failure in many, many instances of trees to grow back at all after this practice.

Time doesn't permit me to tell the stories about this. But, there are lots of them.

It was because of this growing alarm among environmentalists across the nation that Senator Frank Church, as you mentioned earlier, held his famous clearcutting hearings in April of 1971. I was pleased to be a witness there. And, I was pleased to have a role in contacting and arranging for the presentations of the scientific and environmental community at that time.

After three days of hearings, Mr. Chairman, something we rarely do these days, the consensus of the scientific community was very clear, that clearcutting was an abnormal practice and not normal and that it caused grave damage to soils, wildlife, watersheds and even the ability of the forest to reproduce itself; that it, being foreign to the way natural processes actually function in our forests, should be banned. If it was politically impossible because of the pressure of the timber lobby and the forestry establishment, then at least it should be severely restricted.

And, as you know, the result of this was the Church Guidelines limiting the practice, further codified in the Forest Management Act of 1976 which limited it even more, or so we thought.

Unfortunately, in spite of a lot of rhetoric about ecosystem management and "we are banning clearcutting," Mr. Chairman, the practice still goes on. We have seen a lot of lip service and a lot

of statistics to the fact that it's no longer being allowed, but on close examination it's mostly words.

And, I mention in my testimony my experience at the Earth Summit in Rio de Janeiro in 1992. A reporter rushed up to me with an announcement, "The Forest Service Chief announces the banning of clearcutting."

Full of disbelief, I said, "Let me see that. I want to see the fine print." And, sure enough, they did say the words, "we are banning clearcutting," and then the Chief looks at eight exceptions.

Well, after the exceptions were factored in, Mr. Chairman, clearcutting could continue just as before, only now we are just calling it "seed tree" and "shelterwood." And, that has already been discussed earlier.

So, I will conclude by saying that the results of our analysis and participation in the debates over management of our national forests on this subject have brought us to the following four conclusions regarding clearcutting. First, clearcutting does not in any way duplicate nature's way.

It is surprising to even hear this from responsible foresters anymore, so great has been the flood of new scientific knowledge that emphatically demonstrates otherwise. Back in the 1960s and 1970s, and even still now, we still hear some foresters saying that clearcutting is just like a forest fire or a windstorm, that we are just doing nature's work.

Of course, this totally ignores the fact that when you have fires and windstorms, not only do many trees still live but their biomass and all the nutrients they provide remain there as shelter for wildlife, precious shade and nutrients for future regrowth. That is nature's way, Mr. Chairman, and not the liquidation of all the forests and the removal of all its nutrients.

Second, if clearcutting did not make money and was not financially lucrative, it would never be practiced. Any forest manager with any integrity, we think, will readily admit that clearcutting is more convenient and more efficient because you don't need to be very well trained to mark out a large block of trees since they are all going to be cut down anyway.

It seems simply easier for the fallers and the skidders and the tractors and the bulldozers and all the other appurtenances of modern industrial forestry to operate when you just mark out a tract of land and lay it bare. I'm not so sure it makes more money over the long haul, but it sure seems a lot quicker and easier to cut and get out in the short haul.

Third, clearcutting does, indeed, create edge effect and, therefore, benefits certain kinds of wildlife species. But, it destroys the habitat for other generally much rarer species.

Anyone can go out and create a clearcut if we want edge effect, Mr. Chairman. You just give them a chainsaw and half a day, and you will have the forest mowed down and lots of edge effect for deer and other common forms of wildlife.

We understand that principle, but that is not the point here. Edge effect, we have lots of, whether from clearcutting, subdivisions, malls and many other activities that destroy forests in our country today.

What we don't have very much of anymore are large, relatively intact blocks of interior forests. And, the only places we are likely to have them anymore is on the public lands, especially on the national forests.

This is where we are going to find the increasingly rare interior species of birds and mammals that need deep forests and not edge effect. And, that's the purpose of H.R. 1164, we think, which will help the foresters to comply more fully with the mandates of the National Forest Management Act.

Finally, while it is true—and we've heard it here today and will hear it again—that some species of trees need some sunlight, clearcutting does not have to be the only way to provide it. It is true that some species of trees are more shade intolerant than others.

And, Mr. Smith mentioned the Douglas fir in our own Pacific Northwest. However, anyone who travels through a natural, uncut, Northwest forest, Douglas fir or otherwise, immediately notices the many different ages of the trees.

And, they aren't uniformly spaced in 40 to 100 acre blocks either. They are in hundreds of small openings in the forest, created by the dynamic of the older trees falling down, creating patches of light and the younger trees growing up. And, that is nature's way.

So, we believe, Mr. Chairman, that H.R. 1164, with its requirement for selection cutting and leaving scattered openings throughout the forest, would much more provide the kind of forest practices that replicate natural processes. Most importantly, if enacted, it should greatly improve the quality of habitat of those species of plants and animals that cannot survive without large blocks of intact, interior forests.

For all these reasons, we support the legislation and would be pleased to answer questions. Thank you.

[Prepared statement of Mr. Evans follows:]

National Audubon Society

STATEMENT OF BROCK EVANS,

VICE PRESIDENT FOR NATIONAL ISSUES, NATIONAL AUDUDON SOCIETY

BEFORE THE HOUSE NATURAL RESOURCES SUBCOMMITTEE ON

NATIONAL PARKS, FORESTS, AND PUBLIC LANDS

REGARDING HR 1164, FOREST BIODIVERSITY AND CLEARCUTTING

PROBHIBITION ACT OF 1993

Washington, D.C.

May 5, 1994

Mr. Chairman, I am pleased to be here on behalf of the National Audubon Society to offer our support for HR 1164. Among other things, HR 1164 prohibts even age logging - that is, clearcutting and its variations, such as "seed tree" and "shelterwood" logging; and prevents the further building of logging roads in nearly 60 million acres of presently roadless lands because of the damage they do to forest ecosystems. It also reactivates the Committee of Scientists originally provided for in the Forest Management Act of 1976 for the purpose of providing scientific advice to the Secretary of Agriculture on forest biodiversity, and approriate logging systems.

In our view, all these are admirable goals which should be applied as soon as possible to our entire national forest system. For quite some time now our organization has been deeply disturbed about the alarming and rapid loss of biodiversity across our national forest, especially the loss of those species which depend upon relatively large blocks of intact, interior forests for their survival. In our view, HR 1164, with its clear prohibition of the so often abused practice of "clearcutting" and its requirement for the substitution of selection logging practices where commercial logging is to take place, would be, if enacted, one of the strongest steps yet that our country could take toward true reform of forest practices in our public forests. If honestly implemented by the Forest Service after enactment, Mr. Chairman, it could show the way to truly sustainable ecosystem-based forestry practices across the rest of the nation, and be a model for other foresters around the world to emulate.

Personally, Mr. Chairman, I have been intimately involved with and have researched the question of "clearcutting" and its alleged benefits, and have been aware of its drawbacks for nearly 30 years. I first became aware of the massive destructive impact of indiscriminate clearcutting in my years in the Pacific Northwest, in the late 1960s and the early 1970s. There I witnessed personally and first hand, not only the destruction to soils, wildlife, and watersheds from clearcutting on the national forests as it was then practiced in our Northwest National Forests, but also the failure - in an alarming number of instances - of any trees to grow back at all, after application of this practice.

It was because of this growing alarm among environmentalits across the nation that Senator Frank Church, then Chairman of the relevant Senate Interior Committee Subcommittee, conducted his famous "clearcutting hearings" in April of 1971. I was pleased to be a witness at those hearings, Mr. Chairman, and even more pleased to have had a large role in contacting and arranging for the presentations of the scientific and environmental community at that time. There were three days of hearings then, Mr. Chairman, and at the end of them, the overwhelming consensus of the scientific community was clear: clearcutting was an abnormal practice, not normal; and it caused grave damage to soils, wildlife, watersheds and even the ability of the forest to reproduce itself; that it, being foreign to the way natural processes actually function in our forests, should be banned. If it was politcally impossible to prohibit it entirely at the time, because of the pressure of the timber

lobby and the "forestry establishment", then at least it should be severely restricted. The result of these voluminous hearings, and the documentation they furnished, were released in the form of the "Church Guidelines" restricting clearcutting on the national forests to more than 40 acres in size, among other things. These results were further codified, and the practice further restricted after the passage of the Forest Management Act of 1976, which made it very plain that "clearcutting" was only to be used as a method of last resort, after other silvicultural systems were considered and applied first. Or, so we thought.

Unfortunately, in spite of a lot of rhetoric about "ecosystem management"and "we are banning clearcutting", Mr. Chairman, the practice still goes on. We have seen a lot of lip service from our public forest agencies, to the effect that the practice is no longer being allowed - but on close examination, it is mostly words, and very little do. For example, I will never forget my first morning at the Earth Summit in Rio de Janeiro, in early June of 1992. A reporter rushed up to me with an announcement - "the Forest Service Chief announces the banning of clearcutting on U.S. forests." Full of disbelief, I said let me see that - I want to see the fine print. Sure enough, the Chief did say the words - "we are banning clearcutting" - but then he listed 8 exceptions. After the exceptions were factored in, Mr. Chairman, clearcutting could continue just as before - only this time, we are going to call it "seed tree" or "shelterwood cutting" - really just a two-stage clearcut. If it looks like a duck, acts like a duck, and talks like a duck - then it must be a duck. The Forest Service, Mr. Chairman, has "talked the talk", but they certainly have not "walked the walk" on even-aged management.

The result of our analysis and long participation in the debates over management of our national forests have led us to the following conclusions regarding the practice of "clearcutting" as we now know it today:

1. Clearcutting does not, in any way, duplicate nature's way. It is surprising to even hear this from responsible foresters anymore, so great has been the flood of new scientific knowledge which emphatically demonstrates otherwise. Back in the '60s and '70s, even up until recently, we would still hear some foresters say that "clearcutting is just like a forest fire or a windstorm - we are just doing nature's work". Of course, this totally ignores the fact that when you have fires and windstorms, not only do many trees still live, but their biomass and all the nutrients they provide remain there, as shelter for wildlife, precious shade, and nutrients for future regrowth. That is nature's way, Mr. Chairman, not the liquidating of all the forests and the removal of all its nutrients.

2. If clearcutting did not make money and was not financially lucerative it would never be practiced. All rhetoric aside, any forest manager with any integrity will readily admit that "clearcutting is convenient and more efficient: one doesn't need to be very well trained to mark out large blocks of

trees, since they are all going to be cut down anyway. It is easier for the fallers, skidders, the tractors, the bulldozers, all the other appurtenances of modern "industrial forestry" to operate when you just mark out a tract of land, then lay it bare.

3. "Clearcutting" does create "edge effect" and therefore benefits certain kinds of wildlife species - but it destroys the habitat for other generally much rarer, species. Anybody can go out and create a clearcut, if we want edge effect, - just give them a chainsaw, and a half a day, and you'll have the forest mowed down, and lots of "edge effect" for deer, and other common forms of wildlife. We understand that principle, Mr. Chairman, but that is not the point here. "Edge effect" we have lots of, whether from clearcutting, subdivisions, malls and the many other activities that destroy forests in our country today. What we don't have very much of anymore are large relatively intact blocks of interior forests; and the only places we are likely to have them anymore are on the public lands, especially on the national forests. This is where we are going to find the increasingly rare interior species of birds and mammals that need deep forests and not "edge effect." The purpose of this HR 1164, once again, is to help our national forests to be models of ecosystems under protective management, which in this case has to mean protection of interior forests, since there is no way to require or assume that private "forestry", with its much different interests, will ever provide enough of it.

4. While it is true that some species of trees need "some sunlight" clearcutting does not have to be the only way to provide it. It is true that some species of trees are more shade-intolerant than others. We often hear this in the case of Doughlas fir, in my own Pacific Northwest. However, anyone who travels through a natural, uncut, Northwest forest immediately notices the many different ages of the trees - and they aren't uniformly-spaced in 40 to 100 acre blocks, either, Mr. Chairman; they are in hundreds of small openings in the forest, created by the dynamic of the older trees falling down, creating patches of light, and younger trees growing up, That is nature's way.

HR 1164 with its requirement for selection cutting and leaving scattered openings throughout the forest, would much more provide the kind of forest practices that replicate natural processes. Most importantly, if enacted, it should greatly improve the quality of habitat of those species of plants and animals that cannot survive without large blocks of intact, interior forest. For all these reasons, The National Audubon Society is pleased to support this legislation. We would be happy to answer any questions.

Mr. VENTO. Thank you. And, finally, on this panel, we have Carl Ross of Save America's Forests.

Carl, welcome.

STATEMENT OF CARL ROSS

Mr. ROSS. Thank you. My name is Carl Ross. I am co-director of Save America's Forests, a nationwide coalition of over 500 groups and businesses representing more than three million Americans.

The message I bring to you today, on behalf of the coalition's three million members and the vast majority of the American people, is very simple. Please protect and restore America's forestlands to their once matchless splendor. Please stop the clearcutting and the overlogging on America's national forests. Please pass H.R. 1164.

Now, I would like to respond to the query that many people have, asking is there a problem on our national forests, by showing to the committee pictures of clearcuts. Clearcutting isn't only a problem in the Pacific Northwest where it has been popularized over the past couple of years but goes on to national forests in every corner of our country—in Colorado, in Louisiana, slash burning in the northwest, in the Missouri Mark Twain National Forest and in other national forests throughout the region, in West Virginia, Monongahela National Forest.

Now, I would like to bring to your attention reports and congressional letters issued two years ago by Chairman Miller on behalf of the Interior Committee relating to the forest crisis of our federal lands. In Chairman Miller's April 7, 1992, letter, Spotted Forests, he refers to the blight of clearcuts on our national forests and states, "The Forest Service's mismanagement across the national forest system has led to widespread destruction of our nation's forest resources."

In his May 7, 1992, letter, Mining the Forest, Chairman Miller cites a systematic review of replanted clearcuts. What he found was shocking.

Less than four percent of the replanted acres were satisfactorily stocked and free to grow. "What does this mean," he continues. "The tree harvest projected in the Forest Service's computer programs cannot be sustained. If less than four percent of the cut areas are renewed, the Forest Service is mining the forests, rather than harvesting a renewable resource. Yet the Forest Service goes on relying on the reforestation projections in the forest plans, a renewable resource in the Forest Service's computers, but not on the ground."

In his April 9, 1992, letter, Salmon, he states that the U.S. Forest Service is helping to destroy the one billion dollar per year fishing industry in the Pacific Northwest. "Over 60,000 jobs in the Pacific Northwest depend on recreational and commercial fishing of trout, salmon and steelhead. But these jobs are seriously threatened by logging practices that are destroying fish habitat across the region. Over one hundred of those fishstocks are in imminent danger of extinction. At least ninety of these fish are directly at risk due to Forest Service mismanagement practices on the west side of the Cascades alone. The Forest Service and Bureau of Land Management have contributed to the loss of these salmon stocks by

permitting logging practices that destroy gravel stream beds and clog salmon streams with silt. When logging is permitted too close to river banks or on steep slopes, silt and sediment fill the rivers and choke off spawning areas. Logging roads are a large contributor to the problem."

Mr. Chairman, this year, the salmon industry has shut down in Washington and Oregon.

Now, the current industrial forest cycle is based on clearcutting. And, it's an economic and ecological disaster.

But, there really is no need to clearcut our forests when selection is a better way. There is no need to over-consume virgin paper when recycled paper and tree free materials like kenaf and straw are available.

And, for a demonstration, this is straw paper. This is recycled paper, 100 percent. And, this is kenaf paper.

There is no need for a wood shortage when we can stop exporting raw wood from our nation. I would like to offer to the Committee that Save America's Forest platform is a guide to understanding the complex and interlocking nature of our forest and garbage crisis and offer the 16 points in our platform as a comprehensive set of solutions to that crisis.

Chairman Vento, I know you and many other members are concerned about the scientific questions regarding clearcutting. In Charlie Rose's hearing on H.R. 1164 last October, a biologist, a forester and a professional logger testified in favor of H.R. 1164. And, I refer you to that testimony.

I would like to give you a copy of the book, Beyond the Beauty Strip, by Mitch Lanskey, because it is a thorough, technical study voluminously footnoted, which clearly explains all the mistaken biological and economic arguments offered to back up clearcutting and its variations. I also would like to submit two technical articles on the decline of bat and salamander populations and viability due to clearcutting and a study showing that almost a century after clearcuts in Appalachian forests, the forest biodiversity has not returned.

The League of Conservation Voters has listed H.R. 1164 on their projected environmental issues for the second session of the 103rd Congress. For today's hearing, I would like to offer the written statements of a few of the groups from Save America's Forest nationwide coalition.

Garth Hickle of Minnesota Public Interest Research Group was unable to attend today's hearing as a witness but was able to submit a letter endorsing H.R. 1164 on behalf of MPIRG as well as the Minnesota Audubon Council, the Minnesota Center for Environmental Advocacy, the Sierra Club Northstar Chapter and Isaac Walton League of America.

And, I have statements that I received to submit to the Committee from the Black Hills Group, Sierra Club in South Dakota, from Bryan Brademeir.

And, I would like to read one sentence where he says, "We have seen firsthand in the Black Hills how continued, unsustainable harvest levels do not provide jobs, do not promote community stability and do not protect our greatest resource, the natural beauty and integrity of the Black Hills forest ecosystem;" as well as from

the Yellow Bark Society in South Dakota, the Carson Forest Watch in New Mexico and from the West Virginia Environmental Council in West Virginia.

[Prepared statement of Mr. Ross follows:]

STATEMENT OF CARL ROSS
CO-DIRECTOR, SAVE AMERICA'S FORESTS

Before the
Subcommittee on National Parks, Forests and Public Lands
Committee on Natural Resources

United States House of Representatives

A hearing on H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act of 1993

May 5, 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE,

My name is Carl Ross. I am co-director of Save America's Forests, a nationwide coalition of over 500 groups and businesses representing more than 3 million Americans.

The message I bring to you today on behalf of the coalition's 3 million members, and the vast majority of the American people, is very simple. Please protect and restore America's forestlands to their once matchless splendor. Please stop the clearcutting and the overlogging on America's National Forests. Please pass H.R. 1164.

Garth Hickle of Minnesota Public Interest Research Group was unable to attend today's hearing as a witness, but was able to submit a letter endorsing H.R. 1164 on behalf of MPIRG, as well as the Minnesota Audubon Council, the Minnesota Center for Environmental Advocacy, the Sierra Club North Star Chapter, and the Izaak Walton League of America.

The League of Conservation Voters has listed H.R. 1164 on their Projected Environmental Issues for the Second Session of the 103rd Congress.

The forests of the world are undergoing an extraordinary crisis of imminent destruction. International timber corporations are scouring the planet for every remaining natural forest and are devouring and destroying these forests whole. From Siberia to Papua New Guinea, from British Columbia to Chile, the world's natural forests and the once teeming forest plant and animal life are being exterminated. This worldwide forest destruction threatens the very functioning of our planetary life support systems.

While ancient Mediterranean civilizations took hundreds of years to deforest, desertify and impoverish their countries, modern industry, aided by the chainsaw and the

bulldozer, is achieving deforestation in only years. I cite a letter this past Saturday in the New York Times by professor Barlow from the University of Minnesota who relates that the once impenetrable and endless forests of Papua New Guinea will be completely destroyed by clearcutting in less than 5 years.

Decades of overlogging and clearcutting have brought our own nation's forests to a perilous state. The Environmental Impact Statement for the spotted owl forests shows that many of the government's own scientists are predicting that **any** logging at all will cause unacceptably high probabilities of extinction for many species in these forests. A growing number of citizens' groups inside and outside of our coalition are calling for the end of all commercial logging on our federal forestlands as the best way to protect our forests from impending demise.

I would like to bring to your attention reports and Congressional letters issued 2 years ago by Chairman George Miller on behalf of the Interior Committee relating to the forest crisis on our federal lands.

In Chairman Miller's April 7, 1992 letter **Spotted Forests**, Chairman Miller refers to the blight of clearcuts on our National Forests and states, "the Forest Service's mismanagement across the national forest system has led to widespread destruction of our nation's forest resources."

In Chairman Miller's May 7, 1992 letter **Mining the Forest**, he cites a systematic review of replanted clear-cuts. What they found was shocking. Less than four percent of the replanted acres were "satisfactorily stocked and free to grow. . . What does this mean? The tree harvest projected in the Forest Service's computer programs cannot be sustained. If less than 4% of the cut areas are renewed, the Forest Service is mining the forests, rather than harvesting a renewable resource. Yet the Forest Service goes on relying on the reforestation projections in the forest plans—a renewable resource in the Forest Service's computers, but not on the ground."

In Chairman Miller's April 28, 1992 letter **Miracle Trees**, he cites the Forest Service's promise to grow Douglas firs averaging an unheard of 658 feet tall, more than 250 taller than the tallest tree in world! "For too long, they've asked us to look the other way while faulty calculations have led to overcutting of some of the biggest trees in the world."

In Chairman Miller's April 9, 1992 letter on **Salmon**, he states that the U.S. Forest Service is helping to destroy the one billion dollar per year fishing industry in the Pacific Northwest. "Over 60,000 jobs in the Pacific Northwest depend on recreational and commercial fishing of trout, salmon and steelhead. But these jobs are seriously threatened by logging practices that are destroying fish habitat across the region. 214 different stocks of trout, salmon and steelhead are at risk of extinction—and over one hundred of those are in ***imminent*** danger of extinction. At least ninety of these fish stocks are directly at risk due to Forest Service management practices on the west side of the Cascades alone. . .

The Forest Service and Bureau of Land Management have contributed to the loss of these salmon stocks by permitting logging practices that destroy gravel stream beds and clog salmon streams with silt. When logging is permitted too close to river banks or on steep slopes, silt and sediment fill the rivers and choke off spawning areas. Logging roads are a large contributor to the problem."

This year, the salmon industry has shut down in Washington and Oregon.

On June 15, 1993, Chairman Miller issued a report called **Management of Federal Timber Resources: the Loss of Accountability**. In his accompanying letter, he says "the litany of specific reforestation failures and inventory errors is disturbing. Look at the pictures of 20-year-old clearcuts with no trees growing in them...We must insist that our forests are managed in a sustainable fashion, and that these valuable ecosystems are maintained for the future."

Chairman Vento, I know you and many other members are concerned about the scientific questions regarding clearcutting. I would like to give you a copy of the book **Beyond the Beauty Strip** by Mitch Lansky, because it is a thorough technical study, voluminously footnoted, which clearly explains all the mistaken biological and economic arguments offered to back up clearcutting and its variations.

I also would like to submit two technical articles on the decline of bat and salamander populations and viability due to clearcutting by Donald Thomas and James Petranka, and a study by Duffy and Meier showing that almost a century after clearcuts in Appalachian forests, the forest biodiversity has not returned.

Members of the committee want to know if selection management is a workable system. I offer to the committee pictures of privately owned selection managed forests from every region of the nation.

Chairman Vento, we have known for years that the status quo is unacceptable. It is time to act. Today, we are looking at a very modest legislative proposal. H.R. 1164 is the barest minimum of steps necessary to avert the certain disaster of permanent forest biodiversity loss.

Our generation does not want to sit idly by and accept the extinction of any more of our native American species. We do not want to accept the looting of the public wealth of our forests by international timber corporations, which clearcut America's last natural forests, scar the land, pollute the rivers and landscape, fire their American workers, close the mills, and then move the logging operations and all the jobs overseas. And all of this subsidized in the amount of billions of dollars a year by the American taxpayers.

As far as the welfare of the workers, I direct you to the testimony delivered by a logger, Paul Lisko, who testified in favor of H.R. 1164 at the October 1993 hearing in Charlie

Rose's subcommittee. He stated that clearcutting on the national forests in New Mexico was destroying the forests and ruining his livelihood.

H.R. 1164 is not the entire solution. 50% of our nation's wood goes into virgin paper, and almost 50% of our nation's garbage is composed of paper and wood products. We need to leave more natural forests and cut and use less forest material. We can accomplish that by using recycled paper instead of virgin paper, not exporting raw logs overseas, reusing and recycling wood, and using environmentally sound substitutes for wood and tree pulp in building materials and paper. Save America's Forests offers our 16 point platform as a guide to changing our entire industrial forest cycle into a safe, sustainable forest products cycle for the future.

We love our natural America. We love the grizzly bears of the west, and the black bears of the east. We love the wild call of the wolves, the soaring flight of the American eagle, the dappled colors of the migratory songbirds, we love the salamanders, the snakes, the mushrooms and moles, the towering giant trees and the tiniest flowers.

We salute the heroic efforts of environmentalists such as Brock Evans who labored long and hard decades ago in a lonely struggle to establish federal wilderness areas, and we thank the U.S. Congress for their foresight in the creation of these natural wilderness sanctuaries.

But now, the struggle to protect nature has reached a new stage. We know that for millions of years, nature evolved in large scale natural forest ecosystems. It is imperative that we allow nature to once more function on the grand scale of large ecosystems. The current wilderness areas are not large enough to support the survival of America's native species. The whole of our national forest system, from now on, must have all its native biodiversity. Clearcutting, overlogging, roadbuilding and tree plantations must end now. Congress must direct the U.S. Forest Service to carry out a combination of less logging, no logging in some areas, and at a very minimum, selection management instead of clearcutting. Anything less will consign the federal forests to certain and permanent ruin.

We do not need any more new names or euphemisms for clearcutting and even-age management. We want to end artificial tree farms, pesticides, herbicides, phantom forests, genetically engineered cloned "supertrees", clearcutting, seed-tree and shelterwood, highgrading, "improving nature" with edge effect, fire suppression or "ecosystem management" on our federal forests.

Chief Jack Ward Thomas told me that he would not change the logging practices of the Forest Service unless directed to do so by Congress. We are here asking that Congress pass H.R. 1164 and change those policies.

Mr. VENTO. Without objection, the letters will be made part of the record.

Mr. ROSS. Thank you.

[The letters follow:]

The Yellowbark Society
P.O. Box 55
Hill City, SD 57745

May 5, 1994

The Hon. Bruce Vento
Chairman, Natural Resources Subcommittee
National Forests, Parks, & Public Lands Committee
U.S. House of Representatives

Testimony in Support of HR 1164

Dear Chairman Vento:

I am writing to indicate my ***strongest support*** for the "Bryant Bill", H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act. This bill contains many of the changes I have considered necessary on our public lands for many years. For too long we have allowed land "managers" to cater to the needs of industry, to exploit natural resources for short-term gain, and to promote commodity extraction for "career enhancement" rather than land stewardship.

I am sickened by the quantities of materials wasted in the new mechanical harvesting methods on our beautiful Black Hills. When will industry ever do the research necessary to make better use of these natural resources, if our land managers and the Forest Service continue to provide all the raw materials short-sightedly demanded by out-of-state mills?

Recent stumpage price increases have allowed private landowners to begin harvesting their holdings at a modest profit, or at least to offset the ever-increasing property tax payments. I feel I cannot do this to my land, until the Forest Service regains its mission of true multiple use, which to me is based on biodiversity and sustainability, not commodity goals. Reducing the harvesting on public lands will help small private inholders maintain their rural lifestyles and quality of life.

I retired after 26 years in the Park Service, many of these years at Mount Rushmore. I have seen how the best intentions of land managers can be distorted and controlled by special interests. The lack of land stewardship ethics by our public land agencies in the West sickens me, and I am concerned what kind of world will we be leaving for posterity. How thoroughly will they condemn us for our shortsightedness and greed?

I ask for your strongest support for this important legislation.

Sincerely,

Eugene Koevenig

Eugene Koevenig, Chairman

BLACK HILLS GROUP
SIERRA CLUB
P.O. Box 1624
Rapid City, SD 57709

May 5, 1994

The Honorable Bruce Vento
Chairman, Natural Resources Subcommittee
National Forests, Parks, and Public Lands Committee
U.S. House of Representatives
Washington, D.C. 20515

Re: Testimony on H.R. 1164

Dear Chairman Vento:

The Black Hills Group appreciates the strong leadership that you and our Congressman Tim Johnson have provided on public lands issues. We ask both of you to continue this leadership by giving your **strongest support** to H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act, introduced this session of Congress by Representative Bryant of Texas.

Public land policies prohibited clearcutting on public lands until passage of the National Forest Management Act in 1976. Predictably, the Forest Service (and BLM) has seized on the silvicultural loopholes in this Act to promote widespread and unrestricted homogenization of our National Forests. Yet, after 17 years, these same public land agencies are unwilling or unable to implement the explicit biodiversity requirements contained in NFMA.

The Black Hillls National Forest is experiencing the type of mismanagement condemned as "run amok executive agencies" by Judge Parker of Texas and Judge Dwyer in the Northwest. The proposed HR 1164 (the Bryant Bill) proposes several significant changes in land management that will be of direct impact in restoring sane land management in the Black Hills of South Dakota.

Although most of the Bill's provisions apply more generally to the remaining isolated portions of the West (no roadbuilding in RARE II areas, repeal of Section 701 (b), etc.), the direction this legislation will set for ***sustainable*** management of our national forests is also important for South Dakota. We have seen firsthand in the Black Hills how continued unsustainable harvest levels do ***not*** provide jobs, do ***not*** promote community stability, and do ***not*** protect our greatest resource, the natural beauty and integrity of the Black Hills forest ecosystem.

We ask you to give this legislation your strongest support. Time is running out on our options for preserving "the best that remains" of our National Heritage on public lands.

Sincerely,

Brian Brademeyer

Brian Brademeyer
Conservation Chair

Mr. VENTO. I note also that Ms. Bezanson has a number of statements that are attached to hers, affidavits and so forth, which will be made part of the record. They are not too lengthy. Without objection.

Ms. BEZANSON. Thank you.

Mr. VENTO. I think that we will try to come back right away and deal with the questions for this panel. And, so I would tell members that want to ask questions, some of whom are not here, had better be back, because we are going to move along today.

[Whereupon, a recess is taken at 11:10 a.m., to reconvene at 11:20 a.m., this same day.]

Mr. VENTO. If you would, come back to the table. I was going over the statement, and I see that my correspondence to Ray Fenner ought to be put in the record so others will know what we are talking about.

But, one of the questions that was outstanding here, I think, for the Forest Service, that is to say, on February 4, 1994, that, in fact, Janice, Ms. Bezanson's testimony was pointing out that there was a question here asked of Dr. Thomas, the Chief of the Forest Service, concerning specifics of how many acres are being logged under each method on national forests each year. This has become an issue, even at the early part of the hearing here where I had one set of numbers and Congressman Smith and Bryant had others.

So, we do need to get answers concerning that. And, we will raise them today. And, I am sure that they will have to go back to the drawing board to straighten out or, at least, get us the 1992 and 1993 numbers on that topic.

So, I do want to acknowledge that. And, the statements that we made that we are repeating were these statements of the Forest Service in terms of some of the science.

As you can see from my remarks, I did have some questions about the science. And, a lot of this gets to what we are managing it for.

I haven't been able to read all of the testimony that we have received today. That is why we like to get the testimony a little earlier on the oft chance that we might actually take some time to read something ahead of time.

And, I had received a copy of the Beyond the Beauty Strip. It's at home on my bookshelf. And, someday I am going to have enough time to read all of these things.

And, someone else, Wally Herger, Congressman Herger, invited me to go out and look at his district. And, I have been to some of those areas, but I usually go with the Forest Service or with the BLM when I do that, not with the various groups most commonly, because I really want to rely on them to be the professionals that they are.

And, so that's one of the reasons we do that, although we do meet with groups sometimes in the field so that we can get the other perspectives that are necessary rather than just the Agency perspective. But, I did want to make those comments.

I notice you have a lot of Minnesota groups that are favorably disposed towards a different policy path with regards to management. Under the law, the steps that Congressman Church and others—and I mentioned Hubert Humphrey—wrote into the Forest

Rangeland Renewable Resources Planning Act of 1974 which provides that before clearcutting it can only occur if it has been determined to be the optimal method; if it's the interdisciplinary review, the cut blocks, patches or strips of land are shaped and blended to the extent practicable within the natural terrain; maximum cut sizes for normal harvesting, and the cuts are carried out in a manner consistent with the protection of soil, watershed and so forth.

And, so you know this language. And, the fact is that do you all agree that the 90 percent or whatever the amount of clearcutting and even-age management cutting, whatever the difference is, that this language isn't adequate to do the job; is that right?

We have been through the courts with this; is that right, Brock, or what? What's the case here?

Mr. EVANS. Well, yes. Some of us were here—that shows how old we are, Mr. Chairman—at the Forest Management Act hearings of 1975 and 1976.

And, you may recall that that whole issue was precipitated by the West Virginia Isaac Walton League Chapter winning the Monongahela lawsuit. And, the reason I cite that is because for two years we then had a debate in this Congress, in this body, and others about shall we have prescriptive forestry or discretionary forestry.

And, those of us who had seen what was actually going on on the ground all around the country, not just myself but many others, the scientists and others, wanted to really spell out clearly in the law what we wanted to have done to codify the Church Guidelines and make it even more stronger. The forestry establishment and the industry and the Agency said, "No. We promise we will do a good job, because we are the professionals. Leave it to us."

Well, in effect, our side lost. And, we didn't have prescriptive forestry.

We have had almost 20 years now of discretionary forestry, leaving it up to us. And, we have the results that lead people all around the country to come here today.

Every time we've gone to court, whether it's in Texas or the northwest or elsewhere, we have won the lawsuits on this because the plain mandate of the Act is to protect the native diversity across the planting unit, and it's not being done by this practice.

Mr. VENTO. Well, let me leave it at that point. I did see the affidavit on your statements. I will try to look over this more carefully at a later time.

Congressman Smith, did you have any questions of the panel?

Mr. SMITH. I just have one question, Mr. Chairman. I want to preface it by reading a statement from the Society of American Foresters, delivered in 1992, regarding this very issue.

These are the silviculturalists and the experts we hire in some cases, public and certainly private, to give us their best advice. And, I want to quote one small paragraph.

"Properly applied, clearcutting is an environmentally appropriate, financially prudent and economically justifiable silvicultural method to meet many multiple use objectives. It is the proper way to regenerate certain high value commercial timber species, especially the fast growing shade intolerance species such as Douglas fir, western white pine and lodgepole pine of the west, southern

pines in the south and southeast, and eastern hardwoods like oaks, ashes, maples and black cherry. Clearcutting is the only way to control some insect and disease problems. It also creates openings for grouse. It improves wildlife habitat for many species, thus contributing to the biological diversity."

The Society of American Foresters, 1992. Are they right or are you right?

Mr. EVANS. They are wrong.

Mr. SMITH. And, again I suggest to you that it's very difficult if you want to follow science, as everybody seems to want to follow, to go against the scientists with your opinion.

Mr. EVANS. These are not scientists, Congressman.

Mr. SMITH. I found that to be true, Brock, when we were arguing about the spotted owl. So, now I am on the other side.

I am with science. Where are you?

Mr. EVANS. I am with the scientists, too. But, I am not with those who are silviculturalist kinds of scientists who have a financial and an ideological interest in perpetuating the practice that brings more money to their employers. And, I think we have to consider that.

I would refer you, Congressman, to the volumes of testimony and hundreds of pages of testimony at the 1971 hearings, and ever since then, to see what soil scientists say, see what zoologists say, see what wildlife biologists say. I completely agree with you that this is not an issue of cutting timber or not.

It's an issue of how you regrow it again. For example, in your own district, I hired a consulting forester to work with me in the 70s. And, we were down around Medford and some BLM clearcuts, and it was very interesting.

He took me out in the middle of clearcuts. We are just talking 10 or 15 acres here. And, you know how hot the summers get in your district down around Medford especially.

In the middle of the clearcut, which had been cut 10 years ago, nothing was growing at all. On the edges, near the shade near where the strip was, trees were growing like weeds.

In other words, even this forester said we can't do these things down in that place. So, I think if you look at all the science on these things, as we have over the years, I think you would conclude that if you want to provide openings for even shade intolerant trees like Douglas fir, you can do it through the method that we think nature does it, through the small openings throughout the forest, instead of the thing that makes more money.

We have no objection to making more money. But, if it destroys the environment so that trees don't grow back, we have a problem.

And, I would be glad to submit lots of evidence on this. As a matter of fact, if I can, Mr. Chairman, I have one study here called——

Mr. SMITH. Well, Brock, if you are selecting the evidence, make a selection a little bit better than the George Miller selection when he came to southern Oregon and visited one section of land, which was not regenerating, and came back and said, "My God, the BLM and the Forest Service is doing a lousy job, because trees won't grow in this section." There are spots in southern Oregon that regeneration is very difficult that we both know.

Mr. EVANS. Sure.

Mr. SMITH. But, on the whole, the BLM believes, and states, that they have about a 94 percent regeneration success, unlike some of the testimony I heard from Mr. Ross.

By the way, Mr. Ross, one quick question to you. I think you confirmed what I stated in my opening statement.

That simply is. When you all are through with devastating the public lands, eliminating any harvest from them, you are going to go to private lands. You as much as said that.

You want to eliminate the export of logs. You know very well that you cannot export logs from public lands, either federal lands or state lands.

Therefore, the only regulation you want to impose is on the private lands. Come around again, you are going to impose your will upon private landowners; is that correct?

Mr. ROSS. Well, I think we all live on a planet where we all relate to another. We live under a government in the United States where we all relate to each other.

And, none of us have infinite liberty. So, we are all under regulations all the time.

And, environmentally, we are all connected to each other. All the ecosystems of the world magnify and connect to each other until you have a global ecosystem.

So, yes, I am concerned with the forests all over the planet, on public lands and on private lands. H.R. 1164 only refers to public lands.

But, as far as my statement about exports, I would say that because we are exporting so much from private lands, that is creating an artificial shortage at which the public lands are being bled to fill. So, we are cutting far too much from our public lands.

And, we are using clearcutting, which is the wrong way. And, we've done that for far too long.

And, the reason the forests are in such bad health in many areas is because they have been clearcut and high graded. We need to stop the clearcutting and the high grading and then nature will begin to heal itself.

And, I would like to point out one more thing in relation to this. We keep talking about what we have to do to help the health of the forests.

The trees and the forests that we are familiar with evolved about 100 million years ago before there were any forest service managers or private timber companies. So, for 100 million years, nature took good care of itself and grew very large trees and healthy forests.

Now, is it just a coincidence that with the clearcutting that has been practiced for decades that the forests that have been clearcut and high graded are in such bad health? I think the two are directly related.

And, so we are proposing that we change over to a system of natural management, as little management as possible, emulating nature, which clearcutting and even-age management as currently practiced does not do.

Mr. SMITH. I understand that. I won't get into a discussion with you about history.

But, if you've ever seen an overlay of fires in the Pacific Northwest, you will see that fire in itself is non-discretionary. And, it takes old growth as well as young growth.

And, the forests in the northwest are not hundreds and hundreds of years—ancient forests is a misnomer. The facts are that fires wiped out, from time to time, various portions of the west and left it as nude as that.

So, you know, that's not a fair example, I don't think. But, we get back to the point that you want to regulate private lands.

Now, I'm——

Mr. ROSS. We are not talking about harvesting methods on private lands, no. That is not——

Mr. SMITH. No, no, no. You worry about export of logs. You can't export logs from public lands or you can't export logs from state lands.

So, you are back in the private land business again, which I stated in my opening statement would come along. And, the fact is, it's interesting that we can arrive at different conclusions with the same facts.

The facts are that you have squeezed the public lands so badly, and you have eliminated harvest in the Pacific Northwest. Eighty-five percent in Option 9 is gone from harvest timber in the northwest. The other 15 percent is in the courts. We have zero harvest from public lands.

You have squeezed it to the point you are putting huge pressure on private lands. You are destroying exactly what you want to preserve, and that's the ecosystem on a large part of the private lands which is, as I mentioned earlier, are about half of the forest lands in Oregon and Washington.

That's what you are doing.

Mr. ROSS. Well, two points. One is that the reason there is a shortage of logs on public and private lands, to the extent that there is, although we use much too much wood in paper, virgin wood in paper, so that if we used much less virgin wood in paper, which I demonstrated is possible and would be beneficial to our economy—but, in any case, to the extent that we are exporting is this artificial shortage.

But, by exporting so much raw wood and wood products, we are putting American workers out of work. And, I think that should be a paramount consideration.

Mills are closing, because the logs are being milled overseas. That's a fact.

We know that. We have pictures——

Mr. SMITH. There isn't a log exported out of my district, not a log. And, there are 68 thousand people out of work in Oregon.

That's because of organizations like yours who have squeezed the harvest to zero. Mills are closing every week because they can't find any timber to harvest.

Mr. ROSS. Are you denying that we are not exporting logs?

Mr. SMITH. We are not exporting logs.

Mr. ROSS. America isn't exporting logs?

Mr. SMITH. Oregon does not export logs either from the state or on federal lands. And, locally——

Mr. ROSS. Private lands.

Mr. SMITH [continuing]. In my district there are no private logs exported, zero. Why are our mills closing?

Mr. ROSS. Well, you were talking about getting logs from other States recently.

Mr. VENTO. Well, his time has expired. And, he's going to get the last word or someone does, I guess.

So, Mr. LaRocco, do you have any questions of this panel?

Mr. LAROCCO. I just had one for Mr. Evans. I read through the testimony. And, I had mentioned I hadn't seen your testimony before I mentioned the clearcutting guidelines and the hearings back in the 1970s where you testified on that.

And, I think one of our roles here in Congress, and specifically this Committee, is to look forward continually. We can dwell on the past, and some of the past is not all that wonderful to dwell on.

But, with relation to this legislation and the change in the Administration's ecosystem management, I read that the Audubon Society is supporting the legislation. I am trying to marry the two: how we move forward here with a change in Administration and a new look with ecosystem management on the landscapes.

I could give some examples, I think, of really hard hit areas with regard to insect infestation and dead stands of lodgepole pine that are begging for some prescription instead of catastrophic fires. I'm just wondering how you would recommend that we reconcile this on this Committee to move forward with ecosystem management.

And, as you mention in your testimony, you thought that clearcutting guidelines were being followed but they haven't been. Would it please you in any way, shape or form if the Forest Service were to simply adhere to those? There are actually forests in my district that have banned clearcutting.

Mr. EVANS. Congressman, we may not even be here today if the Forest Service tried to follow the guidelines of the early 1970s.

Since they did not, now we are in a situation where organizations like mine consider we are in a situation of real scarcity of if you value large block of intact interior forest, just from the wildlife standpoint alone.

So, I think we are past that, plus we have a lot more scientific knowledge now than then about what this does.

It is true that foresters who see trees as a commercial crop get very much afraid of diseases and bugs and things that are happening to the forest.

To other scientists, these are part of the natural cycle of things, and I think when you are talking about ecosystems management, you have to take into account all the parts; the water, the fish, the climate, everything else, not just the trees for commercial crop. It depends on what you are doing and where you are.

The fact is, it seems to us that we have had nearly one hundred years now of—we had to clearcut log this forest in order to save it, and I think we have the result that Mr. Ross and others spoke of. It has not worked.

The forests are more diseased than ever. They are worse than ever. We have climate situations coming up, but it is worse off right now.

So, we think the idea of clearcutting to save the forest is now an outmoded idea, and I know it is called just another tool in the kit,

but we are here to tell you that the tool has been so abused right now we don't feel comfortable except with these kind of prescriptions.

Twenty years ago, it might have been differently.

There is, as you know, in the legislation, a provision for a committee of scientists which is going to recommend appropriate logging method, and I think this might ease some of Mr. Smith's fears, too, about what could be done, because of course there are going to be situations where you might have fire danger and danger to property and human life, and we certainly want to make sure that is taken care of as well.

But we think we need something strong and prescriptive and enforceable, hence the citizen suit provision, to make sure the agencies will do it as they did not twenty years ago.

Mr. LAROCCO. I would add to the values and the constituencies, whatever you put into the definition of ecosystem management, include local communities as well. I think the success of ecosystem management is going to hinge on local communities that make their living off the land and recreate on the land as well.

This is really important to me that we have this buy-in by folks on the ground who, I think, probably don't want those huge clearcuts anyway. I think that is why I am trying to dwell on the future, and maybe we will get there at some point and I certainly hope so.

I have some concerns about what we would do on the Federal lands, and then what are the obligations on the private land, and that is why we have this hearing.

I would say it is always interesting to deal with these issues as we are today, and we always get back to forest health. I have a bill which deals with forest health that we have discussed in the past, and we will probably hear more about it from the next panel.

It all gets back to what is on the ground after a hundred years of management. The even age management, fire suppression, draught, disease and so forth.

I am glad there is a scientific consensus arriving on that, and some of the wildlife biologists at the University of Idaho have actually come out at some point—maybe there is new data—but Jim Peak, for example, has looked at the benefits of small clearcuts for El Capitan and others, and I don't think that can be refuted, unless you want to now.

Mr. EVANS. I would just like to say that we consider the statement about selection logging is, in fact, a small clearcut. It lets light in. It permits openings, and it does it, we think, in a more natural way.

I have no trouble with anything you said. Clearly the local people live there and make their livelihood, have to understand it is in their long term interest, too, to harvest the trees that are going to be harvest in such a way that they are going to go back forever, and also have the other wildlife values that we believe only the public lands can provide.

Mr. LAROCCO. I mean, if you look at what Plum Creek did, you may not be happy, but I know you would be happy with the change from what they used to do, which is what they admit as a company. They have gone in and with the volume that they take out,

there is another entry twenty, thirty years later. That is the environmental forestry they are attempting to practice. Thank you, Mr. Chairman. Thank you.

PANEL CONSISTING OF R. NEIL SAMPSON, EXECUTIVE VICE PRESIDENT, AMERICAN FORESTS; FRANK M. GLADICS, VICE PRESIDENT, WESTERN FOREST INDUSTRIES ASSOCIATION; DOUG CRANDALL, ASSISTANT VICE PRESIDENT, PUBLIC FORESTRY, AMERICAN FOREST & PAPER ASSOCIATION; AND, GERALD ROSE, MINNESOTA STATE FORESTER, NATIONAL ASSOCIATION OF STATE FORESTERS

Mr. VENTO. Thank you all. Appreciate it. Our next panel is R. Neil Sampson, with the American Forests. Mr. Doug Crandall, American Forest and Paper Association, Mr. Frank M. Gladics, Western Forest Industries Association, and finally Mr. Gary Rose, who is, of course, from Minnesota. He is our State forester. He is now representing the National Association of State Foresters.

So, a special welcome to Mr. Rose. Your statements have all been made part of the record, and we would like you to summarize in about five minutes and then we, perhaps, can ask some questions of you at that point.

Mr. Sampson, please proceed with your testimony.

STATEMENT OF R. NEIL SAMPSON

Mr. SAMPSON. Thank you, Mr. Chairman. I am Neil Sampson, Executive Vice President of American Forests, which is the oldest national citizens conservation organization in the country.

It is a pleasure to appear in front of your committee again. For these many times we have talked about these same subjects.

Before I summarize my statement, very briefly I would like to address a question, if I might, that has been discussed in the committee this morning.

The background statement which I believe people were looking at, which has the harvest acreages for 1984 to 1991 on it, there was some discussion about what has happened since 1991 to 1994, and that is very germane, because there has been a tremendous change.

I only wanted to point out one thing. In the 1991 data, the chances are there is not a harvest on that 1991 list that was planned any later than 1987, and there may be harvests on there that were planned as early as 1984 and 1985.

Unfortunately, the process these days is so lengthy and so cumbersome to plan and put one of these projects together, that the 1991 data is based on 1985 practice or 1984 practice and so on.

That has been a frustration with all of us who are trying to push change in practice, because the change in practice has a time lag in it that represents the length of the planning frame.

So, I am only suggesting that the data that we are looking at is even more historical in its real intellectual base than it appears to be on the numbers.

What I brought for you today is two basic activities that we have been involved in, myself personally. The National Commission on wild fire disasters, which was created under Public Law 101 286, which has just issued its report.

Mr. Chairman, I didn't burden your over-burdened reading pile with that report again today, but I obviously have a few copies. The Congress, in its wisdom, didn't give us any funding to carry out the Commission's activities and, in fact, wrote the legislation in such a way that it precluded private funding.

So, we have essentially sort of volunteered and bootlegged this, and have only a limited amount as a result.

The other thing we have done is in cooperation with the folks in Mr. LaRocco's district and, in fact, with Mr. LaRocco himself, and this is a look at the science underneath the forest health situation in the inland west, and I have brought you a small overview piece that was done out there.

Both of those reports indicate that there are millions of acres of Federal forest largely lying in that region we call the inland west, which is shown on the cover of this.

Forest health problems range from incipient to very severe. Many of those areas, unless effective forest treatment programs are rapidly employed, there is a one hundred percent chance that they will burn, often with very highly destructive wild fires. And by that, we mean fires at the intensity and scale which cause serious and sometimes permanent damage to forest soils, to watersheds and obviously wildlife populations, in addition to imposing enormous costs for suppression and emergency rehabilitation.

As we read H.R. 1164, it would reduce the ability of the federal agencies to treat many of those forests, and if that were the case the effect of the legislation would be the exact opposite of its goals—it would result in the degradation of some Federal forests and the reduction of biological diversity rather than its enhancement.

The problem, we would suggest, is in the approach taken. Any attempt to prescribe or prohibit specific land treatment methods is going to right in some places and wrong in others, and we heard people all morning talking back and forth with an example of how this worked here and that worked there.

The chances are they were all right and all wrong. The problem is that those forests are so tremendously diverse that it is really difficult to generalize on what should be done.

I have gone through a litany of what has gone on out there and I won't repeat it for the committee. You can read it in the testimony. But the message we are trying to bring to you today is that there are millions of acres of Federal forests that need immediate intervention to prevent an environmental and an economic disaster.

Some of them are roaded, some of them are roadless. They exists in a variety of physical locations, exhibit different characteristics, they need different management techniques, according to what conditions exist.

On some of them, clearcutting would be a disaster, on others, doing nothing would be an equal disaster, and on some sites roads are going to be essential, and on others they shouldn't be built, and the product values and topography support helicopter operations,

which under today's prices are often very profitable as well as easy on the environment.

In some places, the clearcutting in very small patches is going to be essential to get the species regeneration that we need.

The point is that legislation that effects the entire Federal forest land base can't foresee all those different needs.

So, just as the tendency to convert every acre of the national forest to the clearcut replant industry model was a mistake, it is probably equally wrong to try to dictate the totally different management schemes across that entire landscape today.

I think we have to recognize that we have very few forests out there, none that I know of, that are unaffected by that human settlement.

When we knocked the fires out in the late 1800s in that region it changed the forest greatly.

The air quality has changed now today until the nitrogen input in those forest lands is vastly different than what it was under original situations.

Many of the roadless areas people want to protect today were logged and logged very hard in the early days with flumes and splash dams and down creek logging with oxen and horses, doing things that are so environmentally more damaging than what we would do with a decent and well-built road system today, that we wouldn't begin to want to tolerate it.

So, we have to really understand that we have very few natural forests left. Our goal must be to return as many as we can toward natural conditions, and that will in many cases require sensitive site-specific active intervention.

Instead of fighting the battles of the past, Mr. Chairman, it seems to me we have to fight the battles of the future. That is, in fact, a forest health situation that is growing rapidly into emergency conditions.

What we need now is instead of trying to do what 1164 attempts to do, we need to support the conversion that is under way in the Federal agencies.

They are eliminating clearcutting as a prevailing silvicultural method. There is an unfortunate five to six year time lag in the way that hits from the planning to the land, and that is too bad.

But the mood should be applauded. They are trying to move toward ecosystem management, and that is the right direction and should be encouraged. They are hampered in doing what needs to be done in here by a cumbersome, top down, often conflicting set of planning and assessment rules. Those should be simplified and streamlined.

They are limited in their administrative tools, to timber sales and salvage sales, that set up a set of perverse incentives that don't allow the forest contractor to become a true partner in what is left on the forest behind, and the result and impact of those forest activities.

All those need to be changed, and that is a significant policy agenda for this committee.

We feel that the forest health bill that was initiated by your compatriot, Mr. LaRocco, which if you looked at very carefully is a

much more appropriate basis from which to begin this important task than 1164, and that is our testimony for today.

We will be glad to answer any questions.

Mr. VENTO. Thank you very much.

[Prepared statement of Mr. Sampson follows:]

AMERICAN FORESTS

GLOBAL RELEAF

Testimony of

R. Neil Sampson
Executive Vice President
AMERICAN FORESTS

Before the

House Committee on Natural Resources
Subcommittee on National Parks, Forests, and Public Lands

on

H.R. 1164

May 5, 1994

Dear Mr. Chairman and Members of the Subcommittee:

I am Neil Sampson, Executive Vice President of American Forests, the oldest national citizens conservation group in the U.S. Our members are a diverse array of scientists, natural resource professionals, and citizens who share a common interest--they care deeply about the protection and sustainable management of trees and forests, on all lands and all land ownerships.

Our organization, and myself personally, have been involved in two related exercises that we believe have relevance to the subject and the legislation before you today, and I would like to take this opportunity to make that connection for the Committee.

The National Commission on Wildfire Disasters, created under Public Law 101-286, has just issued its report. I had the privilege of chairing that Commission and overseeing the preparation of the report.

The Forest Policy Center has just completed work on a book about the forest health situation in the inland west. A copy of one of the overview papers is included with this testimony, and the entire book will be available later this summer.

Both of these reports indicate that there are millions of acres of federal forest, largely lying in the region between the spine of the western coastal mountains and the Great Plains, and extending from Canada to Mexico, where forest health problems range from incipient to very severe. In many of those areas, unless effective treatment programs are rapidly employed, there is a 100% chance of highly destructive wildfires. By highly destructive, we mean fires at a scale and intensity that do serious and sometimes permanent damage to forest soils, watersheds, and wildlife populations, in addition to imposing costs on the public for suppression efforts and emergency rehabilitation work.

As we read H.R. 1164, it would seriously reduce the ability of the federal agencies to treat many of these forests. If that were to be the case, the effect of the legislation would be the exact opposite of its goals -- it would result in the degradation of some federal forests and the reduction of biological diversity rather than its enhancement. The problem, we would suggest, is in the approach taken. Any attempt to prescribe or prohibit specific land treatment methods will be right in some places; wrong in others.

In the inland western forests, for example, the current forest is dramatically different than the forest that evolved over the thousands of years prior to European settlement. Those forests, while they differ considerably across this large landscape with its varied topography and climate conditions, were each greatly shaped by wildfire. The lower elevation, southerly, or drier sites were characterized by long-needled pine forests, often with tree densities of 25-100 per acre, and a fire return interval of 5-10 years. At the more northern, high elevation, or wetter sites, lodgepole pine or fir-hemlock forests burned far less frequently, at return intervals that might have been from 50 to several hundred years between fires.

In the pine forests with regular fires, species evolved that were not only fire-tolerant, but sometimes fire-dependent. Those fires were nearly always cool ground fires that recycled carbon and nutrients, kept young seedlings from crowding around the large trees, and favored the fire-tolerant pines over the more easily-killed species like douglas-fir.

In the lodgepole pine and fir-hemlock forests with long fire return intervals, the fires were nearly always stand-replacing fires, killing the forest where it burned and starting a new round of forest succession.

An important factor in both types of forest is that neither hit a "climax" condition where growth slowed down and normal decomposition balanced it off. In these forests, biomass continued to accumulate until fire removed it. Decomposition never equals growth, because these forests are too cold in the winter and too dry in the summer for adequate microbial activity. Thus -- these forests will all burn at some point, unless the fuels are mechanically removed.

The problem facing these regions today is that the forests have not burned in a

historical manner since about 1860-1890. Wildfire frequency changed dramatically the moment European settlers arrived in the region. The main reasons for this include the introduction of huge populations of domestic livestock, that grazed out the fine fuels that previously carried wildfire through the region; settling, plowing, and irrigating the valleys, which created new firebreaks between mountain ranges; and eliminating Native American ignition practices.

In addition to reducing fires, settlers high-graded the pine forests, leaving behind the firs which were seen as inferior. The region was settled during a period when the United States was operating on a wood economy. From train tracks to smelters, wood was the construction material and energy source for everything. And pine was the choice wood. Forest highgrading, coinciding as it did with a wet period in the climate cycle of the region and the great reduction in wildfire, resulted in a new forest that was dramatically different. As Figure 1 illustrates, a pine forest with around 30 trees per acre is now a forest that is predominantly fir, with densities of over 500 trees per acre.

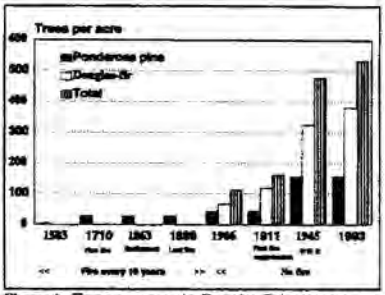


Figure 1. Trees per acre in Douglas-fir/western snowberry habitat type: Sample plot in the Boise National Forest.

A wildfire in those long-needled pine forests today is not a natural event. It is a stand-replacing crown fire that will reach far greater heat intensities, and do far more significant soil and watershed damage. If it occurs in a dry cycle, today's wildfire could change this dry forest into a semi-desert for decades, if not centuries.

We must also face the reality that today's landscapes are different. With houses, towns, farms, recreation facilities, and businesses scattered across the landscape, we simply cannot accommodate large-area, high-intensity wildfires. The Yellowstone fires of 1988 unleashed a political firestorm on wildland managers, and they occurred in a region that is about as sparsely settled as any in the West. Fires of this magnitude and intensity, in far more populous regions, are a virtual certainty if we continue to allow forest fuels to build up on the federal lands. Imagine the cost and political fallout when that occurs!

Up against that daunting possibility, we must fact the fact that these forests, if they are to regain a more natural character, must have periodic fire. Today's fuels are so heavy and unnatural that fire is not acceptable, so the only logical option is to reduce fuel loads. That means thinning, salvage logging of dead and dying trees, and selective removals that help shift the species mix back toward the more historical range. It also means the careful re-introduction of fire, even when it is only to burn the limbs and

foliage after thinning as a means of reducing fuels, recycling nutrients, and providing the "fire pulse" needed for some of the species.

In some places, high up in the mountains where stand-replacing fires were the norm, small areas within the forests should probably be clearcut, or some other even-aged management technique used to mimic the stand-replacing fire effect.

The goal of this manipulation is to begin to re-diversify the landscape so that it becomes a complex patchwork of forest ages and conditions. This is, we feel, the best opportunity to allow the habitat for all species to exist. If the entire landscape is either old forest or young forest, or no forest, then some species are favored while others have no home. It is also the best way in which to cope with inevitable wildfire. You can't prevent these fires; they are going to happen. What management can do, however, is affect the intensity and area they impact. Wildfires can be kept to smaller areas, and more normal intensities, which will not only favor species but accommodate the reality of today's more populated and settled regions.

Such treatment would dramatically affect the financial impact facing the Nation. As Figure 2 shows, wildfire suppression costs are heading out of control. The National Commission Report warns that, unless the nation begins to spend more on preventative efforts, through ecosystem management techniques, these costs will continue to spiral.

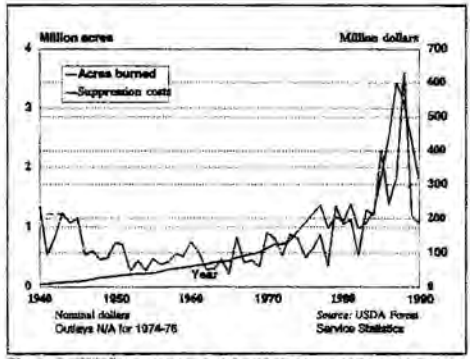


Figure 2 Wildfire acres burned for 11 western states and suppression outlays for the U.S., 1940-1990. Source: USDA Forest Service, 1994.

The message we are trying to bring to you today is that there are millions of acres of federal forest in the inland west that need immediate intervention to prevent an environmental and economic disaster. Some of these forests are roaded; some are roadless. They exist in a variety of physical locations, and exhibit different characteristics. They need different management techniques, according to what conditions exist.

On some of these forest sites, clearcutting would be a disaster. Doing nothing under the current situation might be an equal disaster. On some sites, roads may be essential;

on others, the product values and the topography may support helicopter operations, and an excellent forest stewardship project could be carried out without a road -- and maybe at a financial profit, given the current timber prices. On some sites, clearcutting in small patches may be essential to get the species regeneration needed.

The point is that legislation that affects the entire federal forest land base cannot foresee all these different needs. Just as the tendency to move every acre of federal forest timber management into a clearcut-replant industrial forest production system was wrong in the past, the effort to dictate totally different management schemes across the entire landscape is wrong today.

We join the sponsors and supporters of HR 1164 in urging the federal agencies to abandon the past, and to eliminate clearcutting as the silvicultural option used on all situations. But we equally oppose the effort to dictate other management options across complex landscapes with a legislative mandate. It is essential that we take a more sophisticated and realistic look at the situations facing the nation.

We have no forests remaining that are unaffected by human settlement. Many of the roadless areas of the west have been logged at least once -- often with flumes and splash dams and other methods that were environmentally abhorrent compared with a decent road system. We have unnatural forests almost everywhere. Our goal must be to return most of them toward more natural conditions, and in many cases, that will require sensitive, site-specific, active intervention. The debate stirred by H.R. 1164 is a good way to progress toward policy that encourages such intervention. It is, however, not the right answer.

What is needed, instead, is support for the conversion underway in the federal agencies. They are eliminating clearcutting as the prevailing silvicultural method. That should be applauded. They are instituting a different approach, called ecosystem management. That is in the right direction and should be encouraged. They are greatly hampered in doing needed forest treatments by a cumbersome, top-down, often-conflicting set of planning and assessment rules. Those should be simplified and streamlined. They are limited in their administrative tools to timber and salvage sale contracts that set up a set of perverse incentives that do not allow the forest contractor to profit from leaving the forest better as a result of forestry activities. All these things need to be changed, and that is a significant forest policy agenda for this committee. We just do not feel that H.R. 1164 is an appropriate basis from which to begin this important task.

We appreciate the chance to offer our views, and would be happy to respond to any questions the Committee may have.

Mr. VENTO. We are going to be out of here by 1:00. Mr. Crandall, from the American Forest and Paper Association. Welcome.

Mr. CRANDALL. Mr. Gladics will go now.

Mr. VENTO. Oh, I am sorry.

Mr. GLADICS. We would like to switch if that is possible, sir.

Mr. VENTO. To do what?

Mr. GLADICS. To switch our testimony.

Mr. VENTO. Oh, sure. Fine. Okay. How do you pronounce your name?

Mr. GLADICS. It is Gladics.

Mr. VENTO. Thank you. Please proceed.

STATEMENT OF FRANK M. GLADICS

Mr. GLADICS. I am a Vice President of Western Forest Industries Association out of Portland Oregon, and I am here today to represent our members as well as the members of the American Forest and Paper Association.

I come here because I strongly disagree with H.R. 1164's premise, and to express my concerns for the future of our Federal forests.

I believe the bill is bad for forests, it is bad for people and the public, and it is going to be bad for some of the creatures in the forest.

I believe it will ultimately result in more forest devastation than all the past clearcutting by federal land managers, because it ignores centuries of natural occurrences which very clearly show that many species rely on even-aged events, both man and natural caused.

The part of biodiversity this bill ignores is successional forests and the wildlife which depend on those forests that are in that early successional stage.

Many game species, such as deer, elk, moose, turkey, grouse and others, are dependent on openings in the forest larger than a single tree or a few trees.

This morning you heard Mr. Ross remind you that there were loggers, foresters and others who supported H.R. 1164. I remind you that in some of the past hearings, the Tennessee Wildlife Resource Agency wrote to Representative Volkmer and opposed the bill because they felt they needed even-age management to manage the game.

The Wild Turkey Federation passed a resolution that supports and recognizes all silvicultural practices being needed, and including clearcutting and even-age management when balanced with other forest and wild life practices.

My friends in the southern section of the wildlife society, not a group that I usually agree with, echoed that same resolution.

So, you will find people on both sides of this issue that are, "qualified scientists," and there is a valid question.

The empirical research shows that diversity does result from even-age management and, in fact, in an on-going research study on the Argonne Experimental Forest in Wisconsin, your neighboring state, scientists found that even-age practice results in more species diversity and uneven-age practices reduce species diversity,

but not to the extent of no management, which is what this bill would call for in my view.

The study concludes by stating to maximize diversity, managers should use even-age management. I believe the ban on clearcutting is also short sighted. There are species which depend on large stand replacing events.

The Kirkland Warbler is one of those that utilizes the young Jack Pine stands in Wisconsin, Michigan and parts of Minnesota, and I believe the words in H.R. 1164 could quite possibly result in the extirpation of that species.

If Congress moves forward with this bill, I believe Congress, not the land managers, should take the responsibility for population decreases which result, and it would be, in my mind, Congress, not land managers, that should be subject to the sanctions of the Endangered Species Act.

We have bills that are meant to protect all species from all successional stages. As others have said, the forest service has reduced clearcutting. We can fight about facts and figures, but in fact they have been doing that.

The bill also severely limits salvage logging. That damns the American public to more catastrophic fires than we are currently paying for.

As more people move into the forest urban interface, the use of fire will become increasingly less popular. Insects, disease and fire spawned on Federal land will assuredly spill over onto private forest lands, and I believe the Government should be held accountable for compensation to the private landowners when their private property is damaged by these events.

It is unconscionable to me to prohibit salvage logging of dead and dying timber. We don't believe the American public will accept legislation that willingly leaves most of the timber in the forest to die and rot. We believe they use it.

This bill has a new provision that is extremely troubling to me. It bans road building in all RARE II roadless areas. That is the single largest land use set aside in the history of this nation. We have been through a series of wilderness bills, and have spent over two hundred and fifty million dollars in a forest planning process where the public expressed the desire to have nearly sixty million acres of RARE II area managed for multiple-use needs.

The proposals in this bill would obliterate the compromises that have been made, and would ignore the local input that was put into those bills.

The provisions to eliminate any forest service employee or others from serving on the biological committee represent a most insidious exclusion of valid and, I believe, important expertise.

This is analogous to me of removing doctors from the national health care system, and the result will be the same. The patient will suffer, and some will die.

The question left when I look at this bill is not how will we manage our Federal forest, but how much forest will we have to manage, because as Mr. Sampson told you, we will lose vast amounts of our forests to catastrophic events.

Our population is growing and the demand for wood products is not getting smaller, even with every attempt, which I think is good, to recycle and use other products.

We expect the population in this country to grow double in 63 years from the data that I have seen. We can't afford further land use set-asides that leave our land unmanaged and at the whim of nature to manage, because nature manages in a much more larger style than we have ever conceived of. Just look at Mt. St. Helens. Look at the hundreds of thousands of acres fires in the fire history of Oregon. Look at the intermountain west for your fire history.

Congress has already established direction to reduce the amount of clearcutting in the Federal forests, and we believe that the Federal land managers have done a remarkable job in meeting this direction.

With timber sale levels having fallen eighty percent in the last five years, we only wish that they would take timber targets set forth by this body half as seriously.

H.R. 1164 is not just an anti-clearcutting bill. The question you must ask yourselves is whether this legislation will allow land managers to take advantage of natural processes to help meet America's demands, or whether it is a giant step backwards which only meets the demands of those who would have no management on the Federal land.

Mr. Chairman, Western Forest Industry Association opposes this backwards step, and urges you to relegate H.R. 1164 to the trash bin of history.

I appreciate the opportunity to testify before the subcommittee and I am happy to answer any questions you might have.

Mr. VENTO. Thanks.

[Prepared statement of Mr. Gladics follows:]

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WRITTEN STATEMENT FOR THE RECORD

Of

Frank M. Gladics
Vice President

Of

Western Forest Industries Association

Before The

United States House of Representatives

National Parks, Forests and Public Lands
Subcommittee

of the
Natural Resources Committee

May 5, 1995

I want to thank the subcommittee for the opportunity to testify on H.R. 1164 *The Forest Biodiversity and Clearcutting Prohibition Act of 1993*. My name is Frank Gladics; I am Vice President of Western Forest Industries Association in Portland, Oregon. I am here to testify on behalf of the Western Forest Industries Association and the American Forest & Paper Association.

Western Forest Industries Association represents over 100 companies in 12 western and upper midwestern states who depend on healthy federal forests for their economic survival. The American Forest & Paper Association represents over 450 companies in all forested states, who, likewise, depend on healthy federal forests.

I've traveled back to Washington DC to testify on this legislative proposal because I strongly disagree with its premise, as well as to express my concern for the future of America's forests if this legislation is implemented.

As a professional forester, with nearly fifteen years of public and private land management experience, it is my personal opinion that *The Forest Biodiversity and Clearcutting Prohibition Act* is the single most detrimental and misguided piece of natural resource legislation ever proposed. After three years of hearings, by several House of Representatives' subcommittees, which all highlighted serious flaws in this legislation, we are extremely disappointed this committee would choose to re-address this legislation.

Western Forest Industries Association opposes this legislation in the strongest manner possible. Due to its impacts on federal revenues, as well as its potentially costly nature, we believe this legislation be scored by the Congressional Budget Office to help the American public better understand the potential costs of this bill.

I. H.R. 1164 Is Bad for the Forests, It is Bad for the American Public, and Is Bad for many of the Creatures Which Live in Our Forests

H.R. 1164 proposes to do away with not only clearcutting, but also with all even aged management practices on federal forests. It restricts the ability of land managers to salvage dead and dying timber from those forests and I believe it will ultimately result in more forest devastation than all the past clearcutting by federal land managers.

Although the sponsors of this legislation believe its passage will benefit the forests and the creatures which depend on those forests for their survival, the legislation ignores centuries of natural occurrences, which very

clearly show that many species rely on even-aged natural and human caused events for their survival.

Humans have been very good at manipulating their environments for many generations. Records of humans using tools and fire to control and manipulate plants and animal communities date back nearly 2.6 million years.[1] Many of man's past practices mimic those found in nature. Many species of trees and the animals that depend on forests have adapted, and now are dependant on the earliest seral stages of succession, for their survival.

Before passing legislation, this committee should examine the history of fire, flood, wind storm, volcanic eruptions, insect and disease attacks, and indigenous Native American's land management practices. It should examine the needs of all animals, not just those dependant on late successional stages for their survival. The evidence is very clear; most forest species are well adapted to dealing with natural or man caused stand replacing events. One only has to examine what's happened around Mt. St. Helens in Washington state to see that animals and vegetation are much more resilient than we give them credit for.

Many tree species, Oak, Pine, Aspen, Willow, and to some extent Douglas-fir and Spruce require direct sunlight and soil scarification to reproduce and thrive. The implementation of uneven aged silvicultural practices forced by H.R. 1164, directly contradicts centuries of natural events. Many species are dependant upon large, stand replacing, natural or human caused occurrences. In fact, some species which exhibit this dependence are currently listed as threatened or endangered. Part of biodiversity (the part H.R. 1164 ignores) are those stands which are in the early successional stages and those creatures which depend on that early successional habitat.

Some species, like the Giant Sequoia, Aspen, Lodge Pole Pine and others, thrive due to fire. Giant Sequoia and Ponderosa Pine both need frequent low intensity fire to control other shade tolerant species which eventually crowd out Sequoia and Pine reproduction.

I am not arguing that all forests must be managed through an even-aged management regime, rather that the land managers need the ability to utilize both even-aged and uneven-aged management.

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[1] T. Bonnicksen, Univ. California paper at Conference on Sustainable Ecological Systems, Flagstaff, AZ July 1993.

Beyond nature's dependance on stand-replacing events, there are some very practical economic and social implications which argue against a ban of even-aged management.

If Congress intends to produce wood fibre from our federal forests, a switch to uneven-aged management will require more roads to produce similar amounts of wood fibre. An examination of European forest practices, where they practice more uneven-aged management due to species composition, shows an open road density two to three times higher than that found on our federal forests. Additionally, studies show the costs of logging dramatically increases as a result of uneven-aged management. Unless many more acres are made available for harvest, uneven-aged management will also reduce the amount of timber available from federal lands.

Given Congressional direction to convert to ecosystem management, while at the same time place more acres out of timber production, one must conclude a ban of even-aged management will all but eliminate fiber production from federal lands. Our members feel H.R. 1164 is a thinly veiled effort to stop all timber management on federal forests, and we strongly disagree with this legislation.

More important than the economic health of our members, is the health and viability of our federal forests. Many of the species which currently live in our forests are dependant on even aged forest disturbance to thrive. Many of the big game species, such a deer, elk, moose, etc. are critically dependant on large forest openings. Other important game species such as turkey, grouse, and other game birds also rely on large forest openings and the early successional plants which grow in these openings.

In 1989, the Tennessee Wildlife Resources Agency wrote Representative Harold Volkmer, concerning a proposed ban on even-aged management, to oppose similar legislation to H.R. 1164. The Wild Turkey Federation passed a resolution in July of 1991 which states:

> "[that] the National Wild Turkey Federation supports all recognized silvicultural practices of even-aged forest management, including clearcutting, when properly executed and balanced with other forest and wildlife management practices."

In November of 1991, the southeast section of The Wildlife Society echoed the Wild Turkey Federation's exact words on the need for even-aged management, including clearcutting.

In spring of 1992, the Ruffed Grouse Society testified in front of the Forest, Family Farms, and Energy subcommittee in opposition to H.R. 1969 *The Biological Diversity and Clearcut Prohibition Act of 1991*. Nothing in H.R. 1164 addresses the legitimate concerns of the professional wildlife management groups listed above.

This legislation, through its title, masquerades as one which will protect biological diversity. As previously stated, there are many species which thrive in early successional stage forests. If our land managers cannot utilize a variety of land-management tools to ensure a broad array of successional stages, some species will be adversely impacted.

This has been shown to be true by many western land managers who note populations of game species such as deer and elk thrive after natural and man-made disturbance, as well as by empirical research in the East which shows more biodiversity resulting from the practice of even aged management strategies when compared with uneven aged management practices. In an ongoing 20+ year research study on the Argonne Experimental Forest, researchers found:

1. acres where no management occurred experienced a **decline** in species diversity; that
2. even-aged practice resulted in **more species diversity**; and
3. uneven-aged practice **reduced species diversity**, but not to the extent of no management.

The study concludes by stating: "**To Maximize diversity managers should use even-aged management.**"(emphasis added)

Given the preponderance of evidence supporting the practice of even-aged management, why would Representative Byrant and the co-sponsors of this legislation push for its passage? We can only conclude this legislation has little if anything to do with science or protection of the environment; rather, the co-sponsors have been convinced by elitist preservationists to stop all harvesting on federal lands.

II. The Ban on Clearcutting is Short-sighted and Potentially Devastating to Some Endangered Species

As previously stated many tree species thrive on even age stand replacement events. In fact, many cannot survive long periods of closed canopy conditions. The forests and species which depend on early successional conditions need large scale disturbance to reproduce and thrive.

Some game species also must have early successional conditions to survive. One species, which is currently listed as endangered, must have

young growth Jack Pine to survive and reproduce. The Kirkland's Warbler utilizes young Jack Pine stands in Wisconsin and Minnesota. If these stands do not experience stand-replacing fires, the Warbler populations are greatly reduced. Land managers have clearcut hundreds of acres to replace overly mature Jack Pine stands to help ensure the survival of the Kirkland's Warbler. The passage of H.R. 1164 would doom this type of management, and quite possibly the Kirkland's Warbler.

This is not an isolated instance. Clearcutting has been used in Minnesota and Michigan to increase populations of White Tail Deer to ensure a food source for the endangered Grey Wolf. Moose, Redtail Hawks and other less glamorous species, all utilize clearcuts to gather sustenance.

Even the current Chief of the Forest Service, Jack Ward Thomas, wrote in his Blue Mountain Study that:

> [d]eer and elk have been reported to use man made openings in the forest more than natural openings. Information in the Blue Mountains indicates that elk readily use clearcuts..."

If passed H.R. 1164 will result in conflicts with other legislation, such as the Endangered Species Act, which can only be resolved in the courts. More importantly, other non-listed species currently in no danger of extirpation will face habitat challenges resulting in listing under the Endangered Species Act. If Congress moves forward with H.R. 1164, we believe Congress, not the land managers, should take responsibility for all population declines which result from the ban of clearcutting and even-aged management.

Finally, our members are extremely frustrated that Congress continues to entertain this legislation without regard for the reductions in clearcutting that have been implemented on our federal forests. To begin, harvest levels on our federal forests have been reduced by 80 percent or more since 1987. During that same time period, the Appropriations Committees of Congress directed the Forest Service to reduce the use of clearcutting on our federal forests. The Forest Service has responded and reduced the levels of clearcutting from 243,005 acres (30 percent of all harvest activity) in 1985 down to 132,674 acres (18 percent of all harvest activity) in 1993. This is a nationwide trend and is not the result of injunctions in the Pacific Northwest. For instance: (1) over 18,500 acres were clearcut in California in 1987. Only 9,800 acres were clearcut in 1992 (a 47% reduction). In the Southeast the trend is similar, over 105,000 acres were clearcut in 1987, but only 38,000 acres were clearcut in 1991 (a 64% reduction).

Compared to the hay-days of forest clearing, when for the sixty years between 1850 and 1910 American farmers cleared over 4947.9 square miles of

forest land a year, every year for sixty years[2], the 207.3 square miles clearcut on our federal forest in 1993 is insignificant. If the wildlife and biodiversity withstood the assault of the late 1800's, why should the American public believe the "sky is falling" rhetoric encouraged by H.R. 1164?

Given this progress and the need for some early-succession management, we are at a loss to understand why this subcommittee even entertains this legislative proposal.

III. The Ban on Salvage Logging is Misguided and Detrimental to Overall Forest Health

Whether Congress outlaws clearcutting or not, nature will continue to clearcut. H.R. 1164 limits salvage logging to "within any 30 year period, of a greater basal area than 30 square feet per acre of dead, damaged, or other trees, or combinations of such trees." Given this limitation, none of the following forest rehabilitation work could have been completed: (1) the clean-up in South Carolina after hurricane Hugo; (2) the removal of hazardous trees in Yellowstone Park, after the 1988 fires; (3) the rehabilitation of the Mt. St. Helens complex; (4) the rehabilitation of countless catastrophic fires; (4) the removal of insect infested trees in countless forests; (5) the removal of dead trees which resulted from the fires in and around Boise, Idaho; (6) the removal of trees which blocked major travel routes on the West Coast after the Columbus Day Storm in the 1960's; or (7) the removal of fire hazardous trees in and around the Tahoe Basin in the late 1980's to protect vacation homes from possible cataclysmic events.

This legislative proposal demands the American public accept the cost of many more catastrophic fires than we currently pay for. In 1930 we burned over 50 million acres of forest land in this country[3]. In the 1960's, 1970's, and 1980's the wildfire levels fell to between 2 and 5 million acres. This occurred as a result of aggressive fire prevention efforts, salvage of dead and dying timber, and an excellent transportation system which allowed ready access to most forests. With reduced harvest levels comes reduced roading. The increase in fuel loading which will occur as a result of H.R. 1164, will astronomically increase the costs of fire fighting.

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[2]. MacCleery, D. 1992 *American Forests A History of Resiliency and Recovery*, USDA FS-540\Forest History Society pp. 21

[3]. Doug MacCleery, *American Forests A History of Resiliency and Recovery*; US Department of Agriculture FS-450 & Forest History Society, 1992.

As more people move to the forest\urban inter-face, large catastrophic fires will become increasingly less popular. Additionally, there will be an increased demand to rehabilitate and plant areas which have suffered catastrophic events. Finally, Congress will be forced to fund these projects out of general funds due to the likely complete collapse of the Salvage Sale Trust Fund. If Congress places a salvage restriction on federal lands it will be the lands and the public which will suffer.

Finally, such a provision will result in the destruction of significant amounts of private property. Insects, diseases and fires started on federal lands will assuredly spill over onto private forest lands. In these events, the prudent landowner will bring legal action to force the government to compensate them for the loss of timber value, as well as other property value.

"Timber mortality increased substantially between 1986 and 1991, in all regions, on all ownerships, and for both hardwoods, and softwoods."[4]

Given this fact, we can only expect more fire and devastation in our forests. According to the 1992 Forest Resources of the United States Assessment annual mortality averaged 4.2 billion to 5.5 billion cubic feet between 1896 and 1991. Softwood mortality was up 18% between 1986 and 1991 and hardwood mortality was up 34% in the same time period. Nothing indicates this trend will abate. Rather, provisions of H.R. 1164 indicate the trend will become worse.

It is unconscionable to prohibit the salvage of dead and dying timber when the condition of our federal forests are in decline. We do not believe the American public will accept a government that willingly leaves 70 percent of dead trees in the forest to rot.

IV. The Ban on Road Building in RARE II Areas Has Little To Do With How Forest Stands Are Managed

H.R. 1164's provisions to ban road building in all RARE II areas is the functional equivalent of the single largest land-use set-aside in the history of this nation. The Forest Service estimates there are 60 million acres of unmanaged RARE II areas within the National Forest System. Through a series of wilderness bills and the completion of forest plans, for each national forest, the public expressed the desire to have 53.9 million acres of the RARE II areas managed for multiple-use needs. H.R. 1164 would set-aside more than twice that recently set-aside by President Clinton's Forest Plan.

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4. Powell, D., 1993 *Forest Resources of the United States, 1992*, General Technical Report RM-234, pp 2

Up until this time, questions related to how the individual areas should be managed have been answered through the process of developing complicated Environmental Impact Statements (EIS) which examine all facets of any proposed entry to a roadless area. Further, most states have second and third generation wilderness bills which set some of the RARE II areas aside as wilderness and opened the remaining areas for consideration for active-land management. In the case of the wilderness bills, it is Congress that makes the decision concerning which areas should be Wilderness and which should be available for active-land management. In all cases, these wilderness bills only moved forward if both Senators of an individual state agreed with the proposal. Passage of H.R. 1164 negates all past compromise, as well as the wishes of many state Congressional delegations.

Up until this time Congress has seen fit to allow the local people to decide how much, where, and when wilderness should be added to the system. The addition of the ban on roading in RARE II areas in H.R. 1164 breaks with tradition and clearly delineates why Westerners are so mistrustful of the eastern based preservationist's movement. Westerners are frustrated that these people are willing to interfere with local western decisions and are not more concerned with their own nests (the Eastern seaboard) fouled as it is.

The proposed ban on road building in RARE II areas is not germane to the other provisions of this legislation. Like the entire legislative proposal it should be scrapped.

V. Citizen Suit Provisions of this Legislation Will Result in Further Polarization and Will Likely be Abused by Special Interest Groups and Lawyers

The continued insistence by co-sponsors for a citizen suit provision and language which requires the United States Government to waive its sovereign immunity, including that of its employees, will ensue a number of negative results. As fickle as Congress is, no one in their right mind should be willing to hold any position of responsibility faced with the risk of personal lawsuit. This provision of H.R. 1164 will only foster the costly and damaging trend we now see in land management. Lawyers will be encouraged to bring suit in hopes that their "reasonable costs and fees" will be covered. Money which could be spent to improve our land-management practices will instead be spent to defend against a swarm of nuisance lawsuits from a new cottage industry.

One only has to examine the bills submitted by the Sierra Club Legal Defense Fund (SCLDF) in *Seattle Audubon Society vs. Chief Thomas* (the first Dwyer Northern Spotted Owl case). In that case, SCLDF submitted substantial claims under the Equal Access to Justice Law for time spent lobbying members

of this subcommittee and the Interior Appropriations Committees on Northern Spotted Owl issues. Although the court did not see fit to compensate SCLDF for its lobbying efforts, the fact remains SCLDF was willing to explore whether or not the courts would pay them to lobby. If that type of questionable behavior can occur under the Equal Access to Justice statutes, we have no doubt it will be exploited under the provisions of H.R. 1164. Although there is no way of fully assessing how much this provision may cost the government, this too should be scored by CBO to understand its budget implications.

VI. The Call for a Committee of Scientists to Ensure Conservation of Biological Diversity is Bias

Management which only reflects the recommendations of science will likely fail because it ignores the legitimate concerns of the public relating to economic feasibility, social acceptability, and political reality. While we support the concept of asking the scientific community to develop strategies for maintaining or enhancing the biological diversity of our federal forests, we think it shortsighted and naive to entrust such far reaching decisions into the hands of only the scientists. Furthermore, we cannot accept, and will oppose with every ounce of energy we can marshal, any committee which knowingly eliminates valid expertise. The provisions of section three, which eliminate any Forest Service employee or any other public entity employee from serving on the committee, are biased and represent a most insidious exclusion of valid and important expertise. Yet, legislation does not stop there! It goes on to eliminate "any entity engaged in whole or in part in the production of wood or wood products."

So if we read this section correctly, the Scientific Committee can have no foresters, no university professors (since almost all directly or indirectly receive public monies), no federal biologists, no wood product employees, nor any biologist who has consulted for a public entity, forest products company, or association within the last five years. Who does that leave to serve on the committee of "experts"? It only leaves special interest representatives who profess the need to stop all timber management on federal land. Don't waste ten years of salaries on these people, we already know where they stand on this issue!

The provisions on the Biological Committee of Scientists are analogous to eliminating all health care providers, including doctors, from the proposed National Health Care system, and it will result in the same condition; the patient will die. In this case, Congress will have thrown 100 years of progress in forest management out the window.

For our members to support this concept, or any other legislative proposal, Congress must develop an open and fair process where **all** experts on forest-land management can provide input.

VII. Provisions Which Eliminate the Practice of Even-aged Management on Native American Land Infringe on the Rights of Those Landowners

Generations of Native Americans utilized even-aged management to control vegetation and species diversity throughout the Americas.

> "At the time of European contact, many Indians were horticulturalists. In the East and Southwest they were mostly farmers. Agriculture -- maize, beans, pumpkins, squash -- provided at least half their subsistence[5]. Agriculture originated in America about 10,000 years ago; about the same time it had in the Middle East[6]. By 1500, tens of millions of acres were cleared for crops, Native peoples everywhere in North America also set fire to hundreds of millions of acres on a regular basis to improve game habitat, facilitate travel, reduce insect pests, remove cover for potential enemies, enhance conditions for berries, drive game, and for other purposes."[7]

Given the recent pronouncements concerning what good land stewards these people have been, we are puzzled that the ban on even-age management by provisions of H.R. 1164 would be imposed on the Native American community. Surely this Congress and Administration will not impose these restrictions on the very tribes which are the most experienced land managers in North America. -- The very people who have utilized even-aged management, fire, and clearing (clearcutting) for centuries.

VIII. The Finding and Purpose Statements of H.R. 1164 are filled with Unproven Claims and Errors

Given the importance of the findings of any legislative proposal, we request the Subcommittee carefully review these sections to ensure accuracy and fact. In our opinion, nearly every one of the 17 findings contain serious mis-statements of fact, or include conclusions which are not supported by pier reviewed data.

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[5] Smith, B.D. 1899, Origins of agriculture in eastern North America, *Science*, 246 (1989) pp. 1566-71.

[6] Smith, B.D. 1989. Origins of agriculture in eastern North America, *Science*, 246 (1989) pp. 1566-71.

[7] MacCleery, D. Unpub. Understanding the role of the human dimension has played in shaping America's Forest and Grassland Landscapes.

We believe the findings of this legislative proposal should be reviewed by a panel of competent, non-biased, land-management experts. Those findings which are not supported by a preponderance of pier reviewed scientific data should be removed.

IX. The Question Left Begging by H.R. 1164 and Similar Legislation is -- Not How to Manage our Federal Forests, But -- How Much Forest Will We Have to Manage.

It is estimated there were 1,100 million acres of forest land in 1600. Today with our population at over 256 million people, we have 730 million acres of forest land in this country. With population expected to continue its upward spiral, the last thing the American public needs is for our government to take the federal forests out of production. H.R. 1164 would do just that.

Since demand for wood products "almost precisely follows the growth in world population"[8] and the population of the United States is expected to double within the next 63 years, this country cannot afford anymore set-asides of forest land.

Even though growth on our forests exceeds mortality and removals, the fact remains each year we loose a few more acres to land conversions. These are permanent conversions. The combination of conversions to a non-forested condition with America's ever increasing populations, which demand wood products at a rate at least 3 times that of most of the rest of the world's population, is a prescription for disaster.

We have now entered a period when our government is also withdrawing vast amounts of timberland from production. These acres, while not technically converted from forest land to non-forest land status will be lost from production. If the forest health trends I mentioned earlier are true, many of these lands will deteriorate to the extent they will not be available to help meet America's insatiable demand for wood products. Rather, some future Congress will be forced to expend hundreds of millions of dollars to rehabilitate these lands in hopes they will someday be used to meet my grandchildren's legitimate needs for wood products.

For a country, which is a net importer of wood products, to export its demands to those who are less developed and environmentally enlightened is the ultimate example of the NIMBY syndrome. Rather than working to lock our land

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[8]. Bowyer, J. 1994, *The Outlook in the Context of Global Raw Material Demand*, Unpublished pp. 17.

up, we should be working to understand how to meets the needs of all species, not just those which thrive in old-growth forests, but also those which thrive on the early successional stage habitat. And yes, humans are part of the ecosystem. H.R. 1164 will disenfranchise a significant number of humans. With the population projections described above, we cannot afford to adopt a hands-off custodial management strategy for our federal land; we cannot afford to disregard thousands of man-years of land-management expertise when setting up commissions charged with finding solutions; we cannot afford to ignore the reality that world demand for wood products will grow as long as populations continue to grow; and most importantly, we cannot afford misguided legislation like H.R. 1164. Our members implore this committee to table H.R. 1164 and to work with the public to find ways to make our federal forests productive while maintaining and improving the biodiversity.

X. Conclusion

As you gather by now, WFIA's membership thinks H.R. 1164 stinks! We understand that clearcutting may look bad to some people. We accept the direction from this Congress to reduce the amount of clearcutting on federal forests, and we believe the federal land managers have done a remarkable job in meeting that direction. We only wish they would take the timber targets set forth by this body, half as seriously.

If H.R. 1164 were only about clearcutting, it is very likely we would not have invested the time and money it took to come back to present this testimony. But H.R. 1164 is not about clearcutting. It is a wolf in wolf's clothing! It strips the federal land manager's ability to use the practice of even-aged management - a strategy which has worked for both Europeans and Native Americans for centuries. It will legislate a ban on road building, and therefore, active management on millions of federal acres. It also disregards a Wilderness bill process and all past compromises without regard for local input. It will cause many species which depend on early successional seral stages to suffer and quite possibly extirpate others. And finally, it will disenfranchise an entire profession. A profession responsible for much of the recovery our forests have experienced in the last 100 years.

If this committee would develop legislation that provides incentives to ensure there is no net loss of productive forest land in this country, you would be doing a great public service. If you would direct federal forest managers to develop strategies to prevent forest insect, disease, and fire and enhance the overall health of our forests, you would be doing a great public service. If you would direct federal forest managers to ensure most dead and dying timber is salvaged to meet America's burgeoning demand for wood products, you would being doing a great public service. In 1991, Kenneth

Fredrick and Roger Sedjo of Resources For the Future wrote in their report called *America Resources Historical Trends and Current Challenges*, that our forests are healthier and better managed than at any time in the last 100 years. Progressive legislation, developed in concert with all affected interest groups could be used to build on our federal land manager's records of 100 years of quality forestry management.

Mother nature will continue to manage the land. We will continue to see major catastrophic events which will change the face of our forests. Some will be un-avoidable but others could be avoided. We will continue to see species trans-locate and adapt to new conditions in the environment. The question you must ask yourselves is whether or not H.R. 1164 is legislation which will allow land managers to take advantage of the natural process, to help meet American's demands, or whether it is a giant step backward which only meets the demands of those who would have no management on our federal lands. Mr. Chairman, WFIA opposes this backward step and urges you to relegate H.R. 1164 to the trash bin of history.

I appreciate the opportunity to testify before this subcommittee and will be happy to answer any questions you might have.

Mr. VENTO. Mr. Crandall, I see you have the photographs here. Can you get this done in about five minutes if you try?

Mr. CRANDALL. Sure.

STATEMENT OF DOUG CRANDALL

Mr. CRANDALL. I am Doug Crandall, with the American Forest and Paper Association. My written statement closely parallels and should be associated with Western Forest Industries Association.

AFPA strongly opposes H.R. 1164, and rather than repeat similar comments that Mr. Gladics just made, I will utilize a more visual approach to explain our differences with the legislation.

Perhaps the most significant document in support of H.R. 1164 is the book, "Clearcut—The Tragedy of Industrial Forestry." In the next few minutes, I will discuss the book and use it to explain our opposition to what it and Representative Bryant are trying to accomplish.

AFPA is currently in the process of ground-truthing a number of photos in the book that were taken in the United States. Winter conditions have kept us from entering most of the areas until just the last couple of weeks. Our initial findings after ground-truthing some of them are; one, some photos demonstrate good practices and make good scientific sense and, two, some represent poor practices that are either illegal or no longer used in the United States and three, some are intentionally deceiving.

The cover photo is a good place to start. Could I pass these out to those folks, please?

The authors claim that this is a picture of a Weyerhaeuser harvest next to the Siouxon Roadless Area, of which by the way it is neither. Weyerhaeuser has never worked in this area, and the Siouxon Roadless Area is at least ten miles southwest of this location.

Nevertheless, to give you a better idea of what is actually happening at that site, I refer to photos A, B and C that I just gave you. As you can see, this location is near Mt. St. Helen's. In 1980 Mt. St. Helen's erupted and flattened over one hundred thousand acres of forest, and didn't just destroy the trees, but all the other vegetation as well.

Natural disasters have always shaped these forests, producing a variety of age classes across the forest and numerous relatively large openings in the canopy.

The other two photos show what the cover doesn't, and that is very successful regeneration.

What is also important is in the State of Washington, like it is in other states, the landowner must file a harvest plan with the state and have it checked and approved prior to harvesting. It must also be checked by the Department of Fisheries and Wild Life, the Washington Department of Ecology in the local county, and more important, the Washington Environmental Council has their opportunity to respond, and even take it to court if they want, or appeal.

These local checks and balances make much more sense than the national top down cook book approach as required in H.R. 1164. Furthermore, this approach coincides much closer with the direction the forest service is taking ecosystem management than I am aware of under Jack Ward Thomas.

Pages 122 to 123, show another example of what the authors call, "deforestation from industrial forestry." Again, the opposite is true.

The 1988 Klamath burn raced through this area in about ten minutes and it took most everything with it. Since then, the area has been replanted with all the native tree species that were originally there, including redwood, Douglas Fir, hemlock, western red cedar, Port Orford cedar, red alder, bigleaf maple, and on and on.

Due to these efforts, Turwar Creek in 1991, according to fisheries biologists, had a better fishery habitat, better condition of spawning gravels, more invertebrates, and many more anadromous fish than in 1978. This is also contrary to the written comments in the book.

Our photos d, e, and f, taken last week, show the successful reforestation of another one of nature's clearcuts.

Pages 190 and 191, Wyoming-Idaho, Yellowstone Park-Targhee National Forest, I am personally very familiar with this area, having spent most of the last eleven years working there and enjoying the forest in and around Yellowstone Park.

This photo deceptively leads one to believe that the park forest to the left are healthy and lush, as opposed to the devastated national forest to the right.

Again, the opposite is true. The park service, by eliminating wild fire over the last sixty years and in its failure to use prescribed burns, created an unprecedented condition where practically all the lodgepole pine forests were allowed to become old and decayed and ripe for insect and disease attacks.

Twenty-five years ago the mountain pine beetle took advantage of the situation and killed virtually every tree in the photo. In response, the Targhee National Forest began a vigorous campaign to salvage the dead timber and get new stands regenerated. Clearcutting was the primary prescription as there is scientifically—this is scientifically the best way to management lodgepole pine—as that is how it has managed itself through the eons.

The park service did nothing until the summer of 1988 when it found itself fighting 1.4 million acres of fire at the cost of well over a hundred dollars per acre.

Last week, photos g and h were taken within the park boundary on the lower part of page 193, down here, to demonstrate the deploring condition even six years after the fires.

The fundamental fact of forestry in the northern rockies is that, due to the dry climate, woody fuel accumulates faster than rot can decompose it. Before any human settlement, fire occurred naturally on a regular basis, keeping forests in a mosaic of age classes and keeping insects, disease, and excessive fuel buildup in check.

Native Americans, for a variety of self-serving and good reasons, used fire to an even greater extent than before. With European settlement came population increases and the reduction of fires and an accumulation of fuel.

The only two ways available for returning forests to a healthier mosaic of age classes is through the coordinated use of prescribed burns and timber harvests—both have their place in ecosystem restoration. Our photos i and j show the results of successful practices on the Targhee. Wildlife numbers on the Targhee are improving at

an increasing rate while those park lands that look so healthy in the Clearcut book are stagnant.

Using any long term forest health or biodiversity standards, the right side of the photo, is a much more preferable alternative than the left.

To take this one more step I've included four more photos [k, l, m, and n] which I took in Yellowstone Park in 1989 showing mud slides in three different river drainages resulting from spring rains on fire weakened soils, the Madison, Gibbon and Lamar River, by the way. Nothing from timber management has ever produced even a fraction of these erosion conditions in these regions—nor ever will.

The book does show a few bad practices. The photo on page 138 is a good example of that. It shows no buffer protecting the creek and has evidence of haphazard and unprotected stream crossings. This is an example of why I personally went into forestry in the first place—to make sure unacceptable practices such as this didn't happen.

Fortunately, now, forest service requirements and state forest practices prohibit such logging operations. Not because of my efforts, by the way. They were already happening at the time.

Finally, just for the heck of it, I've included one last photo, o, showing a recent clearcut on land owned by the Northwest Regional Director for the Sierra Club. Just for the heck of it.

While I don't doubt the genuine heart felt emotions of many who participated in the making of the book, "Clearcut," or that there are some deserving messages presented, I am, after studying and reading this monumental and extremely expensive book, disappointed and even alarmed at the work as a whole.

The lack of concern about accuracy, the end justifies the mean style, and the dogmatic spiritualism exemplify an emotion that may have a place in philosophy, but not in science.

In conclusion, I have visited a number of forests around the United States to discuss the implementation of ecosystem management. Each discussion renews my conviction that every forest has its own particular circumstances and needs, and that every management tool available to local forest managers should remain an option.

Top down management doesn't work in business and it won't work in forestry. H.R. 1164, if passed, will prove to hinder ecosystem restoration and be an obstacle to the long term health of our forests.

Thank you very much.

Mr. VENTO. Thanks. We will get back with a question or two, I think, in a moment.

[Prepared statement of Mr. Crandall follows:]

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FOREST RESOURCES GROUP

WRITTEN STATEMENT FOR THE RECORD

OF

DOUG CRANDALL
ASSISTANT VICE PRESIDENT,
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AMERICAN FOREST & PAPER ASSOCIATION

WASHINGTON, D.C.

BEFORE THE
NATIONAL PARKS, FORESTS AND PUBLIC LANDS
SUBCOMMITTEE

OF THE
NATURAL RESOURCES COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

MAY 5, 1994

Mr. Chairman, I am Doug Crandall, Assistant Vice President, Public Forestry, of the American Forest & Paper Association (AF&PA). I appreciate the opportunity to address you here today.

AF&PA is the national trade association of the forest, pulp, paper, paperboard, and wood products industry. The association represents member companies engaged in the growing, harvesting, and processing of wood and wood fiber. Our membership includes companies which manufacture solid wood products such as lumber, plywood and other panel products, as well as those which produce pulp, paper and paperboard products from both virgin and recycled fiber. Of the association's 400-plus company members, approximately 260 are solid wood manufacturers. The association is also the umbrella for more than 60 affiliate member associations that reach out to more than 10,000 companies.

AF&PA members make an important contribution to the U.S. economy. They employ 1.6 million people, enjoy annual sales in excess of $200 billion, and have facilities in all fifty States. AF&PA members account for over 7 percent of the U.S. manufacturing output, producing goods and nurturing a resource which enhances the daily lives of all Americans.

I. CLEARCUT -- THE TRAGEDY OF INDUSTRIAL FORESTRY

The most outstanding tool of the anti-even-age management coalition has become the Sierra Club and Earth Island Institute book "Clearcut -- The Tragedy of Industrial Forestry." The project director of "Clearcut," Douglas Tompkins, is co-founder of the apparel firm Esprit and the founder of the Foundation for Deep Ecology. This fits (so to speak) as much of the text of the book seems to be founded in deep --I would say very, very deep -- ecology.

The title is somewhat of a misnomer: it isn't simply a critique of a single forestry practice -- as its name implies -- but a broad based indictment of what is called "industrial forestry." This includes all forms of even-age management, as well as virtually all commercially feasible forms of tree harvesting, road building, equipment use, tree farming, modern capitalism, and free enterprise. In other words, all the means by which millions of people come to use and depend on wood products.

The editor, Bill Devall, professor of environmental studies at Humboldt State, supports the approach of reverting a majority of the North American continent to a wilderness condition utilizing holistic forestry. Readers are asked to "think like a forest" and are asked to engage in "tree meditations."

The many co-authors frequently use terms such as ecosystem or holistic forestry, deep ecology, and biodiversity in a tone that resembles spiritual worship rather than scientific method. For example, Reed Noss, contrasts biodiversity with a tree farm, but then after failing to define biodiversity, admitting that it is what he calls a "slippery concept," suggests we "move quick beyond definitions if we wish to apply the concept fruitfully to real conservation problems." In other words, this book is for people who don't want to be disturbed by trifles like definitions -- they know their god when they see it. The rest of us simply have yet to get the faith.

The notions of natural forests in this book are wholly sentimental -- they ignore the catastrophic effects of wholly natural phenomena like insect and disease infestation and wildfire. And while asserting that native Americans practiced a philosophy of forest protection the book neglects the fact that prior to European settlement indigenous tribes everywhere in North America were setting fire to hundreds of millions of acres on a regular basis to develop game habitat, promote berry growth, improve travel conditions, reduce insect pests, and other reasons.

While I don't doubt the genuine heartfelt emotions of many who participated in the making of the book, or that there are some deserving messages presented I am, after studying and reading it, alarmed in the work as a whole.

AF&PA is currently in the process of ground-truthing a number of photos from the book that cover forests in the United States. Winter conditions have kept us from entering most of the areas until just the last couple of weeks. Our initial findings after ground-truthing a few photos show that: 1) some photos demonstrate good practices that make good scientific sense; 2) some represent poor practices that are either illegal or no longer used in the United States; and 3) some are intentionally deceiving. In my oral testimony I will relay to the Subcommittee the results of this preliminary work. When our more complete analysis is done in another month we will see that every member gets a copy.

II. H.R. 1164 IS A THINLY DISGUISED EFFORT TO ELIMINATE TIMBER HARVESTING ON FEDERAL LANDS

A. AF&PA Strongly Opposes H.R. 1164

Though it is named the Forest Biodiversity and Clearcutting Prohibition Act of 1993, one only has to read the third section of this bill to understand its real aim:

> "In each stand throughout each forest managed or operated for timber purposes, the guidelines under section (g)(3)(F) shall **prohibit any** even-aged logging and **any** even-aged management after one year after the date of enactment of this section." (emphasis added)

We are strongly opposed to the passage of this legislation! It represents an effort by the preservation movement to totally eliminate the practice of forestry on federal lands. If passed, H.R. 1164 would result in the destruction of many of our forests, as fires, insects, and disease ravage our federal forest lands. Further, such neglect of the federal forests could foster a situation where natural catastrophes spawned on federal lands would grow in size to spill-over onto privately held forest lands resulting in liability to the federal government.

H.R. 1164 extends this management prescription to **all** federal lands by addressing the: (1) Federal Land Policy and Management Act of 1976; (2) National Wildlife Refuge System Administration Act of 1966; (3) Nation Indian Forest Resources Management Act Related to Indian Lands; (4) United States Code, Relating to Forest Management on Military Lands; and (5) Rangeland and Renewable Resources Planning Act of 1974. Such a law would eliminate a time proven management tool. Without even-age techniques, Federal land managers will be unable to restore forest health, fully implement ecosystem management, and to manage the land for many of the non-timber goals and objectives the American public desires.

B. The Findings in H.R. 1164 Misrepresent the Impacts of Clearcutting. The Findings Draw Conclusions Not Fully Supported by the On-The-Ground Evidence.

Many of the charges made in the seventeen findings either lack scientific support or are the topic of legitimate disagreement between credible scientific experts. In other instances the findings favor certain "deep forest" dependant species while ignoring the needs of species which depend upon openings within the forest to survive and flourish. Further these finding leave the impression that all federal lands are, or will be clearcut in the near future. In fact, over 60

percent of Forest Service lands have been allocated to land use prescriptions which severely limit or eliminate commercial timber harvesting.

Claims of reduced biologic diversity due to even-aged management simply have not been proven. Rather, research shows some species depend on open conditions while others species need other forest conditions. Many of the Threatened and Endangered Species such as the Northern Timber Wolf, Red Cockaded Woodpecker, and others including some neo-tropical migratory song birds, need forest openings, forest edge, or a more open grown forest to flourish. Other non-threatened species, such as deer, elk, moose, ruffed grouse, and American Turkey need forest openings in order to thrive. These openings can be furnished through natural events such a fire, windstorm, or insect and disease events, or they can be provided by the forest manager, through the careful application of clearcutting. To categorically state even-aged logging causes a substantial reduction in native biodiversity is an over simplification of what really occurs.

Clearcutting does expose the soil to direct sunlight. Direct sunlight and bare soil are is critically important to the regeneration of many species. Trees such as Lodgepole pine, Aspen, Oak, and the Southern yellow pines, due to their shade intolerance, require direct sunlight to reproduce. Additionally, harvesting through the use of clearcutting can be done with minimal disruption of the forest litter. Run off, erosion and soil leaching are not the problem portrayed in the findings.

Contrary to finding 4 in the bill that even-age logging results in increase stream sedimentation, siltation, and decline in water quality, there is real evidence that uneven-aged or selective management results in more impact than even-aged management. This occurs due to the need to build more roads, and enter the stand more often. Road densities on U.S. Forest Service lands are one third that of forests in Europe where uneven-aged management is more prevalent. Sediment resulting from road building and road use is far more prevalent than sediment from clearcuts. This occurs because ground cover is maintained in most clearcuts while forest roads have exposed surfaces which are subjected to water and wind erosion.

It is not clearcutting or the practice of even-aged management which decreases recreational diversity as described in finding 10. It is the manner in which the public and forest

managers allocate how each forest will be managed. In the case of our National Forest System, well over 60 percent is allocated to prescriptions which restrict or preclude the harvesting of timber. As these preserved acres mature, become old and decadent and die, we will experience reductions in the recreational quality of our national forests.

Selection logging is more intensive. While it may provide for more employment, it will also produce many more negative environmental impacts due to the need for more frequent entry to the stands. It requires maintaining a much more extensive road system, which will be utilized more often. Finally, for some species, particularly those conifers which are intolerant to shade, selective harvesting has not been shown to produce higher quality sawlogs. It can be argued that past attempts at selective management have resulted in low quality stands due to poor implementation of the strategy. Selective harvesting practices takes a much experienced person to ensure the stand is not high graded of the best, highest quality, trees. Past attempts to implement selective harvesting of federal lands have proven less than successful for a number of reasons, the least of which is the short time period most federal land managers are assigned to one duty station.

C. H.R. 1164's Emphasis on Natural Biologic Diversity Requires Technical Understanding Which Does Not Yet Exist

Many of the requirements of the biologic diversity provisions of H.R. 1164 are beyond the technical capability of the agencies. The bill unrealistically and unattainably relies on maintaining "natural" diversity. H.R. 1164 ignores Humans as having any rightful place in the natural order. Finally, like it or not, we Humans are part of our planet, our countries, and our forests, and yes, "natural" biologic diversity. To exclude humans from the equation is little more than an exercise in futility. Humans have lived in, depended upon, and influenced our forests for over 10,000 years. In our modern society we will continue to have a demand for products produced from our forests.

Humans have played a very large part in shaping how our forests looked and how they were used in past generations. It is generally acknowledged that Native Americans used fire to limit forest undergrowth. Are agency managers to mimic this state of our past "natural forests"? Or, should agency managers strive to replicate forests of an earlier epoch? Many forests in the

northern states experienced several periods when ice covered the land and killed all the forests. As the glaciers receded, forests went from Boreal, to Mixed Hardwoods, to Pine. In states like Minnesota and Wisconsin the forest ecotype has changed many times, all of which could be considered "natural". H.R. 1164 fails to reflect the changing nature of our forests and our climate. We do not have the ability to hold the world, especially its climate, in a state of suspended animation. The failure to specify what "natural diversity" is will make it virtually impossible for land managers to know how to manage the land. This will be further complicated by the use of citizen suits claiming that land managers are not working towards restoring the "natural diversity" of the land because varying groups will have distinctly differing opinions on what "natural" is.

While we support the need for better understanding of biologic diversity and support more research on this issue, we oppose the biologic diversity provisions of H.R. 1164 as written.

D. H.R. 1164 Ignores 100 Years of the Collective Wisdom of Congress and Natural Resource Mangers

Congress and the American public have developed a very comprehensive set of forest management and environmental management laws over the last 100 years. H.R. 1164 would amend 100 years of sound forest management and replace it with a paradigm which will result in potential short-term forest devastation.

Most recently, The National Forest Management Act (NFMA) of 1976 addressed the practice of clearcutting on the national forests in great detail. It set specific limits on how, when and where the practice would be used. It also recognized the critical importance of keeping this silvicultural tool available to deal with some forest situations on the national forests, such as the salvage of fire, insect and disease, or wind damaged timber.

Even-aged forest management has been practiced in this country even before Europeans migrated to our eastern shores. Native Americans used fire to clear the land for planting crops. Our forefathers cleared the land for farming and to produce wood for fuel and building materials.

Historically, over 95 percent of the wood harvesting in this country for energy was provided by wood. We cleared as much forest between 1850

and 1920 as are in our entire National Forest Systems, some 190 million acres -- nearly 13.5 square miles per day, every day for 60 years. Yet today our nation has over 730 million forest acres. Nearly 32 percent of our total land base is forested. Even though our population increased nearly sixty times since 1800, we still have slightly over two thirds the forests we had when the first Europeans came to this country. Through the wise implementation of forest management, including even-aged management and clearcutting, our forest are in better shape today than anytime since the Civil War.

If implemented H.R. 1164 would disrupt and set back nearly 90 years of forest management on our federal forests. We currently have well over fifty percent of all federal forest lands set aside for land use allocations which preclude timber harvesting. If our federal lands are to play any part in meeting our needs for wood fiber changing to selective harvest methods would have to be practiced on all federally forested acres in order to meet our increasing needs for wood products.

III. THE USE OF CLEARCUTTING AND EVEN-AGED TECHNIQUES MUST BE AVAILABLE TO FEDERAL LAND MANAGERS TO INSURE FOREST HEALTH AND WILDLIFE POPULATIONS.

A. Professional Land Managers, Professional Societies and Academics Recognize an Important Role for Clearcutting and Even-aged Management.

Virtually everyone with interest in the clearcut issues admits that clearcuts have visual characteristics which are problematic. However, professional land managers, professional societies, academia, and federal resource managers widely agree there is a critical need to maintain clearcutting as an accepted land management tool. Sound forest management, including even-aged techniques, which ensures forest regeneration has and will continue to assure that our forests will be productive. Unfortunately, the term 'clearcut' has, in the minds of many not fully familiar with forestry, become synonymous with the term "cut out and get out". Members of the environmental and preservationists movement have worked hard to perpetrate the myth that stands harvested on the Federal forests' will never regenerate into the forests that existed before harvest.

While the application of clearcutting can be limited, it would be a mistake of incredible proportion to ban clearcutting on federal or any other landownerships. The forest products industry strongly opposes any effort to ban clearcutting on any landownerships.

B. Many Species of Trees Require Open Growing Conditions to Thrive

A ban of clearcutting on our federal forests would favor those species which are shade tolerant and would make it much more difficult to regenerate some of our most important commercial species. Land managers would have a difficult time regenerating other species which are critically important for some species of wildlife.

Species like Lodgepole Pine, Jack Pine, Aspen, some Southern Yellow Pines and, to a lesser extent, Douglas Fir and Sitka Spruce, all require forest disturbances and open growing conditions to thrive. These trees need both direct sunlight and disturbed soils to regenerate. Nature provides these conditions through catastrophic events like wildfire, windstorm, and insect and disease attack. The fall windstorms in Southeast Alaska and the Pacific Northwest clear large areas of forest. Winds generated from downbursts in thunderstorms clear large swaths of forests in the rest of the country. Fire serves as another major disturbance and an equivalent to clearcutting. Through the centuries our forests have repeatedly regenerated from such events. The essential difference between man-made clearcuts and natural clearcuts is two fold: (1) man limits the size, shape, and impact of his cutting; and (2) man regenerates the stands he harvests much more quickly than does mother nature.

C. Professional Wildlife Managers Fully Support Clearcutting as a Needed Silvicultural Tool

Many of the professional wildlife groups fully understand the importance of clearcutting to ensure forest conditions will favor many wildlife species. Our success with Deer, Elk, Big Horn Sheep, and Moose all relate to the land managers' ability to provide forest openings where grass and shrubs thrive. Enlightened forest and wildlife management practices facilitated saving these popular species which were at the edge of being wiped out 60 short years ago. Clearcutting and even-aged management were integral tools in this recovery.

Even-aged management, including clearcutting, is a major tool for restoration of endangered species on the Lake States national forests. These species include the gray wolf, the Kirtland's warbler, and several neotropical migratory songbirds. Unfortunately, H.R. 1164 would prohibit the very tools foresters and wildlife professionals employ to maintain and enhance these species.

Clearcutting in the Minnesota national forests provides enhanced habitat for moose, deer and the small rodents which are prey for the endangered gray wolf. The Superior National Forest Plan points out the need for areas of larger disturbance to insure habitat for moose. Through larger numbers of prey stimulated by clearcuts, wolf populations have a greater chance of sustaining and increasing.

Recovery of the Kirtland's warbler depends on natural fire, or the combination of clearcutting followed by prescribed fire. Kirtland's warblers require a habitat of young jack pine 6 to 18 feet tall for nesting habitat. Only through continued disturbances can the proper habitat be created.

Clearcutting and other even-age management techniques are important in maintaining the diverse habitat requirements of Neotropical Migratory Birds (NTMB). These birds summer in North America, but winter in Central American and the Caribbean. While many of these birds require interior forest habitat, many other species depend on the edge effect generated from disturbed areas in the forest canopy. In an even-age managed stand after harvesting, an herbaceous growth stage is followed by woody, shrub growth, which results in a dense sapling stand. This type of regeneration provides distinctive forage and shelter for NTMBs. These conditions are unavailable in stands managed under uneven-age techniques.

No one type of site, silvicultural practice, or habitat structure can provide all the needs of the NTMBs. A variety of management techniques are needed to maintain habitat. Even-age management, including clearcutting are valuable tools in maintaining habitat. If clearcutting on federal land is abolished, as called for under HR 1164, one valuable tool in preserving NTMB habitat will be lost.

D. Some Regions and Forest Conditions Require More Clearcutting than Others

While there are some species of trees which require open-growing conditions to thrive, some forests benefit more from the practice of clearcutting than do others. In the Upper

Midwest, the Appalachian and Central Hardwoods, and to a lesser extent, the Pacific Northwest, clearcutting is a necessary tool if forests harvested between the mid 1800s to the 1920s are to be totally re-habilitated and transformed into forests which produce optimum levels of wildlife, recreational opportunities, diversity, and wood fiber.

In the upper Midwest states, our forefathers practiced "cut out and get out" forestry during the 1800s. In the late 1880s, the public recognized the folly of this practice, and by 1930 the U.S. Forest Service was well on the way to fully rehabilitating the forests. However, the stands in these areas are not of an age to produce the highest quality timber. The tree species that grow in these forests -- Aspen, Jack Pine, and Black Spruce, to name a few -- require frequent disturbance to regenerate and produce healthy productive forests. We, as a society, decided long ago that forest wildfires needed to be suppressed in order to protect forest, human, and property values. Clearcutting, as an even-aged management silvicultural system in the Great Lake states, and elsewhere, mimics fire in providing the means for renewing forests.

Many forests in the Appalachians and Central hardwood forests experienced similar past forest practices. It makes little sense to walk away from 60 years of forestry investment right when these forests are becoming the productive forests the American public desires.

In the Pacific Northwest, the Forest Service attempted to practice selective (uneven-aged) management from the 1920s through the 1940s and found it was unsuccessful for a number of reasons. Forest disease and regeneration failures plagued managers. In the late 1940s the Forest Service, after a number of years of research, decided to shift to even-aged management, including the practice of clearcutting. Forest health, vigor, and productivity have improved under this management strategy.

E. The Use of Clearcutting Should be Carefully Implemented, Taking into Account All Forest Goals and Objectives

While the forest products industry strongly believes in the legitimate need for maintaining clearcutting, we also expect federal land managers to employ even-aged techniques with care.

IV. THE FOREST SERVICE POLICY ON REDUCING CLEARCUTTING HAS ACCEPTABLE PROVISIONS, IF AGGRESSIVELY APPLIED BY FIELD MANAGERS

A. Progress Has Been Made in Reducing the Amount of Clearcutting

In the FY 1991 Interior Appropriations Bill, Congress directed a 25 percent reduction in the use of clearcutting on the national forests. The Forest Service has responded and in 1991 reduced by 34 percent the amount of harvesting done through clearcutting as compared to the amount done in 1988. In some regions, most notably the Southern Region (R-8), reductions have been even greater. In 1987 the Southern Region harvest 104,042 acres through the use of clearcutting. In 1991 that number was reduced to 38,461 acres -- a 64 percent reduction.

Implementation of the President's Forest Plan in the Pacific Northwest will greatly reduce the volume of timber sold annually compared to historic levels on the BLM O&C timberlands in western Oregon.

B. Current BLM and Forest Service Policy Provides an Effective Policy for Reducing Clearcut Acres

In a June 1992 directive, the Chief of the Forest Service announced a 70 percent reduction in the use of clearcutting on the national forests. With this action, the Forest Service took a clear position that the use of clearcutting would no longer be used as a major harvest technique. Instead, clearcutting would only be used if specific criteria and circumstances are met on national forest lands. The practice of clearcutting can still be used for insect and disease problems, salvage blowdown, recreational and aesthetic needs, and to create wildlife habitat.

At the same time, the BLM adopted a Total Forest Management program on its lands. Under this program the BLM called for large reductions in clearcutting on its lands. With the adoption of the Total Forest Management program, the BLM has already reduced the amount of clearcutting on its timberlands. Over the 1986 to 1991 period, less than 60 percent of the acreage harvested came from clearcuts. The agency currently applies uneven-aged management techniques in high elevation mixed conifer stands where it is appropriate.

The proper application of any silvicultural practice should be dependent upon the on-the-ground expertise of a variety of land management experts. Wildlife biologists, landscape architects, and foresters fully-armed with site specific data have the best chance of prescribing the best land management practices. If the federal agencies walk away from the correct application of clearcutting, at the expense of forest health and productivity, we all will suffer. The forest products industry believes, as we think the rest of the public does, that the single most important purpose of forest management is the maintenance of healthy and productive forests. Thus, we expect federal land managers to aggressively utilize clearcutting in those situations where it is needed.

C. In Many Situations, Even-age Management Techniques Provide the Least-cost Alternative to Achieve Resource Goals.

As Ecosystem Management is applied on the federal lands during the years ahead, the increased application of more complex harvest techniques such as uneven-aged management, selection system and shelterwood cuts, will increase the costs incurred by both the Forest Service and timber purchasers and reduce timber revenues. Policymakers must recognize this fact, as maintaining the health and productivity of public and private forest lands in this country must remain a priority objective. The Forest Service and professional organizations also agree that the use of clearcutting and even-aged management must be retained under Ecosystem Management, as these techniques are considered to be valuable tools toward enhancing biologic diversity.

Maintaining forest diversity requires a long-term investment. The effective application of timber management as a tool to accomplish this maintenance will help to defray the costs of investments in ecologic and forest health. While all forest management techniques, both even- and uneven-age must be available to resource managers, even-age techniques in general incur less cost. Preparation, administration and logging of even-age timber sales is less costly, and timber revenues to the government are generally higher with even-age techniques. These efficiencies may provide the financial difference which allows a restoration project to proceed in an era of tight budgets.

Given a drastic reduction in clearcutting, There are likely to be increased instances of forest pest and health problems. Efforts to deal with these events will require more money be

invested in research and non-timber harvesting related treatments. In assessing these costs, Congress must realize that harvesting timber helps to offset these costs. Since clearcutting has consistently been shown to be the most efficient and economic means for dealing with these events, Congress must accept a higher cost of doing business and increase Forest Service funding.

V. CONCLUSION

The forest products industry is completely opposed to H.R. 1164. This bill would change the entire premise of federal forests from one of active care and management to a blind custodianship, being managed in a manner similar to our existing national parks. The forest health and productivity of these forests would be lost over the long run, and the American public would have to transfer our demand for wood products to other countries which do not have the excellent growing conditions, environmental laws, or enlightened forest practices that we currently practice.

AF&PA strongly urges the Subcommittee to reject the extreme insensitive and blanket mandates of H.R. 1164. The decision to employ even-aged techniques must reflect local forest circumstances, and goals. A blanket prohibition on these techniques will only handcuff federal forest manager's attempts to manage the entire forest ecosystem and to restore and maintain forest health.

Mr. VENTO. And, finally, we are pleased to welcome Gerry Rose, the forester from the Department of Natural Resources in Minnesota. Glad to have you testify. I believe this is the first, Gerry, before the committee. Welcome.

STATEMENT OF GERALD ROSE

Mr. ROSE. Mr. Chairman, I am pleased to be here. I am Gerry Rose, the Director of Forestry in Minnesota. I am representing the National Association of State Foresters, and while H.R. 1164 speaks specifically to Federal lands, the State Foresters have a professional interest in public policy that dictate how Federal forests are managed today and in the future.

Those policies do impact both state and privately owned forest lands in a couple of ways.

One, they become the pattern for regulations and so forth on state and private land, but more importantly and more quickly, they transfer demand from the Federal lands to those lands with serious implications.

Consequently, we oppose enactment of H.R. 1164.

Even-age management is a common practice used in many areas of the country. Douglas Fir has been mentioned here, Southern Pine has been mentioned.

In the lake states, a big species that depends upon even-age management is Aspen, and if we are going to maintain those kinds of species in our forests, we need to have the even-age management tool.

Even-age management is used for economic purposes as has been talked about. It is also used for ecologic purposes. It is vital for the regeneration of early successional species.

In Minnesota, that includes in addition to Aspen, Jack Pine and Red Pine, and ecological objectives are described pretty well by the example Mr. Gladics' used of the Kirklands Warbler.

I spent twenty-five years of my career in Michigan, and worked with the Kirklands Warbler recovery team when that species was listed as endangered, and the plans for recovery for that species included maintaining Jack Pine on sands twelve to twenty feet in height, and it had to be done in relatively large areas.

The scientists on that recovery team came up with three hundred and twenty acres of Jack Pine, and there is only one way to maintain that kind of habitat, and that is through even-age management, and I don't need to remind the subcommittee that there is broad consensus that conservation of native species is an important ecological objective, and we certainly support that.

The image promoted by H.R. 1164, the images are not always accurate. Forest management guidelines for wildlife are developed in most states, and those forest management guidelines require or recommend the retention of dead-standing, green-standing, down timber in order to maintain the diversity of habitat that is needed.

Those guidelines are normally developed jointly by biologists and foresters, and implemented as such.

There are times when even-age management is inappropriate and mis-applied, and the state foresters would be the first to identify that and support that idea.

Even-age harvest on steep slopes, unstable soils can cause resource damage, and these practices are restricted on Federal lands through regulations and forest plans.

On state and private lands they are either guided by best management practices that most states have now, or by state forest practice acts.

The National Association of State Foresters understands that almost all clearcuts and other forms of even-age management can have a major negative visual impact, and the fact that even-age management may not be aesthetically pleasing does not change the fact that it is the appropriate management prescription in a number of cases, and certainly best management practices for visual quality are a way to get at lessening the negativity of that.

A couple of points close to home. We have just been involved in developing a generic environmental impact statement on timber harvest. A broad cross section of stake holders were involved in a steering committee for that, advisory committee for environmental quality board. The group worked for four years, and just last month the environmental quality board deemed the generic environmental impact statement adequate.

Support to adequacy came from both the forest industry and the environmental community, and we are now in the process of developing a round table to implement that generic environmental impact statement, and the strategies that are laid out in that statement, to lessen the impact of timber harvest on the environment.

The GEIS did not recommend the elimination of even-age management in Minnesota.

Likewise the Minnesota Forest Stewardship program, a state/federal partnership that seeks to promote sound, multiple use management on non-industrial private lands, and the state program is governed by a state stewardship committee, and that stewardship committee is made up of landowners, forest industry reps, recreationalists, environmental groups, local government and the subcommittee should note that the forest stewardship committee has not recommended eliminating even-age management as a management tool.

In conclusion, H.R. 1164 not only impacts Federal land, but State and private land as well.

Specifically, it would seriously inhibit Aspen management in Minnesota's national forests, disrupting community and economic stability that is based on the Aspen forest resource.

In turn, this affects management practices on state and private lands by increasing pressures on private forests for timber resources. Similar scenarios exist in all regions of our country.

Policy making of this type does not encourage good forest management, as it overlooks the differences that exist and need to be considered at the local level.

Finally, passage of H.R. 1164 would inhibit Federal land management agencies ability to implement ecosystems management. An ecosystem approach to forest management on Federally owned lands demands that all native forest types be represented on the landscape.

This may require drastic shifts from current land use policy in certain areas.

However, maintenance of viable ecosystems necessitates that all appropriate means of forest stand manipulation, including even-age harvest, be available to resource management professionals.

I appreciate the opportunity of being here today, and would welcome any questions.

Mr. VENTO. Thanks, Gerry, for your comments.

[Prepared statement of Mr. Rose follows:]

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Gerald Rose
Minnesota State Forester

Testimony on H.R. 1164:

"The Forest Biodiversity and Clearcutting Prohibition Act of 1993."

U.S. House Natural Resources Committee
Subcommittee on National Parks, Forests and Public Lands
May 5, 1994

Mr. Chairman, members of the Subcommittee, my name is Gerald Rose, and I am the State Forester of Minnesota. I am here today representing the National Association of State Foresters (NASF). NASF is composed of the directors of the State forestry agencies from the fifty States and three U.S. Territories (Guam, Puerto Rico and the U.S. Virgin Islands), as well as the District of Columbia. In that capacity, we are responsible for providing management and protection services on over 70 percent of the Nation's forest lands.

The State Foresters have a professional interest in public policies that dictate how public forest lands are managed today and in the future. Those policies can impact both state and privately owned forest lands.

This morning's hearing has been called to discuss timber harvesting systems, specifically even-aged management. H.R. 1164, introduced by Congressman John Bryant from Texas, would totally eliminate even-aged management techniques on all Federal lands. Should this legislation be enacted, the issue, implications, attitudes and misinformation reflected in

it warrants comment from our Association as professional forest resource managers.

Even-aged management is a common forest management practice in many areas of the country. It is important in the management of Lake States aspen, western Douglas fir and southern pine. It is used for economic and ecological purposes as well as wildlife habitat management. Several harvesting methods may be used to accomplish even-aged management including clearcutting, seed tree cutting, and shelterwood cutting. Even-aged management can be an important tool for accomplishing ecological objectives.

Even-aged management is vital for natural and artificial regeneration of several Minnesota species including aspen, red pine and jack pine. Regeneration of new aspen stands is dependent upon removal of the overstory, which is best achieved by using the clearcutting harvest method. Sunlight stimulates the root system of the parent aspen to sprout vigorous new stems which eventually become the new forest. Undisturbed, the mature aspen dies on the stump and is unable to regenerate itself. Red and jack pine stands also require open, sunlit areas for seedling establishment and growth.

As an example of how even-aged management can be used to accomplish ecological objectives, the endangered Kirtland's warbler is a songbird species native to Michigan that nests exclusively in young stands of jack pine. The only way to ensure that sufficient Kirtland's warbler habitat will remain available is to periodically regenerate stands of jack pine using even-aged methods. I don't need to remind the Subcommittee that there is broad consensus that conservation of native species is an important ecological objective.

The Subcommittee should also be aware that the image of even-aged management being promoted by advocates of this bill simply is not entirely accurate. In Minnesota, and in a number of other States, management guidelines call for the retention of green trees and snags that provide for diversity

of habitat structures and allow for natural regeneration of native tree species.

Mr. Chairman, there are circumstances under which application of even-aged harvesting is an inappropriate management prescription. There have undoubtedly been instances when this practice has been misapplied. Even-aged harvests on steep slopes or on unstable soils can cause resource damage. These harvesting practices are restricted on Federal lands through regulations and forest plans. Harvesting practices in the States are either guided by Best Management Practices or by State Forest Practices Acts.

NASF also understands that almost all clearcuts and other forms of even-aged management can have a major negative visual impact. The proponents of this bill clearly are attempting to capitalize on this fact. But the fact that even-aged management may not be aesthetically pleasing does not change the fact that it is the appropriate management prescription in a number of cases.

The National Association of State Foresters believes that enactment of H.R. 1164 would set bad forestry policy at the National level. Forest management varies regionally according to forest types, climate, soil, and topographical conditions. Management of Federal lands is accomplished by resource professionals who have the flexibility within existing laws to achieve resource objectives identified through an open, public planning process. Accordingly, professional forest resource managers are trained to identify and select appropriate management practices and are the vehicles through which forest policy should be implemented.

In Minnesota we have developed forest management guidelines for use on state and private lands that we feel incorporate local conditions and interests. These were developed cooperatively between the Divisions of Forestry and Wildlife and cover all aspects of forest management including harvesting, reforestation and wildlife habitat enhancement. Policies such as these should be made at the state level by responsible forest land mangers who know and understand the consequences and impacts of their decisions.

In Minnesota, the Department of Natural Resources has gone to great lengths to develop a forest policy that commands the broadest possible consensus among interested parties and the public at large. Two of these are worth noting. We recently completed a state-wide Generic Environmental Impact Statement on timber harvesting in the State. This document was the result of a long process that sought the broadest possible public input. The GEIS did not recommend the elimination of even-aged management in Minnesota.

Also, the Minnesota Forest Stewardship program is a State-Federal partnership that seeks to promote sound, multiple use management on nonindustrial private forest lands. The State program is governed by a State Forest Stewardship Committee, made up of traditional and nontraditional forest interests, including landowners, forest industry, recreationists, and environmental groups. The Subcommittee should note that the Minnesota Forest Stewardship Committee has not recommended eliminating even-aged management as a management tool.

Further, in Minnesota, we are using the Forest Stewardship program to promote ecosystem-scale objectives across multiple ownerships in the State. This involves providing landowners with information about the larger forest landscape, and helping them to meet their objectives in this context. Mr. Chairman, we would not be able to meet several important ecosystem objectives if even-aged management were prohibited by law. The members of NASF do not believe that Federal land managers should be deprived of this tool for the same reasons.

Even-aged management on Federal lands is already restricted in its application by the Federal Land Policy and Management Act, the National Forest Management Act, as well as by the planning processes required by these laws. Congress should not arbitrarily limit management options and impose certain harvest systems on all public lands. This would not be based on sound science, and it would not be sound public policy.

CONCLUSION

Congressman Bryant's legislation not only impacts federal land but state and private forest land as well. Specifically it would seriously inhibit aspen management in Minnesota's national forests, disrupting community and economic stability that is based on the aspen forest resource in many areas of the state. In turn, this affects management practices on state and private lands by increasing pressures on private forests for timber resources. Similar scenarios exist in all regions of our country. Policy making of this type does not encourage good forest management, as it overlooks the differences that exist and need to be considered at the local level.

Also, passage of H.R. 1164 would inhibit the Federal land management agencies' ability to implement ecosystem management. An ecosystem approach to forest management on Federally-owned lands demands that all native forest types be represented on the landscape. This may require drastic shifts from current land-use policy in certain areas. However, maintenance of viable ecosystems necessitates that all appropriate means of forest stand manipulation, including even-aged harvests, be available to resource management professionals.

It was a pleasure being here today and I look forward to answering any questions you may have.

Mr. VENTO. The general environmental impact statement issue that you put out today generally does not recommend techniques in terms of whether it be even-age management, or not even-age management? Did they generally not recommend techniques in terms of what was happening? It really was looking at volume, wasn't it?

Mr. ROSE. The mitigation strategies identify impacts on many different forest-related things. Wildlife, biological diversity, water quality, long term productivity, those kinds of things.

The mitigation strategies generally promote the use of best management practices. Best management practices in our case are developed by the stake holders. We have just added a wetlands component to our best management practices, and groups from environmental groups, industry, local government, were involved in the development of those.

So, generally, best management practices applied at the local level is what is recommended, and it doesn't call for a band on any kind of practice.

There is a general feeling that there is too much clearcutting, but that doesn't mean we should not have even-age management as a tool to achieve the objectives that we need to achieve as we manage our forest for the people.

Mr. VENTO. One of the things, Mr. Sampson, that occurs is even-age management versus clearcut. Generally, I guess there is a view—I don't know if others disagree on this panel—that there has been a history of too much clearcutting.

That the 1974, the 1976 law, didn't do it, didn't get to it, even though those criteria that I tried to summarize seem to be pretty stringent to me, as a literal reading.

I wonder, reflecting on that as we write this bill, and I say it is pretty specific, but I really wonder what happens on the ground when it all gets translated by a court some times, you know.

Generally, there is agreement that there has been too much clearcutting, but then there is this slip over into even-age management which seems to lend itself to the same practice by a different name.

Mr. SAMPSON. We see a lot of even-age management that is really double or triple cohort management. It is still even-age, but you see two to three age levels in the forest.

But the real truth is it is an even-age application at two or three times in the life. Even-age management doesn't need to mean clearcutting and removals.

Mr. Chairman, there is really some unintended and perverse effects that come out of Federal legislation. I think there is a reasonably good argument to be made that the planning procedures that have been put in place to prevent clearcutting have, in fact, enhanced its use, and made it the practice of choice to the practitioner.

It is sad to go out, as I have done in several occasions, and see forest harvest finally hitting the ground. And because of the way scientific understandings have changed, and because of the way the forest itself has changed, everybody recognized that the plan that was proposed at the time it was proposed was the wrong thing to do on the land.

And it was almost always a clearcut that had been proposed, and it was almost always being rejected at the time of its application by its very practitioners.

But the five year difficulty in putting the plan together and getting it through all the procedures and the assessments and the appeal processes killed everybody's notion of going back and redoing it.

So, the wrong plan went forward. And somehow we have a process problem, Mr. Chairman.

Mr. VENTO. You have five years to eat what has been put out there. I heard your comment on that, and you know, we hope these policy changes now are translating, but the point is we have this data and it seems to be general agreement.

One of the things, Mr. Gladics, is you mentioned this Warbler in Michigan, too, and elk and other types of species, but clearly the purpose, in terms of game species or endangered species, management of the forest for that purpose, this wasn't an endangered species, but clearly is just one aspect isn't it?

If your goal is for game species or an endangered species, it may be a different goal than the whole biodiversity thing. They are not necessarily the same.

Mr. GLADICS. That is true, but nevertheless we are in the process of looking at a law that will add one more layer for our land managers to have to deal with.

They have to deal with the endangered species act, and they are culpable if they violate that Act.

Now, we are going to potentially put on a bill that will say you can't use the very tools you need to protect an endangered species.

As I look around this room, and I look at the paintings of the native Americans here, I look at the very people that used fire and even-age management very much to their benefit, and the forest that we discovered on this continent were shaped by that.

The species that were in those forests pretty much exist today. We do have some problems. But our notion that life is so fragile that it can't adapt is clearly wrong. If you look at the geological history of ice ages, if you look at the massive changes in our country that have occurred over time by natural forces, the species have trans-located and survived.

We have this mistaken notion, in my view, that a species can't move from one inch to the next. Now, there clearly are some that can't move across a highway. We do put barriers up. But they are much more resilient than we give them credit for.

Mr. VENTO. Well, I commend you for your optimism. I don't know that it is necessarily justified. I think the rates of extinction and what is happening to some of these species is pretty dramatic in terms of our impact on the landscape, and it is probably true that Native Americans did do a little landscape planning with fire and other tools, but that their imprint or impact was much less just simply because of their population size and what their needs were.

Mr. GLADICS. The data I have seen, sir, it would indicate that they were not careful, low-scale users of fire. They burned heavily for a couple of real valid reasons. One was they didn't want people to be able to sneak up on them from other tribes.

Another was that it kept the forest clear of pests and, thirdly, it helped them travel through the forest in the eastern half of this country. The record shows they did large scale clearing for agriculture, not to the scale that we have, but again, it wasn't two hundred and fifty-six million people in the country, planning to be doubled in sixty years.

Mr. VENTO. We have some real problems and challenges here, and obviously have had some tremendous impacts.

Well, I did go through the book on clearcuts, especially photograph o, with the Sierra Club. I am sure that they would have some answer for that, but we do appreciate all of the testimony, Mr. Crandall, and the other witnesses.

I really have to move along to the next panel, the final witnesses. I have to go plant a tree, so we thank you very much for your presence.

PANEL CONSISTING OF JERRY A. SESCO, DEPUTY CHIEF RESEARCH, FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE; AND, KEMP CONN, DEPUTY ASSISTANT DIRECTOR, LAND AND RENEWABLE RESOURCES, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR

Mr. VENTO. We are pleased to welcome Jerry Sesco, who is the Deputy Chief, Research, accompanied by Robert Szaro, Research Division, of the Forest Service, Department of Agriculture, and Kemp Conn, the Deputy Assistant Director of Land Management, who is accompanied by Mr. Mel Berg, Chief of Forestry, Bureau of Land Management, Department of the Interior.

Your statements have been made part of the record and I have read them as I received them this morning, so you can summarize them if you choose. Dr. Sesco?

STATEMENT OF JERRY A. SESCO

Dr. SESCO. Thank you, Mr. Chairman. Let me begin by saying that it is a pleasure for us to be asked to comment on H.R. 1164 this morning.

Mr. Chairman, although the Department of Agriculture cannot support enactment of H.R. 1164, we certainly do support the concept that native biodiversity and ecosystems should be protected.

The National Forest Management Act already requires the Forest Service to provide for the diversity of land and animal communities based on sustainability and capability of the specific land area and consistent with the management objectives of the area.

One of the goals of our current commitment to ecosystem management in the Forest Service is to ensure that native biodiversity and ecosystems are maintained or enhanced on the national forest systems.

Mr. Chairman, we have several concerns with certain provisions of H.R. 1164, and I will highlight a few of those. First, the bill places severe restraints upon clearcutting and other even-age management practices. Now, we certainly support the elimination of the use of clearcutting as a standard harvest practice, and we have made progress in reducing that use. Perhaps we will have a chance to share some of those numbers with you.

However, a prohibition on all even-age harvest practices is contrary to the goal of protecting native biodiversity. Many naturally occurring ecosystems have been greatly influenced by natural disturbances such as wildfire and insects and disease outbreaks which create even-age forests.

These forests are an important component of the ecosystem and can be emulated through even-age management practices to maintain biodiversity and other objectives.

For example, as has been stated by several previous witnesses, there are many wildlife species, such as wild turkey and ruffed grouse whose habitat requires even-age management to maintain optimum population levels.

We believe that to practice ecosystem management and conserve native biodiversity, managers need all of the tools available, including even-aged management practices. There is no single management prescription that is best for any one geographic region or vegetation type, and we do not support changing our management authorities without credible scientific research, to restrict options for managing biodiversity.

We are also concerned, Mr. Chairman, with the provision in the bill that would narrow the criteria for membership on a committee of scientists which would provide scientific and technical advice on proposed guidelines and procedures to protect native biodiversity.

Rather that establishing such a restricted committee that would exclude a great number of eminent scientists, we would rather focus our efforts on bringing user groups and scientists together to gain consensus on implementing ecosystem management in the national forest system lands.

In fact, we are beginning to do more of that.

We are also concerned that the bill would require the Secretary to prescribe a shift to individual tree selection management on sites already under even-aged management. And also we are concerned with the civil penalty enforcement provisions of H.R. 1164.

Finally, the bill's prohibition against the construction or reconstruction of roads in designated roadless areas, or in land and resource management plans, could limit opportunities to develop vegetation community mosaics necessary to restore native biodiversity.

We believe the forest planning process or specific wilderness legislation would be a more efficient means of determining how roadless areas should be allocated.

In summary, while we support the goal of protecting native biodiversity, we have serious concerns with the restrictive management provisions associated with H.R. 1164.

We will continue to reduce the use of clearcutting and ensure that it is used only to meet specific ecological objectives.

However, a prohibition of clearcutting and other even-aged management efforts would not, in our opinion, be responsible forest management and would limit our ability to implement ecosystem management on national forest lands and, further, be counter-productive in meeting the biodiversity provisions of H.R. 1164.

The point, Mr. Chairman, is that mechanical, translated to mindless if you wish, application of any management regime by statute

or by the unthinking practice of a natural resource professional, will ultimately result in failure.

It is important to remember that ecosystems change over time through natural succession, whether managed by humans or not. How they change is related to variables, such as natural occurrences of fire, wind, floods, insects, pathogens, climate, as well as how people use and care for the land.

That completes my summary statement, Mr. Chairman. I will be glad to respond to any questions.

Mr. VENTO. Thank you, Dr. Sesco.

[Prepared statement of Dr. Sesco follows:]

Final

STATEMENT OF
DR. JERRY A. SESCO, DEPUTY CHIEF RESEARCH
FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the
Subcommittee on National Parks, Forests, and Public Lands
Committee on Natural Resources
United States House of Representatives

Concerning

H.R. 1164

The Forest Biodiversity and Clearcutting Prohibition Act

of 1993

May 5, 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to offer our views on H.R. 1164, the "Forest Biodiversity and Clearcutting Prohibition Act of 1993."

I am accompanied by Dr. Robert Szaro, who is the Research liaison for Ecosystem Management.

Although the Department of Agriculture cannot support enactment of H.R. 1164, we support the concept that native biodiversity and ecosystems should be protected. The National Forest Management Act already requires the Forest Service to provide for the diversity of plant and animal communities based on sustainability and capability of the specific land area and consistent with the management objectives of the area. One of the goals of our current committment to ecosystem management in the Forest Service is to ensure that native biodiversity and ecosystems are maintained or enhanced on National Forest System lands.

Biodiversity is not a specific condition that can be defined and put in place permanently. Instead, biodiversity is a dynamic series of conditions that exist over time and space; a constantly changing and evolving assemblege and distribution of organisms. There are also different options for management of resources that will sustain biodiversity but which have different effects on the types, amounts, and location of plants and animals, and the meeting of human-related needs.

The objective of our ecosystem management approach is to combine the best available physical, biological, social, cultural, and economic knowledge and the public's views to determine how the Nation's national forests shall be managed.

We have several concerns with certain provisions of H.R. 1164.

First, the bill places severe restraints upon clearcutting and other even-age management practices. We support elimination of the use of clearcutting as a standard harvest practice, and have made progress in reducing that use. However, a prohibition on all even-age harvest practices is contrary to the goal of protecting native biodiversity. Many naturally occurring ecosystems have been greatly influenced by natural disturbances such as wildfire and insects and disease outbreaks which create even-aged forests. These forests are an important component of the ecosystem and can be emulated through even-aged management practices to maintain biodiversity and other objectives. For example, there are many wildlife species such as wild turkey and ruffed grouse whose habitat require even-age management to maintain optimum population levels.

We believe that to practice ecosystem management and conserve native biodiversity, managers need all the tools available, including even-aged management practices. There is no single management prescription that is best for any one geographic region or vegetation type and we do not support changing our management authorities without credible scientific research, to restrict options for maintaining biodiversity.

We are also concerned with the provision that would narrow the criteria for membership on a committee of scientists which would provide scientific and technical advice on proposed guidelines and procedures to protect native biodiversity. Eligibility would be limited to those scientists who are not officers or employees of the Forest Service or any other public entity, or any entity engaged in whole or part in the production of wood or wood products, or any scientists who have contracted with any such entity during the last five years. Establishment of such a committee seems to erroneously presume that the Forest Service and other Federal natural resource agencies cannot manage the protection of native biodiversity with credible internal and external scientific input. Rather than establishing such a restricted committee that would exclude a great number of eminent scientists, we would rather focus our efforts on bringing user groups and scientists together to gain consensus on implementing ecosystem management on National Forest System lands.

The bill would also require the Secretary to prescribe a shift to individual tree selection management on sites already under even-aged management, or to cease managing for timber purposes and restore the native biodiversity or permit the site to regain its native biodiversity.

Meeting these requirements would significantly increase costs without benefits to the long-term management of the affected ecosystems because it is more costly to harvest timber under uneven-aged management and single tree selection techniques.

We are also concerned with the civil penalty enforcement provisions of H.R. 1164. The bill would waive the sovereign immunity of the United States, "including its agents and employees," in all respects in all actions. This could subject Forest Service officers and employees to liability in their individual capabilities.

The bill is unclear in its provisions for payment of civil penalties. First, it provides that the United States shall pay any civil penalties to the Judgment Fund, although the purpose of the fund has been to provide for disbursement of judgments owed by the United States. The bill provides that penalties shall be paid from the Judgment Fund to the person designated to receive it, to be applied in protecting or restoring native biodiversity on or adjoining Federal land. The bill does not state who shall designate the persons to receive the monies, and the mandatory use of the monies on or adjoining Federal land may require expenditures where they are not needed. No estimate of these increased costs are yet available.

Finally, the bill's prohibition against the construction or reconstruction of roads in roadless areas as defined in the Roadless Area Review and Evaluation of 1978 (RARE II) or in land and resource management plans could limit opportunities to develop vegetation community mosaics necessary to restore native biodiversity. We believe the Forest planning process or specific wilderness legislation would be more efficient means of determining how roadless areas should be allocated.

Summary

While we support the goal of protecting native biodiversity, we have serious concerns with the restrictive management provisions associated with H.R. 1164.

We will continue to reduce the use of clearcutting and ensure that it is used only to meet specific ecological objectives. However, a prohibition of clearcutting and other even-aged management methods would not be responsible forest management and would limit our ability to implement ecosystem management on National Forest Lands and, further be counter productive in meeting the biodiversity provisions of H.R. 1164.

It is important to remember that ecosystems change over time through natural succession whether managed by humans or not. How they change is related to variables such as natural occurences of fire, wind, floods, insects, pathogens, climate, as well as how people use and care for the land.

Thank you. This completes my prepared statement. I will be pleased to respond to any questions.

Mr. VENTO. We are pleased to welcome Kemp Conn, who is the Deputy Assistant Director of Land and Renewable Resources, BLM.

Mr. Conn.

STATEMENT OF KEMP CONN

Mr. CONN. Thank you, Mr. Chairman. I appreciate the opportunity to appear here today to present the Department of the Interior's views on H.R. 1164.

I am accompanied by Mel Berg, our Chief, Division of Forestry, and I will be brief.

Mr. Chairman, I would like to emphasize that the Department of Interior and the Bureau of Land Management are strongly committed to ecosystem management. We agree with the goal of this legislation, the one that emphasizes biological diversity.

Globally, species of plants and animals are in danger of extinction at an alarming rate. The Administration, though committed to the conservation of biodiversity, cannot support enactment of H.R. 1164.

President Clinton's forest plan became final within the last few weeks. This plan incorporates our current scientific knowledge of species and ecosystems conservation, and at the same time provides a level of timber production that can help meet societal goals.

The plan uses an ecosystem management approach that, for the first time, considers all the Federal land, despite jurisdictional boundaries across the range of the Northern Spotted Owl.

It also contains the contribution of private lands toward meeting diversity goals, without impeding private property rights. An important point to note is that even-aged management is prescribed as an important part of the plan—a management tool which H.R. 1164 would prohibit.

It is the current BLM policy to use clearcutting as a method of last resort.

Mr. Chairman, I would like to emphasize "a method of last resort."

Over the last 20 years, BLM use of clearcutting has ranged from 29 percent to 76 percent of acres harvested. You did mention the fact that you didn't have statistics from us, and I do have a set that I will be happy to share with you.

From 1986 to 1991, approximately fifty percent of the acres harvested were clearcut. The high in 1986 was sixty-seven percent. The low, in 1991, was thirty-nine percent. Half that over that time period in reduction of acres clearcut, and with today's policy of using it as a last resort, I am sure that—well, we don't have those figures yet. I am sure you would find a dramatic reduction between 1991 and today, as it was between 1986 and 1991.

Mr. VENTO. If you would submit those, Mr. Conn, for the record, we will include those. We obviously have a question on that. Maybe we will start out with that question with Dr. Sesco in terms of the differences in information we had before.

[The information follows:]

Listed below are the acres of timber sold, and the acres to be harvested by clearcutting, by the Bureau of Land Management (BLM) for Fiscal Years (FY) 1991, 1992, and 1993. This is the most reliable data under our current recordkeeping system.

ACRES OF TIMBER SOLD BY BLM FOR FISCAL YEAR 1991–93

Fiscal year	Oregon/Washington (W/PD)	
	Total	Clearcut
1991	21,372	9,234(46%)
1992	23,089	1,041(5%)
1993	5,448	[1]3,374(62%)
Totals	49,909	[2]13,649(27%)

Fiscal year	Public domain	
	Total	Clearcut
1991	5,491	608(11%)
1992	4,520	701(16%)
1993	5,156	[3]1,633(32%)
Totals	15,167	[4]2,942(19%)

Fiscal year	All BLM	
	Total	Clearcut
1991	26,863	9,842(37%)
1992	27,609	1,742(6%)
1993	10,604	[5]5,007(47%)
Totals	65,076	[6]16,591(26%)

[1] Of the total acres cut in 1993 in Oregon and Washington, 97 percent (3,273) were from operations salvage fire or insect killed stands.
[2] Twenty-four percent of total acres clearcut in last 3 years is salvage related.
[3] Of the total acres clearcut in FY 1993 on Public Domain lands, excluding Oregon and Washington, 90 percent (1,471) were from operations salvaging fire or insect killed stands.
[4] Nineteen percent of total acres clearcut in last 3 years in Public Domain lands, excluding Oregon and Washington, is salvage related.
[5] Of the total acres clearcut on all BLM lands, 95 percent (4,744) were from operations salvaging fire or insect killed stands.
[6] Twenty-eight percent of total acres clearcut in last 3 years from all BLM lands is salvage related.

Mr. CONN. Clearcutting will only be used when our silviculturists, our biologists, and our managers find that it is the most effective management method and meets specific environmental or silviculture objectives.

Where logical clearcutting acreages based on current best science might be the best method include diseased or insect infested areas, wildlife habitant enhancement projects, where large openings are needed to provide forage, and the areas damaged by fires, windstorms, or other natural disasters where restoration and rehabilitation are necessary.

Species of trees that require sunlight to regenerate and grow are the best managed under even-aged silvicultural systems. And this does not mean clearcut in the strict sense of the term, where all the trees are removed.

Biodiversity should include trees that are both tolerant and intolerant to shade. Our specific reasons for not supporting enactment of H.R. 1164 are detailed for the record in my testimony, and I will not repeat them. They closely parallel those of Dr. Sesco.

In closing, I reiterate that the Bureau of Land Management and the Department of the Interior are committed to the conservation of biological diversity. We believe that ecosystem management, applied across landscapes, is the best method of achieving the diversity of species and ecosystems that we are charged to manage.

Because of the many variables, our on-the-ground managers need the flexibility to use all the scientifically based land management methods and tools.

This concludes my prepared remarks, and I will be pleased to answer any questions.

Mr. VENTO. Thanks for your testimony.

[Prepared statement of Mr. Conn follows:]

MAY - 5 1994

STATEMENT OF KEMP CONN, DEPUTY ASSISTANT DIRECTOR, LAND AND RENEWABLE RESOURCES, BUREAU OF LAND MANAGEMENT, UNITED STATES DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON NATIONAL PARKS, FORESTS, AND PUBLIC LANDS, COMMITTEE ON NATURAL RESOURCES, UNITED STATES HOUSE OF REPRESENTATIVES, ON H.R. 1164, THE "FOREST BIODIVERSITY AND CLEARCUTTING PROHIBITION ACT OF 1993".

I appreciate the opportunity to appear here today to present the Department of the Interior's views on H.R. 1164, the "Forest Biodiversity and Clearcutting Prohibition Act of 1993". I am accompanied by Mel Berg, Chief, Division of Forestry.

H.R. 1164 has as its purpose the conservation of native biodiversity and the protection of all native ecosystems against losses resulting from even-aged logging on federally owned timberlands where logging is permitted. The bill does this by amending several statutes that authorize the activities of Federal land management agencies. For the Bureau of Land Management (BLM), the bill would amend Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA) to require that land use plans provide for conservation of biodiversity of forestlands managed for timber purposes. This would be accomplished by prohibiting the use of even-aged forest management and requiring a shift to uneven-aged management on areas currently managed under an even-aged regime, or by ceasing management of these lands for timber purposes. It would further provide for enforcement of the provisions through citizen suits.

The Administration, though committed to the conservation of biodiversity, cannot support enactment of H.R. 1164 for a variety of reasons which I will describe in a moment.

It is important to note that the Department of the Interior (DOI) and the BLM are strongly committed to ecosystem management -- the integration of ecological, economic, and social principles to manage biological and physical systems in a manner that safeguards the long term ecological sustainability of natural diversity, and productivity of the landscape.

We agree with the goals of the legislation -- management for biological diversity. However, knowledge about managing for biodiversity across the biological range from individual species to regional communities is only now emerging. We do not now have the information needed to proscribe, as H.R. 1164 seeks to do, specific scientifically acceptable management tools. The science is advancing rapidly. To lock certain actions into law at this time would not allow agencies needed flexibility to shift management as new knowledge or techniques develop. We currently have authority through FLPMA to manage our lands for biodiversity and are seeking to ensure such diversity through projects authorized under that Act.

Globally, species of plants and animals are in danger of extinction at an alarming rate. The BLM, as the administrator

of nearly half of the Nation's Federal lands, is in a unique position to provide for biological diversity within the ecosystems we manage.

The influence of humans in the environment has been largely responsible for the rapid increase in the loss of species. However, humans are a part of the diversity of species and derive food and shelter from land. The only way that humans can sustain themselves as a species is to carefully, and purposefully, manage the land to provide the resources that we need to survive, while maintaining the habitats of other forms of life. As our knowledge of ecosystem expands, we must incorporate this knowledge into our management.

President Clinton's Forest Plan became final within the last few weeks. This plan incorporates our current scientific knowledge of species and ecosystem conservation and at the same time provides a level of timber production to help meet societal goals. The plan uses an ecosystem management approach that, for the first time, considers all of the Federal land, despite jurisdictional boundaries, across the range of the northern spotted owl. It also considers the contribution of private lands toward meeting diversity goals, without impeding private property rights. An important point to note is that even-aged management is prescribed as an important part of this plan -- a management tool which H.R. 1164 would prohibit.

Other areas of the country are using processes similar to those used in the President's Forest Plan to develop ecosystem-based approaches for land use plans. However, the land management prescriptions will not necessarily be the same, but will reflect the species, landform, and conditions experienced in each region. It is important that land managers have the flexibility to meet those needs.

Beyond the actions described in the Forest Plan, the BLM has been pursuing a number of initiatives over the past several years to provide for biodiversity in its forest management activities. I will briefly describe a few.

In 1989, BLM adopted a Forest Policy Statement for the Public Domain Forestry Program incorporating the management of the commercial forestlands with the Woodlands Program and directed a more holistic ecosystem approach in the management of the lands.

Starting in 1990, the BLM forestry staff developed an outreach program entitled Forests: Our Growing Legacy. This program began with interviews of over 300 members of the public to find out how they thought the BLM's forests should be managed. The results of these interviews, along with the experience of our own employees, indicated that we needed to change the way we approached forest management in order to meet the needs of the

other resources. We developed a strategic plan which provides for looking at the forests for multiple objectives including timber, wildlife habitat, clean water and recreational use. It was completed and signed in October 1993.

Although not fully implemented, the program in Forests: Our Growing Legacy has already resulted in actions on the ground. The BLM has entered into partnerships with the American Forests' "Global ReLEAF" program, with the National Fish and Wildlife Foundation, and many local conservation groups. As a result, and with the help of hundreds of volunteers, we have projects under way to restore riparian areas, to reforest burned over bald eagle habitat, and to enhance elk and deer winter range, with the resulting firewood being sold at a profit for the Government.

It is current BLM policy to use clearcutting as the method of last resort. Over the past 20 years, BLM use of clearcutting has ranged from 29 percent to 76 percent of acres harvested. Based on 1986-1991 data, BLM used clearcutting on 50-60 percent of the acres receiving regeneration harvest. This percentage has been reduced and will be reduced more as new sales, developed under new plans, come on line.

Clearcutting will only be used when our silviculturists, biologists, and managers find that it is the most effective method to meet specific environmental or silvicultural

objectives. Areas where clearcutting might be the best method include diseased or insect infested areas, wildlife habitat enhancement projects where large openings are needed to provide forage, and the areas damaged by fires, windstorms, or other natural disasters where restoration and rehabilitation are necessary.

Even-aged management, which includes clearcutting, seed tree, and shelterwood regeneration methods, is a sound silvicultural tool for managing many forested areas. Silvicultural systems are prescribed to produce the stand and landscape level conditions desired to meet the land use objectives set for a given area. Even-aged management, when prescribed in combination with other silvicultural practices -- such as no-cut areas and riparian buffers -- can add to species diversity.

Species of trees that require sunlight to generate are best managed under the even-aged silvicultural system. Species such as Douglas-fir, aspen and lodgepole pine have low to moderate shade tolerance and we will continue to manage them using even-aged regeneration methods. Stands that are infected with diseases such as dwarf mistletoe will have to be clearcut to reduce the disease in the replacement stand. Areas infested with root diseases should also be clearcut and the stand replaced with species resistant to the disease.

We cannot support enactment of H.R. 1164 for several reasons:

- the bill would lock in specific management restrictions that are not feasible under many forest conditions, such as stands of trees that require full sunlight, or stands that are infested with certain insects or diseases;

- it would prevent our resource professionals from using sound silvicultural techniques to meet specific land use objectives, including the goal of conserving biodiversity as intended by this bill, by limiting their flexibility to utilize scientifically proven methods across large landscapes; and

- it would provide for enforcement of the provisions of the bill by citizen suits thereby reducing the willingness of managers and professional resource specialists to undertake actions that are considered controversial for fear of personal financial liability, or having to defend themselves from perceived violations.

Further, H.R. 1164 has several technical deficiencies. Some of the definitions are ambiguous or misuse terms commonly used in forest science. To use these terms, as H.R. 1164 defines them,

would cause confusion. Examples of technical problems are:

- The term "group selection" is restricted to openings no larger than the height of the tallest tree "within 10 feet of the edge of the group cut." It also limits the entry to no more than 30 percent of a stand being felled within 30 years. This definition does not take into account the silvicultural requirements of the species of tree being managed or the objectives for which the stand is being managed.

- "Stand" is limited to 100 acres. This is an arbitrary limitation. Silviculturally a stand is defined as a homogeneous and distinguishable unit of the forest, sufficiently uniform in species composition, arrangement of age classes, and condition. It could be much larger than 100 acres.

In closing, I reiterate that the BLM and the DOI are committed to the conservation of biological diversity. We believe that ecosystem management, applied across large landscapes, is the best method of achieving the diversity of species and ecosystem that we are charged to manage. Our on-the-ground managers need the flexibility to use all scientifically based land management methods to meet their prescribed objectives. They need the

ability to rapidly change management techniques as our knowledge of ecosystem improves, and conditions change.

This concludes my prepared remarks. I will be pleased to answer questions.

Mr. VENTO. We have the numbers question, Dr. Sesco. I see that we had some numbers that we had received from—I think it was CRS that was taking your data, and we have those numbers through 1991 which, of course, were tempered by the remarks in the previous panel by a witness pointing out that they are at least five years behind, where the sales have been made, the forest plans are in place, so what we are reading in 1991 actually occurred as recently as 1987 or as old as 1984. So, that was a good insight, and you concur with that?

Dr. SESCO. Yes.

Mr. VENTO. Mr. Conn, your comments or your statement that you made about the percentages—of course we are actually dealing with numbers in the Forest Service, the number of acres that were included.

Your numbers were dealing with percentages, but your numbers would also be tempered by the fact that those sales were made during the five-year implementation schedule, or not?

Mr. CONN. Yes, sir.

Mr. VENTO. So, it also has that problem. Some would be more recent. When we are reading something in 1991 or 1992 or 1993, it is generally going to be reflecting plans, forest plans and sales that were made in the late 1980s, at this point, is that correct?

Mr. CONN. Yes, sir.

Mr. VENTO. Dr. Sesco.

Dr. SESCO. Yes, Mr. Chairman. A better way to look at this, perhaps, would be to look at the number of acres sold as opposed to the number of acres harvested, and I will provide these numbers for the record.

If you go back to 1986, for example, in the Forest Service, the number of clearcut acres sold was about 330,000, but in 1993 it was just a little over 84,000.

So, that is a better measure, because of this lag.

Mr. VENTO. Mr. Conn, would you agree generally with that particular statement being a better index in terms of if we want to look at this as to where we are in 1994 as opposed to just looking at the number of acres that are sold versus harvested?

Mr. CONN. Yes, sir.

Mr. VENTO. And all those sales have the specific prescriptions on them as to what will and will not occur, is that correct, Dr. Sesco?

Dr. SESCO. I would presume so, Mr. Chairman. Yes, that is correct.

Mr. VENTO. The concern, of course, then is you know is this a distinction without a difference here in terms of even-aged management and/or clearcutting.

Would you comment on that for the benefit of the record and for me?

Dr. SESCO. In terms of even-aged management, which it doesn't necessarily translate to clearcutting, in 1989 about sixty percent of the Forest Service land was under even-aged management.

In 1993 that is down to forty percent. So, you can see that we have shifted from even-aged management down to more uneven-aged management, which is reflected——

Mr. VENTO. What we call either selective or seed, or some other thing.

Dr. SESCO. Shelter wood, seed tree, even-aged, but it is not strictly the classical clearcutting even-aged management.

Mr. VENTO. Mr. Conn, would you have any comments on that, my question of the distinction without a difference?

Dr. CONN. I would just merely say that percentages I gave you have acres behind them. They refer to clearcutting in the true sense of all the trees being removed.

I would agree with Dr. Sesco that—I am probably beating around the bush a little bit—but today clearcutting is the last resort, and that is removing all the trees. Uneven-aged or even-aged harvest does include a variety of silvicultural practices, from seed tree to shelter wood, to group selection.

Mr. VENTO. I think the consequence, if the effect is the same, I guess it gets to be a really big concern about it in terms of whether we are, really, having the same impact.

That would be the concern, and your argument here I guess from the standpoint of a sale, is that it has a different impact ecologically?

Mr. CONN. Yes.

Mr. VENTO. That would be substantive then if it has the same effect ecologically or on the environment. That is a concern. So, that is what I am really getting at in terms of what happens here.

One of the other questions occurred to me. Of course, the Bryant Bill deals with land the armed services have, the native American lands, BLM, Fish and Wildlife service. I didn't know we did that much harvesting in Fish and Wildlife service areas, but I guess we much do some, and Forest Service.

What is the correlation between the different plans today? That would actually put in place consistent plans for each of those agencies in terms of following this prescription? Can you comment on that today?

Obviously, that is not necessarily the case today, is it? Or maybe you are not prepared to answer it, because who knows what the Bureau of Indian Affairs does?

I just was interested in that question. The thought occurred to me. But he does have all three in here, and maybe he can talk what you do know?

Dr. SESCO. Your point is well taken, Mr. Chairman. I would assume that different agencies have different practices.

Mr. VENTO. You certainly have. You don't follow anything that BLM does.

Dr. SESCO. We certainly coordinate with BLM, but I would venture to say that our practices and guidelines are not exactly the same, no.

Mr. VENTO. Do you see any advantage in that?

Dr. SESCO. Any advantage in that?

Mr. VENTO. I think that probably those that are the customers, or folks that you are working with, probably say that having some consistency here would make some sense? Mr. Conn?

Mr. CONN. Mr. Chairman, I think there is something that is very exciting that is beginning to happen in the Pacific Northwest, where we have inter-agency, multi-disciplinary teams, that go out and look at watersheds based on a priority rating.

Where we have individuals from agencies because we don't distinguish boundaries between BLM and the Forest Service, we look at what is best for the watershed, and if we have a healthy ecosystem, then we can—and we define the goals for that ecosystem or that watershed, then we practice the harvesting of timber more consistently between us, because we are working so closely together, and we have those inter-agency, multi-disciplinary teams.

So, I think particularly the Forest Service and the Bureau of Land Management are very close together.

Mr. VENTO. Well, I understand that certainly in Region 6 there is a necessity there because of the challenges that exist, and the Fish and Wildlife Service is supposed to be in there in their role in the Endangered Species Act, at least with regards to that narrow—but it would seem that there is—having at least a similar practice.

One of the concerns that I have about the forest health bill, the clearcut bill, is that we seem to be in a period of time when information about forests and ecosystems seems to be growing rather dramatically. One of the things that has frustrated me is we are trying to deal with the interagency scientific committee, the committee in Region 6, and then we have another report and then we have another report.

And, the numbers keep changing. And, people begin to think that we are not really able to operate in good faith.

You know, we have a bill here that deals with clearcut and all of a sudden my colleague is fearful that on public lands it's going to be in private lands, you know. So, I don't know. I think it's a little bit of suspicion that may not be justified necessarily.

But, one of the problems is you have just got this growth, this explosion of information that we are finding out and we have to react very quickly in terms of forest management policies or BLM or the other agencies that have some responsibilities here. Do you want to comment on that, Dr. Sesco?

Dr. SESCO. Mr. Chairman, let me ask Dr. Szaro. He has got some comments on the interagency coordination.

Mr. VENTO. Yes.

Dr. SESCO. I think one of the things that has been really exciting over the last few years is the recognition of all the agencies that we just can't do it alone, that we need a lot of partners and we need to get together in our approach and how we look at ecosystem management and manage the land. And, there are several efforts that I would like to just bring to your attention.

One is that we have established an interagency ecosystem management coordination team that meets regularly on a monthly basis to talk about issues surround the ecosystem management and some of the planning problems that we have going on. There is also an interagency task force, which is composed of the relevant Assistant Secretarys from at least 12 different departments that are looking at, under the auspices of the Office of Environmental Policy, ecosystem management in the federal government and how we can coordinate better.

And, one of the efforts that we intend to do there is to look at some of these ongoing efforts like in the Pacific Northwest and elsewhere to see what we can learn from those experiences and

where we can make changes and how we can foster better efforts and better interagency coordination. There are several sub-issue work groups that are working together to look at these very issues on institutional barriers, policy development, science and information needs.

We also have a committee of environment and natural resources under the Office of Science and Technology Policy that is looking at ecosystem management, resource use in management, biodiversity and ecosystem dynamics and trying to coordinate research efforts government-wide as well.

Mr. VENTO. Well, I think it's important. That really relates to the question, Doctor, about the similarity and obviously not just of timber management but of other agencies like the Park Service that has a relationship of land management responsibility in relationship with both the Forest Service and the BLM and the others that are maybe doing some harvesting.

In fact, I was surprised when I went into, I think it was, Glacier where they had to do a lot of harvesting around roads. They have a pretty good timber program growing right there in the park because of the safety problems with the blacktop roads that were present there.

So, I don't know how many board feet they got out of that. But, it was done commercially.

But, I was really talking about this explosion knowledge. And, one of the problems, what about the contract that is put out?

You talked about this five year delay. But, if we are writing contracts today and we expect that in 1997 or something they will go to utilize it, what option do we have, or what caveats are in those contracts to, in fact, adjust to what might be a new circumstance in 1997 or 1998 when the actual action takes place?

Is there any opportunity at that point to engage new information? Dr. Sesco, do you have any comment?

Dr. SESCO. I am just told that any changes are already in our contract today, that we don't have much leeway. In other words, if we enter into a contract today, we don't have much leeway.

Mr. VENTO. Sort of a life and death situation but not necessarily an opportunity to tweak it——

Dr. SESCO. Right.

Mr. VENTO [continuing]. concerning some new ecosystem problems or endangered species problems. I think this is one of the areas that we need to look at.

You know, obviously it would affect the value of the contract. Obviously, you can always agree by reopening it with an agreement.

But that tends to put the onus on the government in terms of what the value of the contract is. Then, we eat whatever the cost is, I guess.

And, of course, there may be an economic factor involved in it.

But, money obviously makes people come to the table and do things that you want them to do. But, it may, in essence, cause some problems.

But, I was interested in that as a possibility as we look at the sort of dynamic of what takes place and what tools you have available to lend to the problems at hand. Mr. Conn, do you have any

comment on the question about that in terms of leeway once a contract is set out?

Do you have flexibility to revisit that before the execution of that contract takes place?

Mr. CONN. I think Mr. Berg has a word on that.

Mr. VENTO. Yes, Mr. Berg.

Mr. BERG. We have provisions in our contract. As a matter of fact, we have stopped some active contracts that were issued prior to the listing of the spotted owl and more specifically the listing of the Marble mullet.

We have stopped operations on contracts until such time as we could make evaluations of the impacts of that logging activity on the Marble mullet. And, some of those contracts are still held up.

So, we have provisions built in there for new information based on the Endangered Species Act or other things that we didn't know about when the contract was put together. But, the specifics of the contract as far as logging type locations or roads, you know, those types of things are usually pretty well nailed down.

Mr. VENTO. So, you don't have any flexibility there, but you have some for the endangered species?

Mr. BERG. Some of the other things we have.

Mr. VENTO. Dr. Sesco, that's the same question or answer you were going to make, I guess?

Dr. SESCO. Yes. I was going to say that we are proposing some changes in the National Forest Management Act that would give us the leeway to look at things on more of an ecosystem approach, which would then be folded into our future contracts.

Mr. VENTO. Or the execution, I guess, really.

Dr. SESCO. Yes.

Mr. VENTO. If we are signing things up now or if we are going to get into a lot of signing of contracts in Region 6, we obviously have to have some provisions where we can take new information, positive or negative, and—you know, of course, that doesn't exactly give certainty and predictability as much as somebody wants, but it might be better than not being able to write a contract at all today, to be on the safe side, I guess. So, that is a concern that occurs.

There are quite a few papers here that deal with selective logging. And, how would you describe or differentiate the amount?

Do you see now when we are talking about this policy path change that there is more basic selective logging, as defined by the proponents of this legislation, that is taking place within your agencies? Dr. Sesco?

Dr. SESCO. Yes. As we reduce the number of acres of clearcut harvest, obviously we are going to reduce the logging techniques related to that.

As we move more to uneven-age management, obviously we will be using different logging techniques which perhaps would be more amenable to the environment.

Mr. VENTO. Mr. Berg or Mr. Conn, did you have any comment on that? I didn't want to——

Mr. BERG. You are right, I am not a Doctor.

Mr. VENTO. Okay. Pardon me. I don't want to get you in too much trouble. [Laughter.]

Mr. BERG. No, don't. You don't want to give me too many degrees. I don't need anymore. [Laughter.]

Mr. VENTO. Okay.

Mr. BERG. We——

Mr. VENTO. The selective logging application increase.

Mr. BERG. If you were to look at the amount of clearcutting that we have done in the past, as you can see in the trends there, it has jumped all over the board. But, as we start getting into implementing the forest plan that came out of the Pacific Northwest here recently, there is going to be considerably less of clearcutting going on, much more selective logging because of the adaptive management areas. We are going to try different techniques in harvesting out there in the Pacific Northwest to see if, in fact, we can still get some of the volumes that we need to sustain some of those communities and still won't impact the environment out there.

Mr. VENTO. Well, I think if the BLM is having such a mosaic of land where there is more public/private ownership mixture in some of these blocks that, you know, it would be more likely that you would be doing it. But, obviously with the new regime, both agencies will be doing that.

One of the points that I wanted to make, and then I've got to leave, is that with the ecosystem management, there has, of course, been these adaptive management strategies, which you are both very familiar with, I assume, in the Pacific Northwest. But, the key component is, of course, to have more of an on-the-ground local community and scientists and so forth control.

This legislation, of course, sets up new requirements, new parameters, that would be a reference point in terms of what happens on the ground in a specific watershed or an adaptive management area to use the landscape like it is being used by your agencies now. Is there some contradiction between me sitting here passing judgment in terms of a bench mark, you know, no clearcutting or even-age management or selective?

You know, how do you relate the laws, the policies, the rules that you might have? It may be us.

It may be the Forest Service or the BLM itself doing it and then having an adaptive management strategy on the ground that, say, deal with forest health or deal with that forest as an ecosystem or that watershed. Is there a contradiction here or not?

And, how do we deal with that, my last impossible question for the day?

Dr. SESCO. Well, no, I think there would be a contradiction as we implement adaptive management, which is learning by experience or managing to learn, where we involve a wide variety of our customers. And, by removing the tool of clearcutting, we are removing one option that might play a major role in developing that mosaic of uses in a particular adaptive management area.

We do believe that in implementing ecosystem management that there is a place for even-age management and perhaps a place for clearcutting. And, so just by statute, to remove that tool I don't think, Mr. Chairman, is wise.

Mr. VENTO. I was just wondering about this contradiction just in any type, let's say, forest health or anything. So, I just want you to think about it.

You know, one of the other options—and I want to make certain I emphasize that we have got a couple of things in here. One is to clear everything, you know, a lot of areas in the inland west, as an example, wilderness, because there is a lack of confidence, either justified or unjustified in the agency in terms of what is happening.

And, so I hope you heard me say that in terms of—because, you know, that is one idea, is, you know, put it in the wilderness. Now, another is maybe to conserve it, and they will preserve it in a different way by abandoning clearcutting and trying to, you know, hone things in a different way. Of course, forest health.

So all of this is all part of the same, sort of idea. But, these bills had 100 sponsors on them in the House, you know.

So, just as sort of an editorial comment on my part or an information point, I should say, with regards to it.

Let me get to Mr. Conn. Did you understand my question——

Mr. CONN. Yes, sir, I did.

Mr. VENTO [continuing]. On the adaptive management and the relationship between any of these bills? Obviously, we know it's a wilderness declaration.

That's one thing. But, it could be LaRocco's forest health. It could be Bryant's clearcut bill, if I can characterize it that way.

Mr. CONN. I believe you used an excellent example of maintaining flexibility for adaptive management when you used the example of harvesting trees in the national park along side the road because of safety. I believe that all lands are going to need intensive management, even wilderness areas, because of the numbers of people that are out there and want to use them.

So, as things change, as we learn new science, I believe that on-the-ground managers need the flexibility to take that good science and put it into good management practices. I do believe, however, that we need all parties to work together so that they can keep us honest and make sure that we are doing what the greatest amount of people need, and ecosystem management takes a look at all the biota, along with looking at the social and economic impacts.

And, I think we all need to work together to do that. And, we need to maintain flexibility to do that.

Mr. VENTO. Well, I just think that as we are going down this road in terms of watersheds and ecosystems, as difficult as they are to define—and I agree with my colleague about that—but, in any case, we need to look at how we are going to do that and what the impact of policies are here and what guidance is appropriate if we are to remove it from the table by saying it's wilderness or remove it from the table by saying no clearcutting as a tool. I think it's important that even-age management doesn't translate into the same sort of problem.

In any case, gentlemen, your testimony was very good. I wish other colleagues had been here to hear it.

But, it will be available with the record. And, hopefully we will all benefit from it.

We are going to close down now at this point. And, I am going to go plant my tree. I think a willow oak.

It must be an oak. I'm trying to figure out whether it's a willow or an oak.

We will stand adjourned.

[Whereupon, the hearing was adjourned at 1:00 p.m., Thursday, May 5, 1994.]

APPENDIX

MAY 5, 1994

ADDITIONAL MATERIAL SUBMITTED FOR THE HEARING RECORD

Congress of the United States
Washington, DC 20515

April 9, 1992

Dear Colleague:

> ***The U.S. Forest Service is helping to destroy a one billion dollar per year industry in the Pacific Northwest.***
>
> ***60,000 JOBS ARE ON THE LINE.***

Does this sound like the timber industry? It's not. It's the ***fishing*** industry. The debate over how logging affects the Northwest's economy ***must*** look at fishing as well as timber.

Over 60,000 jobs In the Pacific Northwest depend on recreational and commercial fishing of trout, salmon and steelhead. But these jobs are seriously threatened by logging practices that are destroying fish habitat across the region.

214 different stocks of trout, salmon and steelhead are at risk of extinction--and over ***one hundred*** of those are in ***imminent*** danger of extinction. At least ninety of these fish stocks are directly at risk due to Forest Service management practices on the west side of the Cascades alone.

Media attention has focused on the dams in the Columbia River Basin. In fact, *two-thirds of the threatened fish stocks reside outside of the Columbia River Basin.*

For many of the coastal rivers, no significant dams stand as barriers to salmon spawning grounds. Something else--more insidious--is happening. The consistent factor in the loss of these fisheries is *loss of habitat.*

Salmon travel hundreds of miles upstream from the ocean to spawn in the rivers of their birth. If a clean gravel stream bed is not available when they arrive, the salmon cannot reproduce. In just a few years, the salmon stock genetically adapted to that stream will die out.

The Forest Service and Bureau of Land Management have contributed to the loss of these salmon stocks by permitting logging practices that destroy gravel stream beds and clog salmon streams with silt. When logging is permitted too close to river banks or on steep slopes, silt and sediment fill the rivers and choke off spawning areas. Logging roads are a large contributor to the problem.

The ancient forest groves and riparian areas that support most of our remaining salmon habitat will soon be logged off if current logging practices continue. The salmon fishing industry will be destroyed at the same time that the timber industry is forced to cut back because all the large trees are gone.

Legislation will be introduced soon to improve the management of our remaining national forests, including the protection of ancient forests and essential watersheds that support these priceless fish resources. I hope you will join us in this effort.

Sincerely,

GEORGE MILLER
Member of Congress

Congress of the United States
Washington, DC 20515

You've heard of the spotted owl?

Now meet the spotted forest!

April 7, 1992

Dear Colleague:

For the past twenty years the management practices of the Forest Service have led to the decline of the spotted owl and the creation of the spotted forest.

In the attached photo of the Gifford Pinchot National Forest in southwestern Washington state, the white blotches that mar the landscape are clear-cuts -- areas where hillsides have been stripped of all trees.

The Forest Service is supposed to manage our national forests to produce a sustained yield of various resources, including timber. But it is cutting timber beyond what the forests can sustain, and faster than the forests can regenerate.

Rather than rely on the Forest Service's own reports and promises, I ask you to look at this photo. Is this sustainable management of the forests?

Instead of logging the forest at a rate that can be matched with reforestation, it is obvious from this photo that the Forest Service has been stripping the forest much faster than it can be regrown.

Unfortunately, this is not an isolated problem. A satellite photo shows that much of the Gifford Pinchot forest is similarly "spotted." And other forests in the Pacific Northwest are also covered with these ugly blotches. Incredibly, the Forest Service has proposed that two-thirds of the 1992 timber sales in this forest will be in the remaining significant old-growth reserves.

The issues of mismanagement of the forests clearly go much deeper than the survival of the northern spotted owl. The Forest Service's mismanagement across the national forest system has led to widespread destruction of our nation's forest resources.

Please help me to bring the Forest Service into an age of sustainable management of the National Forests, and stop the spread of the spotted forest.

Legislation will be introduced soon to improve the management of our remaining national forests, including the protection of ancient forests. I hope you will join us in this effort.

Sincerely,

GEORGE MILLER
Member of Congress

Congress of the United States
Washington, DC 20515

MINING THE FOREST

May 7, 1992

Dear Colleague:

The timber industry likes to refer to our National Forests as a renewable resource. Of course, they're not talking about renewing the ancient forests, but renewing trees that can be harvested for pulp or timber.

This works only when trees are regrown after cutting. When clearcut areas are not reforested, however, there can be no claim of renewal. Rather than harvesting a renewable resource, the Forest Service is *mining* the forest.

Unfortunately, the Forest Service keeps terrible records on reforestation. It's computer projections anticipate tree growth without any systematic review of tree growth on the ground. No one knows how many acres actually grow into harvestable stands of mature timber.

But some hard evidence is now available.

On the Wallowa-Whitman National Forest in Oregon, one district, the Pine Ranger District, recently conducted a systematic review of replanted clear-cuts. What they found was shocking.

Less than four percent of the replanted acres were "satisfactorily stocked and free to grow" -- Forest Service language for an area that may mature into a harvestable tree farm. *Almost one-fifth of the replanted areas had been completely written off for forest regeneration, and over one-quarter needed replanting.*

What does this mean? The tree harvest projected in the Forest Service's computer programs cannot be sustained. If less than 4% of the the cut areas are renewed, the Forest Service is mining the forests, rather than harvesting a renewable resource.

Yet the Forest Service goes on relying on the reforestation projections in the forest plans--a renewable resource in the Forest Service's computers, but not on the ground.

H.R. 4899 was introduced to improve the management of our remaining national forests, including the protection of ancient forests. Both the Agricuture and Interior Committees have scheduled markups on this bill. It is our hope to bring this bill to the floor so that Members will have an opportunity to help save America's remaining ancient forest.

Sincerely,

GEORGE MILLER
Member of Congress

Congress of the United States
Washington, DC 20515

MIRACLE TREES

April 28, 1992

Dear Colleague:

The Guinness Book of World Records says the tallest tree in the world is a California sequoia measuring 387.8 feet. But the U.S. Forest Service has promised us Douglas firs *averaging* an unheard-of *658 feet tall* in the year 2047.

New math? Miracle growth hormones?

No, it's just one of the odd results you get when you trust a computer model called FORPLAN, used by the Forest Service to justify destruction of ancient forests by predicting future growth.

As with any computer program, the quality of what goes in determines the quality of what comes out. In the case of the forest plan for the Clearwater National Forest, the prediction of one stand of 650-foot trees to be grown in the rocky, dry mountains of Idaho drove the forest production figures up by 60%. (Just think of all the lumber you could get from each tree!)

Admittedly, the 650-foot tree prediction is an anomaly. But the "yield tables" used to predict timber production in our national forests are full of similar, smaller distortions--all driving the timber yields up, not down.

The Forest Service has for too long asked us to trust their numbers.

For too long, they've asked us to look the other way while faulty calculations have led to overcutting of some of the biggest trees in the world.

It's time to change all that. H.R. 4899 was introduced to improve the management of our remaining national forests, including the protection of ancient forests. Both the Agricuture and Interior Committees have scheduled markups on this bill. It is our hope to bring this bill to the floor so that Members will have an opportunity to help save America's remaining ancient forest.

Sincerely,

GEORGE

GEORGE MILLER
Member of Congress

Congress of the United States
Washington, DC 20515

KEEPING OUR PROMISES

June 15, 1992

Dear Colleague:

The promise of sustained yield from our national forests is a promise to our children and to the generations following them. It is a promise that cannot be met unless we are honest with ourselves about how much timber is available and how fast we can grow it back once it's cut.

Unfortunately, the Forest Service and the Bureau of Land Management have not been honest with themselves or with the people of the United States regarding the timber available from the forests of the Pacific Northwest. In the attached New York Times article, a deputy regional forester claims "99% success" in forest regeneration. Sadly, this is not accurate.

Over the last several months, the staff of the Committee on Interior and Insular Affairs has researched many accounts of how the Forest Service and the BLM have overestimated timber inventories and overstated reforestation success. After verifying and documenting these accounts, the staff collected them in the attached report, "Management of Federal Timber Resources: the Loss of Accountability."

I urge you to read this report. The litany of specific reforestation failures and inventory errors is disturbing. Look at the pictures of 20-year-old clearcuts with no trees growing in them. Consider the dismal results of the few on-the-ground surveys that have been completed.

We must insist that our forests are managed in a sustainable fashion, and that these valuable ecosystems are maintained for the future. Please join me in reporting H.R. 4899 to ensure that our remaining ancient forests will be sustained and to keep our promise to the future.

Sincerely,

GEORGE MILLER
Member of Congress

THE NEW YORK TIMES **INTERNATIONAL** THURSDAY, JUNE 11, 1992

The Earth Summit: A Closer Look at the Vanishing Forests

Space Photos Show Forests in Pacific Northwest Are in Peril, Scientists Say

By TIMOTHY EGAN
Special to The New York Times

SEATTLE, June 10 — A team of Government scientists mapping changes in the earth's surface says the latest satellite pictures show a surprising level of damage to the richest forests of the United States.

When compared particularly with the tropical rain forests of Brazil, the evergreen forests of the Pacific Northwest, although only a tenth the size, appear to be in danger of losing their biological vitality, the scientists said.

They said the pictures show the national forests in the Northwest so torn up by thousands of clear-cuts that the logging threatens the ability of the forests to support a diversity of species.

The scientists, from the National Aeronautics and Space Administration's Goddard Space Flight Center in Greenbelt, Md., are led by Dr. Compton J. Tucker. They base their conclusions on pictures from space of the tropical rain forest in Brazil and the temperate rain forests of Washington and Oregon.

'Severe Fragmentation' Found

"When you compare the situation in the Pacific Northwest to the Amazon of Brazil, the Northwest is much worse," Dr. Tucker said in an interview. "The pictures show this amazing, graphic situation — the severe fragmentation of the forest in the Northwest."

Because the continuity of the forest is so badly damaged, he said, such logging "has serious implications" for the diversity of plant and animal species needed to maintain a healthy biological system.

Officials of the United States Forest Service, which sets policy on such logging operations, say it is misleading to make judgments about forest practices based on pictures from space.

Almost all the cut-over Forest Service land has been replanted with new trees, they say, but this is not shown in the pictures from space because newly planted plots look the same as bald, deforested areas until the trees are about 10 years old.

The NASA pictures are bound to influence the debate in Congress over how much logging should be allowed in the national forests. The Bush Administration wants to open up logging on 266 million acres, in two areas of the state of Washington that contain large sections of old growth forest. Several bills pending in Congress would preserve most of the remaining forest.

Aerial tours of clear-cuts in the Northwest have proved to be one of the most convincing lobbying tools for environmentalists as opposed to extensive logging.

Tucker said he made his pictures available because he thought the comparison was relevant to the international debate.

Mapping Terrestrial Changes

Dr. Tucker, a senior fellow at the Goddard Center who has worked for the space agency for 17 years, heads a 15-member team that has been using satellite pictures to map changes in the earth's surface. He directs a unit of the Laboratory for Terrestrial Physics. His past studies have focused on the Amazon rain forest and on the growth of the Sahara Desert.

He has spent much of the past year comparing pictures of the Pacific Northwest with those of Brazil. Some of the pictures were shown to President Bush during his visit to the Goddard Center two weeks ago.

A White House spokesman said today that the President saw many satellite photos that day and did not specifically recall the ones comparing deforestation.

In Brazil, Dr. Tucker said, most of the Amazon forest remains intact despite years of cutting and burning to clear land for agriculture and development. The forest's edges have been pushed back and some sections have been opened in the interior, but the vast expanse of forest is undisturbed.

By contrast, he said, in the Pacific Northwest a large portion of the forest has been cut into small segments by roads and development or logging. When loggers clear-cut a tract of land, they cut down all the trees on hundreds of plots of 40 to 60 acres each.

Cutting the Forest to Pieces

"What so astonished us when we started to do this comparison was the tremendous degree of fragmentation in the Northwest," Dr. Tucker said. "It appears that much of the forest has been literally cut to pieces."

Some biologists compare the forests of the Northwest to a shirt that has been perforated again and again; after awhile there are many holes and little shirt. They contend that the region's national forests have been so sliced up by small clear-cuts that the overall health of the forest is at risk.

New Logging Methods

The Forest Service announced last week that it was retreating from its decades-old policy of clear-cutting. Under the new logging methods, some trees will be left standing as a means of encouraging a more natural regeneration of the forest.

The satellite analysis of the forests in the Pacific Northwest and Brazil adds a new dimension to a claim that many environmentalists have made about logging in the [illegible]

Extensive mapping by the Wilderness Society, for example, has concluded that a little more than 10 percent of the original 25-million-acre forest that once stretched from Northern California to the Canadian border is intact. This great swath of trees, including species like the Pacific yew, which contains a cancer-fighting compound, and many plants and animals in danger of being lost forever, is generally considered the biggest and richest of American forests.

In recent years, as other countries have stepped up their criticism of forestry practices in South American nations, some of these countries, including Brazil, have countered by citing the destructive logging of ancient forests in the Pacific Northwest.

As delegates met in Rio de Janeiro this week for the Earth Summit, leaders from the northern nations have continued to press for restrictions on logging in tropical forests.

The United States delegation arrived in Rio proclaiming protection of the world's forests as the main objective. As an incentive to developing countries, President Bush said the United States would increase its aid to other nations' forestry [illegible] by $150 million, to $270 million, in the next fiscal year.

But the Bush Administration has opposed as too costly a proposed treaty that would protect the world's plant and animal species.

In Dr. Tucker's analysis, the biggest threat from logging in the Pacific Northwest is to the diversity of species, a point on which many Forest Service officials agree.

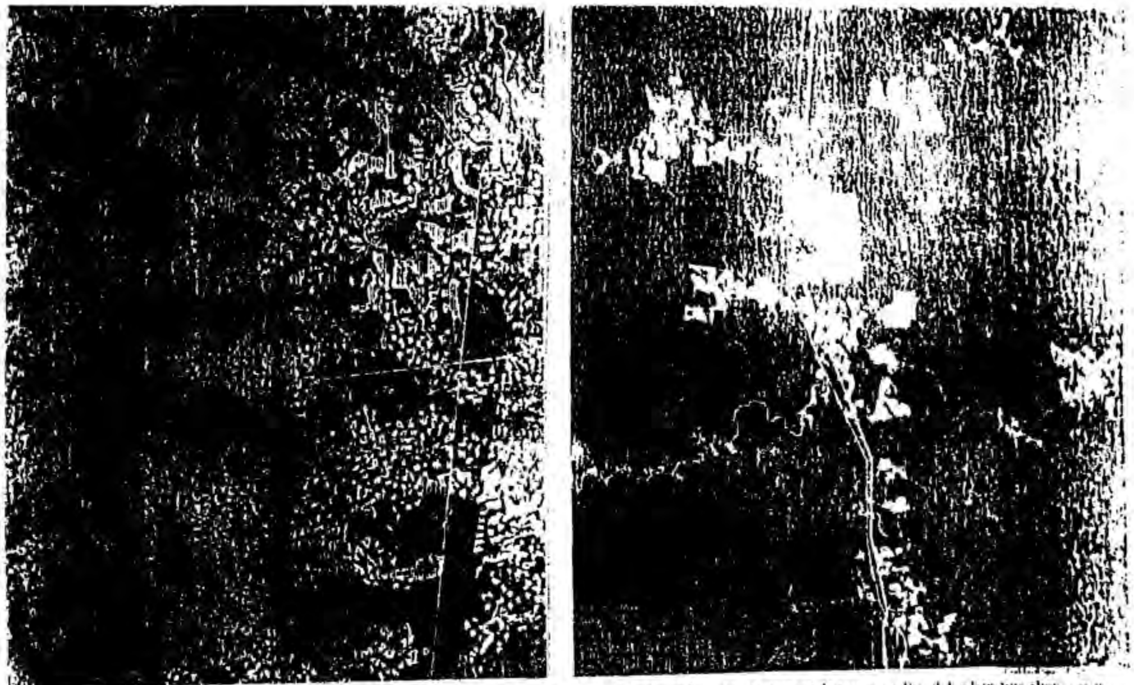
Pictures Termed Misleading

But John Lowe, the deputy regional forester for the Pacific Northwest, said the satellite pictures do not show the replanting that has taken place in many areas.

"The big difference between us and Brazil is that we are trying to bring it back," Mr. Lowe said. "Deforestation is not the business we are in. It never has been. We have been 99 percent successful in bringing in new forests after logging."

He acknowledged that the clear-cutting in the Northwest had left many experts concerned about a drop in the diversity of species. These people say that when a natural forest is replaced by commercially valuable trees, the plot becomes a farm, not a forest, and biological interaction is damaged.

But Mr. Lowe defended the practice. "Certainly, we have fragmented the landscape," he said, "but overall the forest is healthy enough to operate."



Satellite pictures taken in the last two years of forests in the Mount Hood National Forest in western Oregon, left, and in the state of Amazonas in Brazil. Each picture shows an area of about 1,000 square miles. Such pictures have convinced Government scientists that evergreen forests in the Northwest are [illegible]

News

Committee on Interior & Insular Affairs
George Miller, CHAIRMAN
U.S. House of Representatives
Washington, D.C. 20515

RELEASE: Monday, June 15, 1992 CONTACT: Daniel Weiss, 202/225-2095

REPORT BLASTS FOREST SERVICE REFORESTATION FAILURES.

LACK OF INFORMATION ON TIMBER INVENTORY

WASHINGTON D.C. -- Two key federal agencies have overstated the amount of timber left on federal lands, particularly in areas where forests have been logged but trees have not grown back, according to a new report released today by the chairman of the House Interior and Insular Affairs Committee.

The report cites dozens of examples of forests where logged areas have not regrown and timber inventories have been overstated. The report shows there is no evidence to support Forest Service claims -- made as recently as last week -- of a 99% reforestation success rate in clear-cut areas. To the contrary, the report shows that many of the areas that were claimed successful by the Forest Service were in fact failures.

The report comes just days before the House Interior Committee and the House Agriculture Committee are scheduled to vote on legislation to preserve ancient forests in the Pacific Northwest and develop a sustainable yield policy for those areas. The report was prepared by Interior Committee staff at the request of Congressman George Miller, D-Calif., the Committee chairman. Miller distributed the report to his Committee colleagues and urged them to "keep [their] promises" to future generations by passing an ancient forest protection bill.

H.R. 4899 was approved in May by the National Parks and Public Lands subcommittee. The measure would protect 8 million acres of ancient forest from logging and would order a study of logging practices. The measure also would establish a reforestation and restoration program for areas hard hit by clear-cutting.

Mismanagement of Pacific northwest forests is considered a chief culprit in endangering the northern spotted owl and hundreds of species of fish, including pacific salmon.

"This report shows that in spite of repeated assurances by the Forest Service, the forests we've cut down are not growing back," said Miller. "The Forest Service does not check whether new saplings are growing after they are three years old, they do not check forest

(over)

inventories against actual on-the-ground surveys, and they have not stopped cutting in forest areas that they know will not grow back.

"By exaggerating forest regeneration and forest inventories, the Forest Service and the Bureau of Land Management justify cutting more timber than the forests can sustain. Without more accurate information about the status of the forests, the agencies can't begin to set appropriate cutting levels," Miller said.

The staff report includes satellite studies showing that 10% of the commercial land base in the Olympic National Forest in Washington is bare dirt, and on-the-ground surveys that conclude that up to one half of the clearcut areas in the Sequoia National Forest in California are empty of replanted trees. The report also shows that 20 acres of land owned by the Bureau of Land Management in Oregon have been replanted eight times since 1960, without success.

These problems are compounded by over-optimistic Forest Service projections of forest regrowth. For example, growth projections for the Siskiyou National Forest in Oregon predict that replanted trees will produce twice the timber volume of the original forest. And in the Clearwater National Forest the Forest Service set its cut level based on the assumption that replanted Douglas Firs in one area of the forest would grow to 658 feet tall -- nearly twice as tall as the tallest sequoia, which is about 387 feet high.

"I just returned from the Earth Summit to find a NASA report that our Pacific Northwest forests are in far worse shape than the tropical rainforests of Brazil. The lesson from those satellite pictures is not just for other nations to see. It is for this country – where only 10 percent of the country's ancient forests remain. Our forest policy has already done great harm. We cannot afford to lose what remains.

"The mismanagement of these forests has been devastating. We have to stop the overcutting and start requiring careful stewardship of forest resources. This is our responsibility to future generations," Miller said.

A limited number of copies are available in room 2228 Rayburn.

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Management of Federal Timber Resources: the Loss of Accountability

Compiled by the staff of
the Committee on Interior and Insular Affairs
U.S. House of Representatives
Washington, D.C.

June 15, 1992

Clearcut on Sequoia National Forest—logged 1984-85, photographed 1991.

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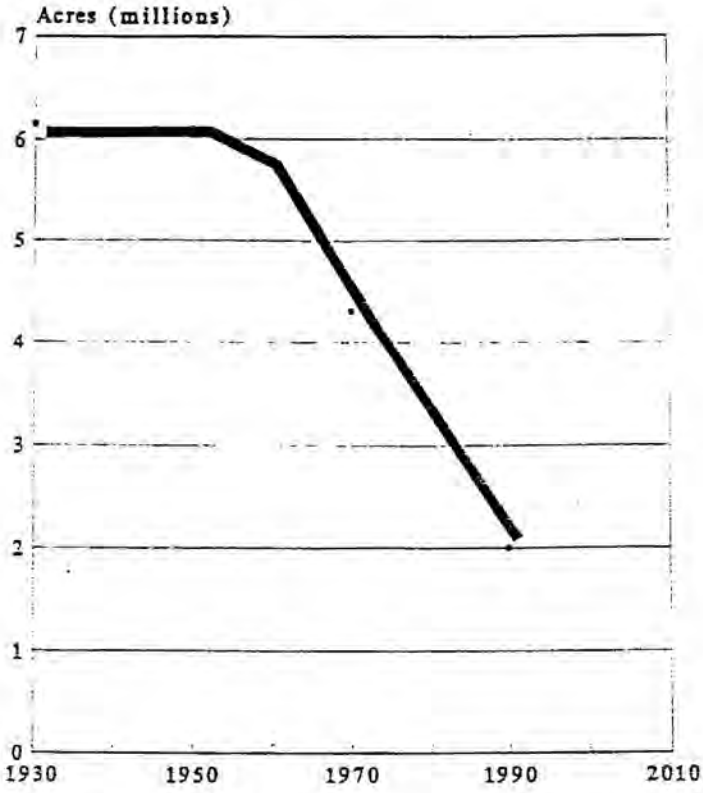
Summary:

Controversy over federal forest management has prompted investigations by Congressional committees, the General Accounting Office, and most recently by the Office of Technology Assessment. These inquiries reveal that the Forest Service and the Bureau of Land Management (BLM) lack adequate or up-to-date inventories and monitoring programs. Without such programs, the agencies cannot assess the success of replanted tree farms on the public's commercial forest lands or the quantity of mature timber available. Lacking such information, neither the Congress nor the public can determine whether ongoing federal timber sale programs meet legal standards for sustainable timber management. This report describes how the lack of monitoring and outdated inventories in the Pacific Northwest have prevented accurate determination of timber cutting levels, to the detriment of America's forest heritage.

Background:

Existing laws require that the public forests be managed on a "sustained yield" basis: use should be limited to the level that can be maintained in perpetuity. Accumulated data indicates that the Forest Service and BLM timber programs have not fulfilled this mandate. These reveal that overcutting in the last thirty years has liquidated much of the forests. 3.4 million acres, or 57% of the native, old-growth forests on Forest Service land in Oregon and Washington, have been cut down since 1955 [U.S. Fish and Wildlife Service, 1990 and 1992]. Without proper monitoring and attention to the "sustained yield" mandate, the cutting programs have turned the Nation's irreplaceable forest ecosystems into a fragmented patchwork of forests dotted with single-species, even-aged tree farms.

Two-thirds of the prime commercial timber on Forest Service lands in the Pacific Northwest has been cut down over the last forty years. However, the amount of this cumulative decline was never reported until the listing of the northern spotted owl under the Endangered Species Act required such accounting. The decline was not reported directly by the Forest Service, but instead appeared in the 1990 Status Review of the owl by the Fish and Wildlife Service.



This graph shows the loss of old-growth forest meeting spotted owl habitat requirements from commercial timberland. Extrapolating the curve, all old-growth would be gone by the year 2010, yet Forest Service second-growth tree farms will not be old enough to cut for many years thereafter.

In the April 28, 1992 hearing on the Forest Service budget, Forest Service Chief Dale Robertson stated that the forests "have always been managed on a sustainable basis," but recent Forest Service data show otherwise for the Pacific Northwest. An analysis of Forest Service statistics shows that current forest regrowth is only 64% of the volume being cut [Wolf].

This report identifies specific problems of faulty on-the-ground monitoring and unrealistic assumptions in Forest Service and BLM computer models, explaining how these problems result in inflated timber cuts that violate the legal requirement that timber be cut only at sustainable levels. The three categories of errors are:

(a) reforestation failures and slow regrowth on tree farms;
(b) over-optimistic projections of future tree farm growth; and
(c) inaccurate inventories of the standing timber volume.

This report analyzes the lack of accountability in sustaining timber resources; the more difficult question of accountability in maintaining other resources, like fish and wildlife or water quality, must await further inquiry.

The report starts with an overview of the agencies' monitoring failures, followed by specific examples described by agency personnel and citizens. A summary of the documented problems, by National Forest and BLM District, is provided to illustrate the scope of the abuse.

The Failure to Monitor:

Various laws require the agencies to monitor the performance of forestry investments according to certain standards, in order to ensure that timber harvest can be sustained. In particular, the National Forest Management Act (NFMA) requires:

1. "All national forest lands treated from year to year shall be examined after the first and third growing seasons and certified... as to stocking rate, growth rate in relation to potential and other pertinent measures" [16 U.S.C. § 1601(d)(1)].

2. The Forest Service shall "insure that timber will be harvested ... only where ... there is assurance that such lands can be adequately restocked within five years" [16 U.S.C. § 1604(g)(3)(E)].

The NFMA also specifically directs that clearcutting not be used unless it is determined to be the "optimum method" [16 U.S.C. § 1604 (g)(3)(F)(i)].

The Forest Service and the BLM have simply not complied with monitoring requirements. For example, the Forest Service's annual "Reforestation and Timber Stand Improvement Report" is the agency's only official report on tree farm survival, and it only measures success based on seedling survival in the first three years of a plantation's life. Measurements of "growth rate in relation to potential," as required by NFMA, are reported from only a small sample of trees after the first growing season.

Tree farms stocked with a target number of seedlings are "certified reforested" after three years. The agencies replant problem sites that cannot be certified, but agency records don't account for acres that have consistently failed and been replanted. Thus, the required assurance of restocking within five years is not met. Delayed regrowth ("regeneration lag time") of repeated plantings delays the actual date that the trees will be ready to cut again, but the computer model used to generate cut levels still assumes that the first planting was successful. Robert Rogers, Forest Silviculturist on the Sequoia National Forest, reported in 1988 that "less than 10% of the reforestation records were complete in all respects, and in most cases there was no measure of the reliability of the data." [Rogers].

The most salient evidence of the lack of monitoring data may be the fact that none of the national forests or BLM districts produced a tree farm inventory for their new Forest Plans; only older timber stands were inventoried. Vague claims of tree farm success were not supported by documentation. On the Siskiyou National Forest, a belated tree farm performance analysis [Greenup] falsely claimed "99% success" by using a biased, incomplete sample that ignored high-elevation failures in the Illinois Valley Ranger District [Headwaters].

A March 1992 Office of Technology Assessment report on the Forest Service noted that the agency has a distinct disincentive to monitor implementation because degenerating conditions reflect poorly on the agency and its managers [Office of Technology Assessment]. Since citizens and agency personnel have pressed for better monitoring of tree farms, however, some national forests have begun to collect growth data. On the

Umpqua National Forest, a "100% young-growth inventory on all lands clearcut before 1969" is underway [Fierst]. Results should be available soon on average tree diameter, stand density (trees per acre), and average growth rate. Such inventories are necessary for all our public forests.

Examples of the Lack of Accountability:

This table summarizes results of in-house and outside monitoring projects on the public forests of the Pacific Northwest and California.

THREE BASIC ACCOUNTING AND MONITORING PROBLEMS UNCOVERED ON FEDERAL FORESTS

STATE	FOREST	REFORESTATION FAILURES	UNREALISTIC GROWTH PROJECTIONS	INACCURATE TIMBER INVENTORIES
WASHINGTON	Olympic NF	x		
IDAHO	Clearwater NF		x	x
MONTANA	Kootenai NF			x
	Lolo NF			x
OREGON	Deschutes NF			x
	Medford BLM	x	x	
	Mount Hood NF		x	
	Rogue River NF	x		
	Siskiyou NF	x	x	
	Willamette NF		x	
	Umpqua NF	x		
CALIFORNIA	Klamath NF		x	
	Plumas NF			x
	Sequoia NF	x		x
	Sierra NF	x		
	Six Rivers NF	x		

A. Reforestation Failures and Slow Regrowth on Tree Farms

Many factors may cause reforestation failures and slow regrowth: drought, frost, unsuitable soils, soil compaction from heavy equipment, use of non-native species, poor seedling stock, steep slopes, gopher damage, deer damage, porcupine damage, and root-rot diseases. Except for areas with high rainfall and deep soils, reforestation has not been as easy or successful as the agencies imply. The worst problems occur south of the Rogue/Umpqua divide in southern Oregon and at high elevations.

Reforestation success is crucial, because the agencies use predicted tree farm growth in the future to justify cutting more old-growth today. Here are some examples of concern.

1. California - Sequoia National Forest

Three-thousand-year-old Giant Sequoias make this one of America's premier national forests, yet clearcut logging around and within these ancient groves has produced serious reforestation failures. Charlene Little of the Sequoia Forest Alliance, foresters Gordon Robinson and Roy Keene, and the members of the California Native Plant Society charge that half of the clearcuts are seriously understocked and below Forest Service standards, even though over $1,000 per acre is being spent.

Gordon Robinson, formerly chief forester of the huge Southern Pacific timber holdings, estimates from his own surveys that clearcuts are only 50-75% stocked with planted trees. This lack of success is caused by clearcutting on dry, steep (100%) slopes, followed by poor planting of pine seedlings in areas to which only fir trees are adapted [Robinson, 1988]. Roy Keene, former logger from Oregon, independently confirmed Robinson's findings. He reports that over two thirds of the tree farms on south-facing, steep slopes are failures [Keene].

20-year-old pine plantation following clearcut on steep slope in Sequoia National Forest. Reforestation problems frequently result from clearcutting in such steep areas.

These failures are officially denied by Sequoia National Forest managers, who have taken various steps to cover up the problem. They

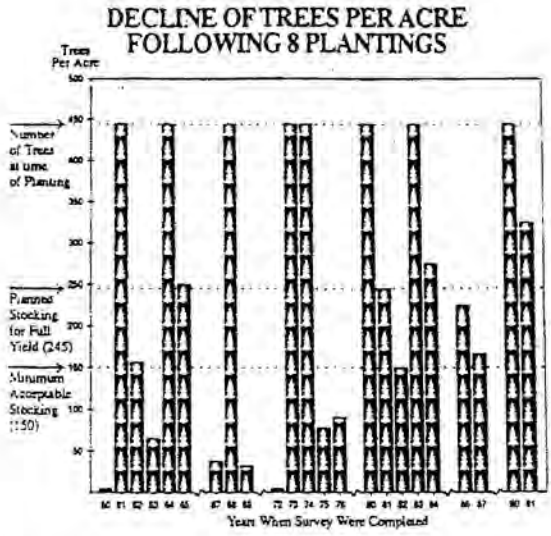
lowered stocking standards in 1991 (from 200 trees per acre to 100 trees per acre) without reducing their cut level, and averaged survey data to conceal problem zones. However, the Forest's own Silviculturist, Robert Rogers, reported in 1988 that "accumulated volume growth in the Sequoia National Forest is lagging by 80% in its reforestation effort," based on his own survey of a random sample of older cuts, measuring height and diameter [Rogers].

The Sequoia National Forest's "Annual Reforestation and Timber Stand Improvement Needs Report" for a 6-year period showed steady increases in replanting needs: from 4,614 acres in 1983 to 12,106 acres in 1989. Many of these units had been planted as many as four times. After visiting 101 stands described in the Forest Service's Reforestation Report, the Native Plant Society estimated that 24% of the stands failed after one year [California Native Plant Society]. The higher failure rates reported by Robinson and Keene indicate that first year survival is no guarantee of successful regeneration.

2. Oregon - Medford District BLM and Rogue River National Forest

Clearcutting in the high-elevation Indian Plateau has been practiced extensively by Forest Service, BLM, and private timber companies despite well documented research [Minore] showing that most replanting after clearcutting in this area is doomed to failure. High ridges surrounding the plateau concentrate cold air from early summer frosts in the openings created by clearcuts, and newly planted seedlings are therefore severely damaged or killed.

Of the 1,700 acres clearcut on BLM lands between 1958 and 1970, over 500 acres are still understocked and an additional 500 acres meet only minimum stocking standards, despite replanting an average of four times. In spite of these serious problems, the BLM has clearcut an additional 1,500 acres in this area since 1970 [Brock]. In 1991 the BLM acknowledged that clearcutting here was a mistake.



Unit #122386, 20 acres clearcut in 1960. The high points in the graph show the number of trees planted in eight attempts since 1960, including two consecutive years. The number of surviving trees drops dramatically until replanting, one to seven years later. Source: data from USDI Bureau of Land Management, graph by Headwaters.

Encountering similar problems, the Rogue River National Forest published a "Recovery Plan" for the same high-elevation area in 1989, listing 1,600 acres in need of replanting due to earlier failures. Nonetheless, clearcutting continued into 1990 with two more timber sales [Brock]. While some foresters are no longer clearcutting, neither the BLM nor the Forest Service has adequately acknowledged these historic failures in their growth projections, their tree farm inventories, or their annual cut levels.

An example of failed Bureau of Land Management reforestation on the high-elevation Indian Plateau in southwest Oregon. The site has turned to grassland, which brings in gophers that eat the conifer seedlings.

3. Oregon - Siskiyou National Forest

In the High Siskiyou Mountains, the District Silviculturist on the Illinois Valley Ranger District, Alan W. Wolfson, analyzed tree farm records for 14,000 acres of high-elevation cuts in 1973. He concluded that "above 4,000 feet clearcutting is questionable from a solar radiation standpoint, and above 5,000 feet it is out of the question." He found that 4,700 acres (34%) of the cuts in the Illinois Valley District were poorly stocked [Wolfson].

Following up on Wolfson's research 16 years later, volunteer researchers surveyed 37 clearcuts on 706 acres at elevations greater than 4,000 feet and found 400 acres that had degraded to grassland due to destruction of the soil community that supports conifers. Only 4 of 25 failed cuts had been reported as failures on the Siskiyou National Forest's 1988 Reforestation Status Report. Citizen researchers reviewed the agency's Total Resource Inventory computer print-outs for the Grayback and Sucker Creek watersheds where many of the high-elevation failures occurred. They

found significant delays in restocking, from 6 to 25 years, on 2,396 acres of old clearcuts--in violation of the statutory 5-year restocking standard.

Unfortunately, these repeated failures do not appear to be exceptional. Dr. David Perry of Oregon State University did intensive research on one of these sites in the Siskiyou National Forest, and reported, "We do not believe that Cedar Camp is an anomaly. At the very least, it probably represents many other unreforested clearcuts at high elevation throughout the western United States." [Perry, et al.]. This expert opinion is shared by John Beuter, the Assistant Secretary of Agriculture, who in 1990 said of high elevation old growth, "Frankly, I think we ought to leave it alone until we understand more about how to grow it back." [Peterson].

4. Oregon - Umpqua National Forest

James Kaupilla, Umpqua Valley Audubon Society, obtained digitized Forest Service tree farm records in 1990 and found that 3,282 acres of old clearcuts in the Diamond Lake Ranger District had not been successfully restocked within five years. The average "regeneration lag time" for this group of cuts, located in "problem land types" was 14 years, but the computer model assumed a lag time of 7 years. Audubon volunteers surveyed fourteen high-elevation clearcuts that were recorded as adequately stocked, which were almost completely devoid of trees upon inspection. Meanwhile, the Forest claimed near 100% stocking [O'Toole, 1992].

The Forest Silviculturist, Jim Fierst, echoed these findings in his April 1991 report. He found slow growth and mortality related to high elevation stress, overstocked stands in need of thinning, use of non-native seedling species, and frost [Fierst].

5. Washington - Olympic National Forest

By comparing satellite reconnaissance photos from 1962 and 1988, graduate student Stephen Greenway from the University of Washington analyzed significant bare areas in old and new clearcuts; 51,784 acres of bare soil were found in cut over areas, in patches of 4.8 acres or larger. This represents 10% of the commercial land base. Taking into account smaller patches, Greenway found 55,784 acres of bare soil [Greenway].

In this area of the Olympic National Forest, almost all trees have been cut except those left in narrow bands along waterways.

6. California - Sierra National Forest

Terry Thompson, a former Forest Service employee, found that the Sierra National Forest is falling behind on the 5-year minimum stocking requirement, and that tree farms are far below minimum stocking standards. "I have personally observed many failures which have been planted more than 2 times and are still not able to regenerate." [Thompson].

Three-year-old trees showed increased mortality, with survival rates as low as 25% for white and red fir [USDA Forest Service, 1991]. The Sierra National Forest summary certification report for the years 1981 to 1988 showed that less than 45% of reforestation areas had been certified as reforested. Twenty percent of the acreage was classified as reforestation failures and 26% had not reached the age for certification.

7. California - Six Rivers National Forest

In 1986 Tim McKay, a member of a Forest Service silvicultural review team, visited 22 sites that had been site-prepared, replanted, or thinned between 1980 and 1984; 13% percent of these sites were complete failures, 31% were not fully stocked, and 12% had marginal success. Only 44% were fully restocked. Unit C of the Black Rock timber sale on the Lower Trinity Ranger District was clearcut in 1972; photographs taken 14 years later show that replanted conifers have not survived [McKay].

The photo on the next page shows a 1972 clearcut site in the Six Rivers National Forest dominated by brush, with a few small trees. The photo was taken in 1986, fourteen years after clearcutting.

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B. Over-Optimistic Projections of Tree Farm Growth

The Forest Service and BLM use computer simulation models to project growth on tree farms over time. These calculated tree farm yields (timber volume per acre) are projected for different types of tree farms according to the productivity of the land, the species of trees, and various intensities of management. Computerized growth models (DF-Sim, Prognosis, and Organon) estimate growth over time given certain assumptions, including (a) 100% stocking to target levels and (b) increased growth from "intensive management practices" (genetically superior seedlings, fertilization, herbicide use, and thinning).

The agencies use these assumptions to rationalize increasing the cut levels now, without waiting for increased growth to actually occur [Robinson, 1971]. These "allowable cut effect" credits were institutionalized in the agency computer models in the 1970s and contribute substantially to the cutting levels now included in the Forest Plans.

Unfortunately, the agencies have not matched the sophistication shown by developers of these computer models in validating their projections. The lack of on-the-ground growth data cripples their ability to verify the growth projections. Validation is crucial since no tree farm has yet grown to merchantable age (85 to 120 years old)--the oldest tree farms in the Pacific Northwest were planted by Weyerhaeuser in 1942, and most federal tree farms are less than 35 years old. The timber cutting levels generated by FORPLAN, the computer model that serves as the agencies' chief tool for setting timber harvests, rely heavily on the growth projections coming true.

Also, expected increases in growth stand on shaky ground because the intensive management practices incorporated into the projections are expensive and underfunded, and have yet to be proven effective. For example, the claim that "genetically improved seedlings" will increase growth 10 to 15% is questionable, because it is unproven and dependent upon a successful thinning program that may or may not be completed by the agencies [Silen].

Forester Gordon Robinson states, "I have had a lot of experience with the Forest Service, and can attest that it is their common practice to make repeated computer runs, varying the input data until they come up with...yield tables to justify the quota coming down from Washington D.C. for their ASQ." [Robinson, 1992]. Complaints about over-optimistic growth projections in the forest yield tables abound, because they assume the best case and inflate logging levels. Here are some examples.

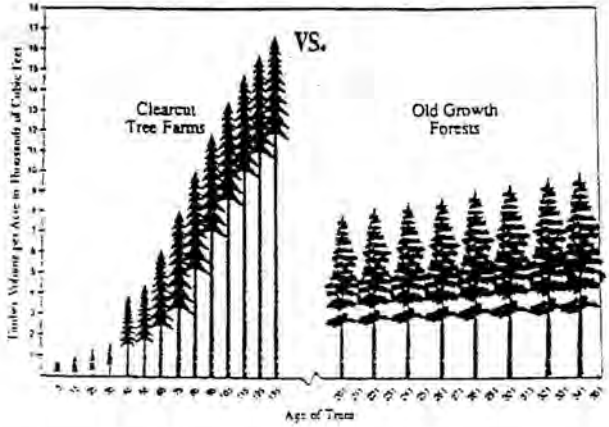
1. Idaho - Clearwater National Forest

The dry, rocky mountains of Idaho are known more for their beauty than for the productivity of their forest soils. Yet the "yield tables" used by forest planners for the Clearwater National Forest tree farms predict some Douglas fir trees will grow to 658 feet tall [McQuillan]. Such an awesome growth rate (over ten feet per year for 60 years) will make the tallest tree in the Guinness Book of World Records,look puny...a giant sequoia that towers a full 387.8 feet high. The Forest Service corrected this obvious mistake when it was discovered, but other less dramatic errors remain. According to an internal Forest Service memo from 1985, "Most of [the Clearwater] timber yield tables would appear to be biologically unreasonable." [Field].

2. Oregon - Siskiyou National Forest

High-intensity tree farms in this steep, rugged area of southwest Oregon are projected to produce twice the per-acre volume of the original forest, according to the growth projections in the FORPLAN "yield tables" [USDA Forest Service, 1984]. A Draft Planning Document from 1982 shows the increments that were added to the growth projections: 36% for commercial thinning, 2% for genetics, 27% for herbicide treatments, 21% for pre-commercial thinning, and 2% for fertilization [USDA Forest Service, 1982]. None of these factors has been proven through actual implementation. In reality, drought, high-elevation stress, deer damage and wildfire damage seriously reduce reforestation growth. These problems are not acknowledged by Siskiyou managers or the Forest Plan.

GROWTH OF WOOD VOLUME



This figure shows projected tree growth from a computer model for the Siskiyou National Forest. The projection anticipates trees will grow twice as big in half as much time. Projected tree size will not actually be taller than old growth, but per-acre density is predicted to double original timber volume.

3. Oregon - Medford District BLM

This BLM district contains forests that are drier and less productive than many commercial timberlands. Nonetheless, the draft growth tables for the new Resource Management Plan say that tree farms will produce three times as much wood (volume per acre) as exists in the natural old-growth forests. This increase is attributed to a variety of unlikely hypothetical factors including the complete elimination of "competing" native hardwood tree species in the tree farms [USDI Bureau of Land Management].

4. California –Klamath National Forest

The Klamath National Forest is one of the few national forests to actually survey growth in their existing tree farms, and Forest Planner Jim Benson found that planted trees in the mixed conifer, true fir, and

ponderosa pine zones were not meeting expected growth rates. New predictions based on these on-the-ground surveys conclude that trees will reach merchantable size as much as two decades later than originally projected, because tree diameter growth was lower than projected. Fortunately the Klamath National Forest has incorporated this new information into the yield tables for its long-delayed Forest Plan. Also, 17,000 acres of tree farms have been destroyed by wildfire, and the likelihood of more wildlife damage is high due to long-term drought [Pace].

5. California - Sequoia National Forest

As described above, Forester Gordon Robinson reports clearcuts in the Sequoia National Forest are not growing on schedule because of serious shortfalls in stocking levels (trees per acre) and damage to site productivity [Robinson, 1988].

6. Oregon - Willamette and Mt. Hood National Forests

Forest Service silviculturists recommended that yield projections be reduced by 30% to compensate for low seedling survival, wood defects, steep slopes, natural non-forest openings, root-rot, road right-of-ways, disease, rocky sites, and animal damage, but the Regional Office only approved a 10% decrease [O'Toole, January 1992].

7. Oregon and California - USFS Region 5 and 6 and BLM

All the existing growth projections for Oregon and California include assumptions of increased growth from the active elimination of "competing" hardwoods and brush in the conifer tree farms through the use of herbicides or manual brush cutting. Whether or not this growth could actually be achieved, litigation in 1983 banned herbicides, so little brush control was accomplished. But the "credit" for use of herbicides was still added to the growth projections.

C. Inflated/Inaccurate Inventories of Standing Timber Volume

In many national forests, the commercial timber inventory assumptions used in the forest planning process are not accurate. Randal O'Toole, a forest economist who has analyzed 66 Forest Plans, found that over half of the forests did not compile new inventory statistics for their Forest Plans. Typically the acreage and timber volumes used in the planning process inflate the remaining inventories to justify larger timber cuts and continued overcutting [O'Toole, February 1992].

Regional Forester Jeff Sirmon directed Oregon and Washington Forest Supervisors to adjust inventories to account for timber volume that was sold between 1983 and the date the Plans were adopted (1989 and 1990) [Sirmon]. Sirmon officially recommended that the cutting levels be adjusted downward for this overcounting, but it never happened because he was transferred.

1. California - Plumas National Forest

In September 1991 the Plumas National Forest managers reported to the Regional Office that they could only offer 115 million board feet of timber rather than 253 million board feet in the President's budget, in part because of over-estimated timber inventory volumes that did not exist on the ground, especially in the remaining, more difficult terrain [Palmer]. Total timber volume was exaggerated by 44% when the FORPLAN analysis was compared with on-the-ground inventory data from the ranger districts.

2. Idaho - Clearwater National Forest

Timber inventory contractor Leroy Lee compiled Forest Service data to determine that the Forest Plan calculations for timber harvest were based on timber volumes that were exaggerated by 36% in the Palouse Ranger

District. Instead of relying on the "Timber Stand Inventory" developed by the Ranger District, 75,000 acres were arbitrarily designated as mature timber (with the greatest volume per acre). In fact, only 5,000 acres of prime, original forest remains in the Palouse [Lee].

Forest Service analyst Richard Field reported that Clearwater planners had ignored the inventory impacts from dead and dying white pine [Field].

3. Montana - Kootenai National Forest

Timber inventory contractor Leroy Lee reports that 32,105 acres of cut-over lands were falsely reported as mature timber in the Upper Yaak Decision area. Although this commercial area has a full range of age classes (seedlings, poles, mature), forest planners assumed the area was largely mature timber [Lee].

4. Oregon - Deschutes National Forest

Randal O'Toole's analysis of a new Deschutes National Forest timber inventory revealed that the old inventory used in their Forest Plan exaggerated the ponderosa pine volume by one-third [O'Toole, January 1992].

5. California - Sequoia National Forest

Forester Gordon Robinson reports that 86,000 acres of mixed conifer forest and 20,000 acres of red fir forest were reclassified as commercially "suitable" in the Forest Plan, although these marginal areas cannot sustain commercial logging [Robinson, 1988].

In this photo from the Sequoia National Forest, the light-colored trees in the foreground are dead, with pale brown needles against the dark background.

6. Montana - Lolo National Forest

The Lolo Forest Plan erroneously assumed that 280,000 acres that burned in wildfires earlier this century contained merchantable timber [Daniels].

Conclusions:
Responsible Forest Stewardship or a Sylvan Savings and Loan Crisis?

The public forests are a national inheritance passed on to generations of Americans. Laws established by Congress have placed this inheritance in a trust, appointing the Forest Service and Bureau of Land Management as

the trustees and guardians of the trust. Existing forest ecosystems and the land's future productivity represent the principal or assets of our national forest trust. The American public and future generations are beneficiaries of the trust, legally entitled to benefit from the income produced from the assets' growth.

Congress mandated that the Forest Service and BLM maintain the underlying principal of forest productivity and not allow the aggregate value of the trust assets to diminish. In the terminology of the law, the forests must be managed to insure "sustained yield" of all resources on the public's forest trust. The Multiple Use--Sustained Yield Act of 1960 echoes the two requirements for the administration of the trust, to provide a regular income from for the beneficiaries without diminishing the original capital:

> sustained yield of the several products and services means the achievement and maintenance in perpetuity of high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land. [16 U.S.C. § 531]

Since this law was passed in 1960, over 3 million acres of commercial old-growth timber have been clearcut and extracted from the public forests of the Pacific Northwest and California. The recent study by the Office of Technology Assessment on Forest Service planning found that the Forest Service has sold this timber with no means of ensuring that the fundamental requirements of the forest trust have been met, because it does not have auditing systems adequate to verify that cut levels can be sustained or that the use of clearcutting has not damaged the productivity of the land.

The parallel with the savings and loan crisis is clear. Managers of savings and loan institutions, the trustees of people's savings, substituted junk bonds and poorly-secured loans for reliable long-term home mortgages which had been the traditional assets of savings and loan institutions. Junk bond speculation furthered the quest to maximize short-term profits, even though such speculation placed accumulated capital as well as income at risk. Inadequate auditing or monitoring of the S&L's allowed this mistake to reach tragic proportions before it was detected by the public and the federal government.

Likewise, the trustees for the public's forest trust, the Forest Service and BLM, have failed to adequately audit the consequences of their actions and their investments. Thousands of acres of original forests have been cashed in by clearcutting. The basic productivity of the land has been reinvested (loaned out) in a speculative system of clearcuts and monoculture tree farms.

The Forest Service and BLM chose one type of re-investment program (clearcutting/tree farming) and used their assumptions of success to justify the continued conversion of the original forest assets. Agency computer models pronounced, without on-the-ground proof, that clearcut tree farms would double the amount of timber volume per acre found in the original old-growth forest--definitely a speculative investment strategy. Just like the S&L managers, the Forest Service and the BLM have failed to evaluate the quality and stability of their investment strategies. The original investment decision to switch from intact forests to clearcut tree farms was never seriously reconsidered, although such re-evaluation was mandated by the National Forest Management Act of 1976 (NFMA). In their rush to sell timber, the federal agencies failed to diversify their forest management portfolio, ignoring other cutting methods that better protect soil, biodiversity, and long-term site productivity.

Now the Pacific Northwest is living with the consequences of the agencies' failure to audit this speculative management strategy. Because they have not audited the results, the Forest Service and BLM have been continuing their investment strategy without realizing that their investment returns--high yield tree farms--have in many cases not been growing as anticipated. Lower yields have resulted from both the agencies' inability to get trees to grow at all in some areas and the unrealistically inflated yields projected in the agencies' computer-generated tree growth charts. Furthermore, the agencies' failure to audit their assets on hand has lead to continuing reliance on overstated timber inventories. Rather than monitoring the forest assets held in trust for future generations, the agencies have engaged in speculative investment that can only be described as liquidation of the trust assets--the public's forest heritage.

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OPENING STATEMENT
of
THE HONORABLE JAY DICKEY
Fourth District - Arkansas

National Parks, Forests and Public Lands Subcommittee Hearing on H.R. 1164, the Forest Biodiversity and Clearcutting Prohibition Act.

May 5, 1994

Mr. Chairman, thanks for holding this hearing on H.R. 1164. My hope is the hearing, along with a similar hearing held last October in the Agriculture Specialty Crops and Natural Resources Subcommittee, will help develop the record as to the folly of this legislation.

In essence, the bill proposes to almost end responsible, professional, healthy forest management on National forest Lands, Bureau of Land Management forest lands and Indian forest lands. It mischaracterizes effective forest management tools such as modified shelterwood and modified seed tree timber management as equivalent to clearcutting.

The Ouachita National Forest, in my Congressional District in southern Arkansas, ended essentially all clearcutting back in 1991 -- a pioneering management initiative in the national move toward forest ecosystem management. The forest does use as management tools, non-traditional shelterwood and non-traditional seed tree management, to include a variety of timber and plant species of varied ages and heights, and to promote favorable habitat for wildlife. Varied forest management options are needed to provide a variety of plants and wildlife that evolve, live and prosper in different types of ecosystems and forest stands.

The ecosystem management policy subsequently begun in 1992 by then-Chief Dale Robertson, and further promoted by the current Chief, Jack Ward Thomas, has also resulted in a significant reduction of clearcutting in the National Forests across the country. This bill is not needed.

We should allow these new direction policies to mature and be evaluated as to how they are working over a longer term, before embarking on a massive change in policy proposed in this bill -- essentially a policy of one management (or non-management) prescription fits all forests. Obviously, that is not realistic or rational given the varying geography, climates, land characteristics and other resource variables attendant to each National Forest across America.

My hope is we will not move further with this legislation.

Thank you .

###

in brief:

what are the problems?
what can we do to solve them?

Save America's Forests
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Washington, DC 20003
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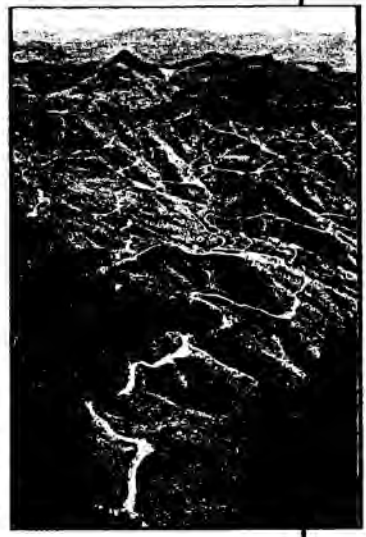
The Nationwide Campaign to Protect & Restore America's Wild and Natural Forests

America's Forests In Crisis

America's Magnificent Forests

When Columbus arrived on the North American continent nearly 500 years ago, it was covered with pristine ancient, virgin, and native forests. A squirrel could travel from the Atlantic coast to the Mississippi River without touching the ground. In the East, White Pine, Oak, Hemlock, Maple, Chestnut and many other species of trees stood tall, the framework of some of the most diverse and complex forests on Earth. Magnificent ancient forests of Giant Sequoia, Redwood, Douglas Fir, Spruce, and Cedar were an unbroken band of temperate rainforest from California to Alaska.



Natural forest ecosystems are the foundation of our planet's land-based web of life; they are diversity in harmony, habitat for the many plant and animal wonders of nature. Natural forests also create clean air, clean water, and many other essentials for the continuation of all life on Earth.

Since Columbus, civilization has waged war on America's forest ecosystems. 95% of our original forests have been destroyed, and the last 5% reside almost entirely on public lands that are owned commonly by all Americans. The past 40 years have seen heartbreaking losses on America's public lands. The rate of destruction increased when the National Forest Management Act legalized clearcutting in 1976. Now, our National Forests across the country are falling to the chainsaw and bulldozer faster than at any time in America's history, logged by private timber companies with the help of Congress, the U.S. Forest Service, and at the yearly cost of hundreds of millions of taxpayer dollars.

End of Biological Diversity Coast to Coast

A founding purpose of the U.S. Forest Service was to reclaim lands laid to waste by

Virgin Forests 1620

Virgin Forests 1850

Virgin Forests 1989

SAVE AMERICA'S FORESTS

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INFORMATION SHEET AND PLATFORM

WHAT IS SAVE AMERICA'S FORESTS?

Save America's Forests is a nationwide coalition of local, regional, and national environmental groups, public interest groups, responsible businesses, and individuals working together to pass strong, comprehensive nationwide laws to protect our forest ecosystems. The wasting of America's forests adds to other environmental and economic problems of air and water pollution, overflowing landfills, and loss of taxpayer dollars and American jobs. Therefore, our coalition includes people and groups from a broad spectrum of society, representing related environmental and economic issues, and both rural and urban communities. Currently, we represent over 500 member groups and businesses with a combined membership of more than 3 million people. We have grown to this size since our inception in May 1990, and continue to expand at a rapid pace.

We are working to create comprehensive solutions to the systemic problems of waste, destruction, and pollution that dominate our entire forest products economy. Our goals are to pass federal laws which will protect our forest ecosystems, improve the financial security of forest-dependent communities, and convert the forest products industry into a balanced, sustainable economic system based on ecologically healthy, perpetual natural forests.

THE PROBLEMS:

There is a crisis of worldwide deforestation and ecosystem destruction. The U.S. must set an example of conservation by not clearcutting and wasting our own country's forest resources. However, current federal policies and subsidies favor the extraction and waste of virgin materials over the development and use of recycled and alternative fiber materials. This has caused problems at several levels of society.

Our nation is engaged in the rapid liquidation of our natural forest treasures: huge ancient trees-Redwood, Douglas fir, oak, hemlock—and all the plants and animals living in our forests. Two square miles of public, virgin forests are clearcut every week in the Pacific Northwest alone.

Environmental Destruction: Clearcutting and even-age management of our public lands has caused species extinction, damage to water and air quality, increased flooding and drought cycles, destruction of sport and commercial fisheries, erosion and loss of soil fertility. It is estimated that as much as 66% of the woody biomass is wasted in logging operations on our National Forests. Two-thirds of the native ecosystems in Florida's National Forests have been lost, converted into monoculture tree plantations. In the Shawnee National Forest of Southern Illinois, the U.S. Forest Service is cutting down the last areas of contiguous native forest, critical habitat for declining populations of migratory songbirds. Global deforestation is now seen as a significant contributor to the greenhouse effect and global warming.

Subsidies to the Timber Industry are driving this destruction. Most of the Forest Service's $2 billion annual budget is spent to clearcut our National Forests. Forest Service figures show that over 80% of their timber sales lose money for the nation's taxpayers. The destruction is not limited to the forests of the Pacific Northwest. The incentives created and maintained by the Northwest congressional delegation have wreaked havoc on public forests across the country.

cut-and-run logging operations during the 19th century and to insure that the same type of destruction would not happen to the remaining virgin forests of the West. After almost 100 years of natural regrowth, many of the second growth forests are regaining some of their original native biodiversity. We call these "native forests." Along with the fragments of ancient forests still in existence, native forests are the last repositories of the original biological diversity of the United States. Biodiversity is the complex web of interconnected and interdependent species--microorganisms, fungi, flowers, plants, and animals--that thrive in a natural forest, the result of millions of years of evolution. The loss of even a single species contributes to the unraveling of this delicate web of life that forms the forest ecosystem. Henry David Thoreau recognized the importance of natural biodiversity when he said, ***"In Wildness is the Preservation of the World."***

Yet now, with marching orders planned by the timber lobby and handed down by past Congresses and Presidents, the Forest Service has been destroying the same lands it was originally mandated to protect. In the last 25 years, with the use of clearcutting, slash burning, bulldozing, and pesticide and herbicide application, most of our ancient and native forests have been converted into single species tree farms. Few other plants or animals can survive in these "monocultures." The poisoned topsoil pollutes our streams, rivers, and oceans, killing fish and wildlife.

Monoculture tree plantations: Unhealthy vegetation succumbs to wind and disease.

Extinction of species is occurring faster than at any time in history. Protection of our last biologically diverse forests is critical to insure the survival of thousands of endangered plant and animal species.

<u>Now or Never</u>

Because of intense public outcry and improved media coverage, Congress is finally beginning to address this issue. The timber industry, however, is pulling out all the stops in an effort to hold on to their bonanza of subsidized logging on public lands. Without a powerful political coalition to lead the fight for protection, our forests don't stand a chance.

Now is the time for all concerned citizens to come to the defense of our country's natural heritage. We are down to the wire. Without strong forest protection legislation from Congress soon, we will lose the chance to save and restore our native forest ecosystems. It is imperative that we win a political victory for our forests which will usher in a new era of environmental responsibility.

Loss of Jobs: The timber industry disregards the welfare of their workers by overcutting and depleting the forests, degrading both the local and global environment, and undermining the economic security of forest-dependent communities. Technologically advanced machinery replaces the labor of skilled workers. Overseas exports of unprocessed timber products have cost thousands of workers their jobs. Timber booms have exhausted the forests. In the following busts, companies move on to other forested regions, leaving the workers, their communities, and the environment literally in the dust.

Economic Conflict: These subsidies to large timber companies put the federal government in direct competition with small mill owners and non-industrial woodlot owners. They also prevent the implementation of positive programs to reduce waste and save our resources.

Municipal Waste Problems: Over 40% of our nation's solid waste stream consists of paper and wood products. This huge volume of waste has been used as economic justification for incinerators which pump toxic wastes into the air and our backyards, creating a toxic waste disposal nightmare, and poisoning local communities. By recycling most paper and wood products waste, we will not only save trees, but we will reduce the need to build hundreds of new incinerators and landfills. Waste reduction must be a primary national goal. Subsidies for logging and for using virgin pulp encourage waste, and are at the root of our current waste problems. These subsidies must be ended.

Destruction at the Paper Mill: Manufacturing paper from wood requires much more energy and chemicals than the processing of recycled or alternative fiber paper. The process results in toxic discharges, including cancer-causing dioxins, which pollute our rivers, poison fisheries, and make their way into human drinking water supplies. Making paper from alternative fibers like kenaf causes almost no pollution, and helps to boost farm economies.

THE SOLUTIONS:

THE SAVE AMERICA'S FORESTS PLATFORM

In order to protect our forest ecosystems, we must create comprehensive solutions that address the problems at all stages of the forest products cycle—from destruction of the living forests to pollution at paper mills and garbage dumps. Save America's Forests proposes the following **Comprehensive Platform** as a guide for writing laws in the U.S. Congress to save and restore our natural forest ecosystems, and lead to a non-polluting, sustainable timber and paper economy.

1. **Complete protection for ancient and virgin forest ecosystems, nationwide.**
   No legislation yet.

2. **Complete protection for fragile, recovering native forests, nationwide.**
   -preserve our last fragments of biodiversity
   -help abate the greenhouse effect
   -protect watersheds, fisheries, soil, and air
   No legislation yet.(Proposals to ban logging entirely on midwest National Forests such as the Shawnee NF, the Hoosier NF and the Wayne NF have not yet been introduced in Congress)

3. **Ban clearcutting and require selection management on all federal lands nationwide where logging is permitted.**
   The Forest Biodiversity and Clearcutting Prohibition Act (H.R.1164)

4. **Convert monoculture tree plantations on federal lands to native diversity in order to:**
   -provide ecological links to existing ancient and native forests to reestablish large natural forest ecosystems
   The Forest Biodiversity and Clearcutting Prohibition Act (H.R 1164)

5. **Implement integrated bioregional proposals to recreate ecosystems, ecological corridors, and evolutionary preserves.**
   The Northern Rockies Ecosystem Protection Act (HR 2638), Ancient Forest Protection Act

6. **Add to existing fragmented forest ecosystems** financed from the Land and Water Conservation Fund, and other sources. Priority for acquisition should go to the remaining Redwood forests and for the New England "Northern Kingdom" region.
   e.g.The Giant Sequoia Preservation Act (HR 2153), The Headwaters Forest Act (HR 2866)

7. **Restrict the international trade in primary forest timber, and help the remaining indigenous forest peoples of the world sustain themselves and revitalize their cultures.**
   No legislation yet.

8. **Ban the export of unprocessed timber from the U.S., and reform tax laws to encourage maximum employment in value-added wood products manufacturing.**
   No legislation yet.

9. **Create a Community Economic Transition program** to sustain workers and communities which are now dependent on federally subsidized logging. Create a federal trust for stable payments to counties and schools. Create natural forest non-timber based economies based on alternate forest products such as herbs, boughs, pine cones, mushrooms, and other perpetual forest products.
   Abercrombie-Save America's Forests "Save America's Jobs" Amendment to H.R. 4899 (102nd Congress)

10. **Shift federal funding priorities from road building and timber management to forest ecosystem restoration** such as native fish habitat improvement, logging road closures, and revegetation of damaged logged areas. This will help maintain jobs in forest dependent communities.
    The Forest Biodiversity and Clearcutting Prohibition Act (H.R.1164)

11. **End "money-losing" timber sales.**
    The National Forest Timber Cost Recovery Act (102nd Congress H.R. 2501, S. 1334)

12. **Improve tax code for non-industrial private forests** to
    -eliminate incentives for liquidation of standing timber
    -encourage selection management for lands that are managed for timber production
    No legislation yet.

13. **Mandate the U.S. Government to procure 100% post-consumer recycled or alternative fiber paper (such as Kenaf) for use in all agencies and offices.**
    No legislation yet.

14. **Set targets for recycled content in newspapers and for community paper recycling.** Offer federal incentives to meet these goals, such as
    -tax breaks to newspapers who use recycled paper
    -funding for community park restoration or urban tree-planting
    No legislation yet.

15. **Create economic incentives for alternative fiber (such as Kenaf) use and wood and paper recycling, and disincentives to virgin pulp and virgin wood use.** Create incentives for:
    -new recycling mills and alternative fiber mills
    -mill conversion from virgin to recycled pulp and alternative fiber processing
    Help balance the federal budget and create disincentives by:
    -taxing the outputs of virgin paper mills and adding duties to imported virgin paper.
    -taxing wasteful onetime use of wood pallets and other lumber constuction materials
    No legislation yet.

16. **Place a moratorium on construction of new waste incinerators.**
    The Pollution Prevention and Incinerator Alternatives Act of 1993 (HR 2488) 103rd Congress

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Executive Summary
H.R. 1164—The Forest Biodiversity and Clearcutting Prohibition Act

What are the problems?

1. Clearcutting was illegal on Federal lands until 1976. Now clearcutting and other forms of even-age management are the primary method of logging on all Federal lands where logging is pursued. Clearcutting and the replacement of natural forests with tree farms destroys the native biodiversity of the natural forests, timber quality, the alternate forest products, watersheds, air quality, wildlife habitat, recreation value, and natural amenities values for communities.

2. Subsidized clearcutting dumps excessive amounts of artificially low priced virgin wood and paper on the market, encouraging wasteful overuse and making recycled products uncompetitive. Our landfills are overflowing with virgin paper and wood waste.

3. Logging roads cause severe damage to forest ecosystems and cost more than logging operations produce. There are 8 times as many miles of logging roads in the National Forests than miles of roads in the entire interstate highway system. Roadbuilding must be banned in our few precious roadless areas.

4. Timber industry funded programs at our universities have created a "timber first" cadre of foresters--public lands managers who move freely between industry and government--who are philosophically opposed to letting nature exist unmanaged by humans anywhere on Earth. Sham "grassroots" organizations funded by the timber industry lobby Congress for greater logging on public lands.

Why does the timber industry push Congress to mandate clearcutting on public lands?

By lobbying Congress to subsidize the added expenses of clearcutting (road building, hand replanting, pesticide application), **timber companies are able to extract public timber at a fraction of the true cost.** In fact, over 80% of the timber sales on federal lands lose money for the taxpayers and add to the national debt. This lost money equals big profits for timber companies. On their own lands, however, timber companies often use selection logging (the removal of selected individual trees while maintaining an intact forest canopy) because it costs them less and provides more and higher quality timber on a given site.

What does H.R. 1164 do?

1. **Protects and Restores Native Biological Diversity**—This means that, by law, maintaining **NATIVE** forest diversity will be the main priority of federal forest management agencies. The US Forest Service will be required to restore all the native plants and animals that originally existed on that forest site before human intervention, either by active restoration projects or by letting natural succession take its course.

2. **The bill prevents the construction of logging roads in approximately 60 million acres of presently roadless areas as defined in RARE II**, saving American taxpayers millions of dollars. This provision comes in recognition of the fact that roads cause severe damage to forest ecosystems and cost more than logging operations produce. ***This section of the bill would further President Clinton's agenda to cut waste out of the federal budget.***

3. **Bans clearcutting and "even age" logging, and artificial tree farms on ALL federal lands:** Forest Service, Bureau of Land Management, Bureau of Indian Affairs Forest Lands, Fish & Wildlife Refuges (yes, they are clearcutting in wildlife refuges), and Military Bases (some of the finest remaining native forests). **Allows selection logging** on all federally designated timber lands, except those that have a higher level of protection, such as National Parks, Wilderness Areas, National Monuments. Selection logging has been shown to produce more timber, higher quality timber, and more jobs than clearcutting, even in Douglas Fir forests.

4. **Creates dispersed citizen enforcement**—The federal land management agencies have proven that they have no regard for the law (e.g., the decision by federal Judge Dwyer). Unfortunately, public recourse against timber management agencies is very limited.

Other environmental laws such as the Clean Air Act and the Clean Water Act provide compensation for citizens who successfully sue the federal government for violation of federal law, which allows for greater enforcement and results in less violation of law. H.R. 1164 would provide similar enforcement measures, ensuring that the good provisions in the bill will become reality on the ground.

5. **The bill reactivates the Committee of Scientists**--to provide scientific advice to the Secretary of Agriculture on forest biodiversity and on logging systems. The members of the committee shall be appointed from the private sector, but not the timber industry.

6. **The bill repeals Section 701 (b) in the Federal Land Policy and Management Act of 1976** that made remedies of that Act subordinate to the looser provisions of prior acts, particularly those governing Oregon and California Railroad Revested Grant Lands.

7. The bill makes technical clarifications to the definitions of "native biodiversity", "within-community" diversity, "even-age management", and "salvage logging" which helps to close possible future loopholes.

The Forest Biodiversity and Clearcutting Prohibition Act (H.R. 1164) is the strongest nationwide forest protection bill in Congress today, and as such, is a rallying flag for the entire forest protection movement from coast to coast. It would solve basic problems faced by ALL forest protection activists, giving them greater strength and resources to protect local, regional and international forests.

Write your members of Congress today. Ask your Representative to cosponsor H.R. 1164. Ask your Senators to introduce a companion bill to H.R. 1164.

Rep. _____
U.S. House of Representatives
Washington, DC 20515

Sen. _____
U.S. Senate
Washington, DC 20510

To get a free copy of H.R. 1164, call the House of Representatives Document Office—202-225-3456.

The Forest Biodiversity and Clearcutting Prohibition Act of 1993, H.R. 1164

John Bryant (D-5-TX) Cosponsor List as of April 12, 1994

5ME	ACKERMAN, GARY L.	D	4MA	FRANK, BARNEY	D	1MA	OLVER, JOHN W.	D
25TX	ANDREWS, MICHAEL A.	D	7NJ	FRANKS, ROBERT O.	R	10NJ	PAYNE, DONALD M.	D
1NJ	ANDREWS, ROBERT	D	24TX	FROST, MARTIN	D	10IL	PORTER, JOHN EDWARD	R
15FL	BACCHUS, JIM	D	12TX	GEREN, PRESTON M.	D	19IL	POSHARD, GLENN	D
5WI	BARRETT, THOMAS	D	1MD	GILCHREST, WAYNE	R	15NY	RANGEL, CHARLES B.	D
30CA	BECERRA, XAVIER	D	29TX	GREEN, GENE	D	15IQ	RAVENEL, ARTHUR, JR.	R
24CA	BEILENSON, ANTHONY C.	D	4IL	GUTIERREZ, LUIS V.	D	2IL	REYNOLDS, MEL	D
26CA	BERMAN, HOWARD L.	D	1CA	HAMBURG, DAN	D	PR	ROMERO-BARCELO, CARLOS	D
1NV	BILBRAY, JAMES	D	2NE	HOAGLAND, PETER	D	33CA	ROYBAL-ALLARD, LUCILLE	D
2PA	BLACKWELL, LUCIEN E.	D	36CA	HORN, STEVE	R	9NY	SCHUMER, CHARLES E.	D
23NY	BOEHLERT, SHERWOOD	R	10IN	JACOBS, ANDREW, JR.	D	15NY	SERRANO, JOSE E.	D
3PA	BORSKI, ROBERT A., JR.	D	2LA	JEFFERSON, WILLIAM	D	4CT	SHAYS, CHRISTOPHER	R
42CA	BROWN, GEORGE	D	30TX	JOHNSON, EDDIE BERNICE	D	2UT	SHEPHERD, KAREN	D
11VA	BYRNE, LESLIE L.	D	19FL	JOHNSTON, HARRY II	D	2KS	SLATTERY, JIM	D
3MD	CARDIN, BENJAMIN L.	D	1CT	KENNELLY, BARBARA B.	D	28NY	SLAUGHTER, LOUISE	D
1MO	CLAY, WILLIAM	D	1AR	LAMBERT, BLANCHE	D	21TX	SMITH, LAMAR S.	R
16TX	COLEMAN, RONALD D.	D	6GA	LEWIS, JOHN	D	13CA	STARK, FORTNEY PETE	D
15MI	COLLINS, BARBARA-ROSE	D	18NY	LOWEY, NITA M.	D	34CA	TORRES, ESTEBAN E.	D
14MI	CONYERS, JOHN JR.	D	1RI	MACHTLEY, RONALD	R	9NJ	TORRICELLI, ROBERT	D
12IL	COSTELLO, JERRY	D	14NY	MALONEY, CAROLYN B.	D	10NY	TOWNS, EDOLPHUS	D
3CT	DELAURO, ROSA	D	13PA	MARGOLIES-MEZVINSKY, M.	D	12NY	VELAZQUEZ, NYDIA	D
20FL	DEUTSCH, PETER	D	7MA	MARKEY, EDWARD M.	D	25NY	WALSH, JAMES T.	R
9CA	DELLUMS, RONALD V.	D	6CA	MATSUI, ROBERT	D	18TX	WASHINGTON, CRAIG A.	D
32CA	DIXON, JULIAN	D	8IN	MCCLOSKEY, FRANK	D	35CA	WATERS, MAXINE	D
16CA	EDWARDS, DON	D	5MA	MEEHAN, MARTY	D	12NC	WATT, MELVIN	D
17NY	ENGEL, ELLIOT L.	D	13FL	MILLER, DAN	R	29CA	WAXMAN, HENRY A.	D
14CA	ESHOO, ANNA	D	15CA	MINETA, NORMAN Y.	D	6CA	WOOLSEY, LYNN	D
17IL	EVANS, LANE ALLAN	D	8VA	MORAN, JAMES P.	D	4MD	WYNN, ALBERT	D
17CA	FARR, SAM	D	6MD	MORELLA, CONSTANCE	R	9IL	YATES, SIDNEY	D
3CA	FAZIO, VIC	D	8NY	NADLER, JERRY	D	12NJ	ZIMMER, RICHARD	R
50CA	FILNER, BOB	D	2MA	NEAL, RICHARD E.	D			
19OH	FINGERHUT, ERIC	D	ALDC	NORTON, ELEANOR HOLMES	D	TOTAL		94

Gentlemen, thank you very much for shedding great light on this problem. And we will have to go vote now and return with panel 4, Mr. Lisko, Ms. Feryl, Mr. Hayes, Mr. Williams, and Mr. Myers. I will be right back.

[Recess taken.]

Mr. BAESLER [assuming chair]. We will get started. I will substitute for the chairman right now.

Mr. Lisko, Ms. Feryl, Mr. Hayes, Mr. Williams and Mr. Myers will join us. Sorry for the delay. We have a vote right now. We will try to get moving.

As most of you probably know by now, your written statements will be put in the record in their entirety. I would like now, if you want to make any comments in addition to it, please take the time and try to, of necessity, keep it within our 5-minute rule.

Mr. Lisko, I will ask you to start.

STATEMENT OF PAUL LISKO, INDEPENDENT LOGGER, MOUNTAIN DREAMWORKS, VALLECITOS, NM

Mr. LISKO. My name is Paul Lisko. My residence is Rancho de Trujillo, Vallecitos, New Mexico. My family and I have lived there for the past 14 years. I am a second-generation American. My grandparents immigrated to this country from Eastern Europe in the early part of this century. My father and my uncles were all blue collar workers, and that is the work ethic with which I grew up.

I am a logger, and I have harvested timber and other products, such as southwestern style building materials and fuel wood, from the Carson National Forest of northern New Mexico.

I have also been an active member of the Southwest Forest Fire Fighter organization for the past 12 years. And on my last assignment in southern Idaho, in the summer of 1992, I was field promoted to a task force leader and placed in charge of two, 20-person hand crews and three pumper trucks.

I wish to speak with this subcommittee today about my experiences with current Forest Service timber management practices. I am here to tell you that these practices—specifically those of even-aged management perspectives—are inappropriate for sustainable timber resources and are detrimental to not only the forest ecosystem but to forest-based economics as well.

In the spring of 1991, my family and I went for an outing in the woods. I knew of an ideal place off of a secondary forest road from a timber sale area where I had worked a few years before. Passing through this area known as Jarita Mesa, we noted that there were a large number of blowdown trees. These trees were initially left behind in the sale area to serve as seed trees in order to naturally regenerate stands of ponderosa pine. When totaled, the number of blowdowns came to more than 800.

I wrote to the district ranger to express my concern that the windthrow of the seed trees on Jarita Mesa might adversely affect the natural regeneration planned there. In reply, I received a lengthy letter which basically thanked me for my comments but contended that, since I knew little of forest service silvicultural practices, I should just mind my own business and leave it to the experts in the field.

But I am not so easily dissuaded. I consulted one of the experts in the field, specifically the 1987 Ponderosa Pine Symposium Report, written by USDA Forest Service Plant Physiologist L.J. Heidmann. Entitled "Regeneration Strategies for Ponderosa Pine," it outlined five prescriptions necessary for successful regeneration of the species.

On Jarita Mesa, Forest Service silvicultural practices were in obvious noncompliance with three out of the five and in questionable compliance with a fourth.

Eventually, it was necessary for me to point this out in a formal appeal of the district ranger's decision, the first ever filed on the Carson National Forest.

Partially as a result of this appeal, a salvage sale planned for the area did not occur. However, due to Forest Service inadherence to its own scientific reports—which are paid for with taxpayer money—little successful regeneration and inappropriate silvicultural practice currently continue on Jarita Mesa.

To defend such practices, the Forest Service argues that each sale area is different and, therefore, each district must apply different management directives. Ostensibly, it must then follow that even-aged management should not be applied carte blanche to most sale areas. Unfortunately, this is not the case.

Let me clarify here that I am a tree cutter, not a tree hugger. I live and work in the woods, and my family depends on our livelihood being generated in part by harvesting forest products from public lands. I am not against all timber harvesting on the national forests. However, I am against bad management of these resources. To this degree, one of the worst practices to date is even-aged management.

Even-aged management not only disrupts the natural order of regeneration of timber specifically, but also disrupts necessary biological interactions within the ecosystem upon which this regeneration is dependent. After employing an even-aged prescription, such as a seed tree cut, a formal census of the rodent population is supposed to occur. This is necessary in order to ensure that an overabundance of rodents isn't left to eat any resultant cone crop. My experience has been that this formal census never occurs.

In this instance, there is an important chain of events that is being broken through Forest Service mismanagement. Even-aged management creates a situation wherein the majority of trees, usually the largest and most mature of any given stand, are harvested within the boundaries of a timber sale. Hawks and other raptors, which had depended upon the canopy that these trees provided, leave the harvested area for more suitable habitat elsewhere. The rodent population increases as remaining predators are insufficient to adequately control its growth. More mice and squirrels eat more pine cones, which create less seed stock, which means less trees are grown which results in less employment for loggers over the long term.

The Forest Service utilizes these even-aged harvest strategies with apparent disregard for the "desired future condition" as little subsequent monitoring occurs to assure the success of such a prescription. This is most disturbing given that the area where I am

familiar with logging is on the Vallecitos Federal Sustained Yield Unit.

This sustained-yield unit was one of six established through an act of Congress in 1944. It is to be managed to provide a sustainable supply of forest products, primarily sawtimber, for maintenance of steady employment opportunities to the benefit of economic stability within the dependent local communities.

However, stability to these affected communities through large-scale timber activity has provided little more than a hand-to-mouth subsistence living for most residents. Clearly, the economics have remained stable, but at poverty levels.

As long as the Forest Service continues to plan timber sales on the basis of even-aged management over wide areas of forested land and then gear these sales for harvest by large-scale operators whose investment in these communities is based solely upon their bottom line, then this deplorable social situation will continue.

Additionally, with the depletion of the timber resource also comes the loss of traditional agriculture to the area. As a case in point, the heavy harvest of timber resources on Jarita Mesa has resulted in adverse water quality for downstream users. I submitted a newsletter with my written statement entitled "Logging Damages Acequia Systems" from the Rio Grande Sun in Espanola, New Mexico, dated December 27, 1990.

That newsletter states that these users have traditionally depended upon this water for irrigation of crops. For the past few years, they have noted a disruption in both the frequency and amount of flow through their 100-year-old acequias, or ditches. This, again, is a direct result of even-aged harvest practices.

One final result of these practices has been a lack of accounting for the number of seed trees left behind. Of the five timber sales that had occurred on Jarita Mesa in the late 1980's, post-harvest densities averaged 8 to 10 seed trees per acre according to Forest Service records.

However, in 1991, the district ranger claimed, in written correspondence, that only four to six seed trees per acre remained. Taking into account the 800 windthrown trees mentioned earlier, that results in a discrepancy of about 11,600 trees with a minimum d.b.h. of 18 to 20 inches.

At the time, the timber would have been valued at about $1 million. I inquired of the Carson supervisor's office what happened to it, but received no response. To leave unaccounted such a discrepancy, it becomes clear that the Forest Service management of Jarita Mesa was either grossly incompetent, manifestly negligent, or completely fraudulent. Even-aged management promotes fiscal irresponsibility.

In conclusion, I hope that I have made clear how even-aged management is inappropriate on the national forests not only for its obviously detrimental effect on ecosystems, which I have experienced firsthand, but also for its adverse effects on dependable employment opportunities, rural community stability, and basic fiscal responsibility. I realize that I am just one small voice trying to relate to you how important it is for you to support H.R. 1164 and enact its legislation to prevent even-aged management practices from eventually destroying our precious national resources.

I have heard it stated that the Forest Service needs to continue clearcutting and even-aged management as tools in maintaining adequate timber supplies on the national forests. Based on my experience, I find that statement to be unfounded.

Keep in mind that many years ago, the Forest Service instituted a program of complete wild land fire suppression that they have only recently admitted was inappropriate management. The national forests cannot sustain similar and potentially worse management decisions.

You are probably familiar with the adage that if it looks like a duck, walks like a duck, and quacks like a duck, it is probably a duck. According to the accepted Forest Service logic, even-aged management policy may look like a disaster and feel like a disaster and smell like a disaster, but it is actually a beneficial silvicultural strategy.

Now, I have made my living as a logger on the national forests and cannot reasonably expect to do so unless such poor management of timber resources on the part of the Forest Service is adequately addressed and sufficiently remedied.

The Forest Service needs to live up to its motto of "caring for the land and serving people." Make them do so by passing into law H.R. 1164 now.

Thank you for allowing me this opportunity to testify.

[The prepared statement of Mr. Lisko appears at the conclusion of the hearing.]

Mr. BAESLER. Thank you, Mr. Lisko.

Do you have anything, Mr. Volkmer?

Mr. VOLKMER. No, Mr. Chairman.

Mr. BAESLER. We will go onto the rest of the panel first.

Ms. Feryl, photographer from Ridgefield, Washington.

You are up. I don't think you were in when I made the point that we have all your written statements in the record. If you want to add to it or do it within a 5-minute period, we would appreciate it.

Ms. FERYL. Well, fortunately for you, I have taken 10,000 slides of national forest lands, and I have whittled them down to 40, and I will be expedient.

Mr. BAESLER. Go right ahead. Do you need the lights turned down further?

Ms. FERYL. It would help, thank you very much.

STATEMENT OF ELIZABETH FERYL, PHOTOGRAPHER, RIDGEFIELD, WA

Ms. FERYL. My name is Elizabeth Feryl, and I would like to thank you very much for the opportunity to be here.

I have been documenting forest practices since 1988. I am not a member of any environmental group, nor am I sponsored by any of them. I am a private citizen. And I must say that, on my way here, I was given the old heave hoe by store clerks, teachers, photographers, people on the street that knew I was coming to speak before you and speak for the forests. And there is a huge public out there whose voice has not been heard, and I would like to speak for them and for the forests today.

Leon Neel
P.O. Box 1043
Thomasville, GA 31799
(912) 226-8432

Tony Parks, V.P.
Anderson-Tully Company
1242 N. Second St. P.O. Box 28
Memphis, TN 38101
(901) 376-1400

Marshall Pecore
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P.O. Box 680
Keshena, WI 54135
(715) 799-3816

Louis Rainey, Sr. Forester
Deltic Farm & Timber Co., Inc.
200 Peach Street
El Dorado, AR 71730

Redwood Properties
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Contact James E. Greig, supra.

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Yosemite Ranch
South Boundary of Yosemite
Ntl. Park, CA
Contact James E. Greig, supra.

Statement of Paul Lisko, Independent Logger
Mountain Dreamworks
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PO Box 1242
Vallecitos, NM 87581
505-582-4209

Hearing on HR 1164
October 28, 1993
House Agriculture Subcommittee on Specialty Crops and Natural Resources
re: H.R. 1164
Charlie Rose, Chairman

Mr. Chairman, and members of the Committee,

My family and I live near the village of Vallecitos, situated in the Carson National Forest of Northern New Mexico. In the Spring of 1991, we went for an outing in the woods. I knew of an ideal place off a secondary forest road from a timber sale area where I had worked a few years before. Passing through this area known as Jarita Mesa, we noted that there were a large number of blowdown trees.

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directives. Ostensibly, it must follow that even-aged management should not be applied carte blanche to most sale areas. Unfortunately, this is not the case.

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As a case in point, the heavy harvest of timber resources on Jarita Mesa has resulted in adverse water quality for downstream users. (Please refer to attached letter entitled "Logging Damaged Acequia Systems". Rio Grande Sun, Espanola, NM, December 27, 1990.) These users have traditionally depended upon this water for irrigation of crops. For the past few years, they have noted a disruption in both frequency and amount of flow through their hundred-year-old acequias, or ditches. This again is a direct result of even-aged harvesting practices.

One final result of these practices has been a lack of accounting for the number of seed trees left behind. Of the five timber sales that had occurred on Jarita Mesa in the late 1980's, post-harvest densities averaged 8-10 seed trees per acre. In 1991, the district ranger claimed in written correspondence that only 4-6 seed trees per acre remained. Taking into account the 800 windthrown trees mentioned earlier, that resulted in a discrepancy of about 11,600 trees with a minimum d.b.h. of 18"-20".

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I have made my living as a logger on the national forests and cannot reasonably expect to do so unless such poor management of timber resources on the part of the Forest Service is adequately addressed and sufficiently remedied. The Forest Service needs to live up to its motto of "Caring for the Land and Serving People." Make them do so by passing into law H.R. 1164 now.

Respectfully submitted by:
Paul S. Lisko
October 26, 1993

(Attachments follow:)

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RIO GRANDE SUN

Duel in the SUN . . . Logging Damages Acequia Systems

MEMORANDUM
IN SUPPORT OF ELIMINATING LOGGING PRACTICES WITHIN THE CARSON NATIONAL FOREST

In reference to an article [illegible]

1. [illegible]

2. We are in complete [illegible]

3. We totally agree and [illegible] Mr. Sanchez, (Dulce City Vice-President of Finance) [illegible]

4. We completely acknowledge the statement prepared by Mr. Sanchez, [illegible]

5. We are in complete agreement with Mr. [illegible]

6. Finally, we must point out to the public in general and the U.S. Forest Service in particular that [illegible]

7. As a result of logging along drainage basins our acequias have suffered irreversible damage. [illegible]

8. Our acequias have for the last five years given [illegible]

9. Many residents along the [illegible]

10. The acequia [illegible] Northern New Mexico [illegible]

11. We are appalled by the thought of [illegible]

In summary let us remind the public [illegible] Northern [illegible] to enjoy the beauty of a forest that at one time flourished.

Acequia Jarita Assn.
Acequia Chavez Assn.
Acequia Molino Assn.
Jerry Valdez
President
Floyd Valdez
Mayordomo

153

Your Community Voice in the Carson

Re: Additional Comments For Support for
House Bill 1164 - Anti-clearcutting and Biodiversity Bill.
(Bryant Bill)

Carson Forest Watch
[illegible] Llano, NM • 87543 • [illegible]

Oct 30, 1993

Congressman Charlie Rose
305 Cannon House Office Bldg.
Washington, DC 20515

On behalf of our citizens group in rural northern New Mexico, I am writing to express our full support for Congressman Bryant's bill - 1164, the Anti-clearcutting bill.

This letter should be submitted as an additional testimony to support Paul [illegible] testimony before your Sub-committee on Agriculture and Forests and Forest

We would like to note that here in the Carson National Forest of northern New Mexico, the Forest Service continues to prescribe even-aged management in areas not suited to this practice, and that the silvicultural prescriptions being applied on the ground, while not called a clear-cut - function as clear-cuts in these high elevation forests.

The Forest Service continues to use over-story removals, shelterwood, seed cuts, and group selection cutting methods that basically leave the forest in a degraded and even-aged condition. Here in New Mexico, these types of even-aged forest management serve to convert our forests into single-aged and single species ecosystems. This destroys the entire biodiversity and ecological processes of these fragile forests, and look much like a clear-cut when completed.

Sent Separately

Enclosed are photos of a timber sale on the Carson National Forest, in the Camino Real Ranger District, that was termed an over-story removal. As the photographs clearly show - this looks and functions like a clear-cut, although it was not called a clear-cut. This forest has been destroyed, and as the enclosed pictures demonstrate - even 3 years AFTER the logging, this forest remains devastated, and re-generation is not occurring.

We have called for a Congressional inquiry into this timber sale, and Congressman Bill Richardson and Senators Jeff Bingaman and Pete Domenici have all responded to our concerns with detailed letters of inquiry to the Forest Service. It is important to note that these types of treatments are being continued on timber sales throughout the Region, and many timber sales continue to use even-aged treatments on some stands. This is completely unacceptable, and will cause irreparable harm to our PUBLIC forests.

We urge your support for HR 1164 - and would like to submit this letter along with the testimony of Paul [illegible], who testified before your Sub-committee last week.

We appreciate your time on this matter.
Sincerely,
Joanie Berde for Carson Forest Watch Citizens Group

Copies to: Save American Forests

Bats and OLD-GROWTH FORESTS: Are Both Vanishing?

Although spotted owls may be more well-known, they are not the only animals that rely on the dwindling old-growth forests of the Pacific Northwest . . .

BY DONALD W. THOMAS

WHAT DO BATS AND northern spotted owls have in common? Both are nocturnal and secretive and both depend on old-growth forests for their survival in the Pacific Northwest. Bats and spotted owls are in good company. At least 14 species of vascular plants, 16 species of birds, 6 species of non-bat mammals, and 11 amphibians either depend upon or reach their peak abundances in old-growth forests of the West Coast.

Yet old-growth forests are disappearing. Place yourself on just about any mountain top from California to British Columbia and look out over the facing slopes. Regardless of what any forest you see will be a patchwork of clearcuts and regrowth less than 100 years old. The original stands of massive 200-year-old Douglas fir, 5 to 10 feet in diameter and stretching up over 100 feet, are mostly gone. One hundred years ago there were about 30 million acres of old-growth forest in California, Oregon, and Washington. Today, only about 17 percent remains, and almost all of it is on public lands controlled by the U.S. Forest Service.

In the early 1980s old-growth was disappearing so rapidly that biologists predicted it would be gone by the turn of the century. Many questions were raised. What would happen if old-growth simply ceased to exist? Was

MERLIN D. TUTTLE

In Oregon, silver-haired bats, a tree-dwelling species, were discovered to be 10 times more abundant in old-growth forests than in forests that had been logged. The cracks, hollows, and scaling bark of aging or dead trees provide ideal roosts for many species of tree-dwelling bats.

old-growth a specific wildlife habitat or simply an age category of forest? How many species depend on old-growth as critical habitat in the rich plant and animal communities of the western slopes of the Cascades, Coast Ranges, and Sierra Nevadas? Would we witness widespread extinctions with the removal of old-growth? At that time, no one could be sure.

Given our lack of any fundamental knowledge about the relationships between plants and animals and their forest habitats, the answers would only come from careful study. Lobbying by concerned biologists stimulated the Forest Service to propose, and Congress to fund, a study specifically focusing on old-growth habitat. Beginning in 1983, the Old-Growth Forest Wildlife Habitat Program (OGFWHP) was faced with the daunting task of determining just how plants and animals made use of Douglas-fir forests of different ages and whether they required undisturbed old-growth to ensure their long-term survival. Fortunately, far-sighted planners included bats in the study.

When I was called in to run the OGFWHP bat study in 1984, I was struck by how little we knew about bats in natural habitats. Bats are widespread and often seen, but along with most bat biologists I would first look for them in buildings. Virtually nothing was known about the types of roosts that bats typically use in undeveloped forest habitats as opposed to rural landscapes. For the common and widespread little brown bat (*Myotis lucifugus*), only two descriptions of natural roosts had ever been published. And even less was known about most of the 11 other species that we were likely to encounter.

MY FIRST CHALLENGE was to develop a sampling method that would allow us to observe and identify the various bat species in forest stands, regardless of their roosting preferences or the age and structure of the forest. Searching for roosts would be difficult and it seemed inefficient. Direct observations were obviously out. Capturing bats either with specialized harp or Tuttle traps or with fine nylon bird nets* was also fraught with problems. What if the bats flew in or above the forest canopy? With their sophisticated echolocation

*Two methods are commonly used to capture and study bats, the harp or Tuttle trap and mist nets. The trap, perfected by Merlin Tuttle, resembles an upright bedspring strung vertically with monofilament fishing line. When bats strike the line, they fall into special collecting bag below from which they cannot escape. Mist nets made of extremely fine nylon mesh have long been used to capture flying birds, but they are also excellent to capture bats. Both methods allow biologists to capture, study, and release bats without harming them.

Stands of old-growth forest can be 200 or more years old in the Pacific Northwest (left). But today few of these giants remain and they too are disappearing rapidly, spelling trouble for the many species, including bats, that need these ancient forests for their homes.

The mosaic of clearcuts is now a familiar sight throughout the Pacific Northwest (right). The fragmented forests and relatively young regrowth severely limits use by the animals that traditionally make the old forest their home. Forestry management must ensure that an adequate mix of old and younger forest is maintained if wildlife is to survive

system, would all bats be equally prone to capture? Would feeding bats pay more attention and be less likely to be caught? If so, we could possibly overlook important feeding habitats.

A possible means of detecting and even identifying bats was to eavesdrop on their echolocation calls. Most bats continually betray their presence by emitting relatively loud echolocation calls as they navigate through forests or hunt for small insects. If moths and certain other nocturnal insects can use their specialized ears to detect bats at great distances (and thus avoid becoming a meal), why couldn't we? With microphones sensitive to the high-frequency calls of bats, and electronic circuitry to reduce frequencies to the range audible to the human ear, we could simply listen in on bats as they went about their normal activities.

The passive detecting system of a bat detector had several features that lent itself to the type of habitat-use survey that the OGFWHP study required. First, most insectivorous bats echolocate continuously as they commute or hunt, so if they are present they will be heard. Bat detectors sample a volume of air 30 or more feet in radius and are likely to pick up the sounds of far more bats than traps or nets would ever catch.

Microphones can also be raised high above the ground to listen deep into, and even above, the forest canopy where nets or traps could never be hoisted. And unlike nets or traps, detectors do not rely on bats making navigational errors and so are less affected by the bats' attentiveness or agility. Finally, bat detectors can provide information not only on the presence of a bat, but also on its identity and what it is doing.

Many species have their own specific patterns of echolocation calls that allow us to identify them much as bird-watchers do with bird calls [*BATS*, Summer 1991]. For example, little brown bats sweep from over 70 kHz (70,000 cycles per second) down to almost exactly 40 kHz and they do so in 5-7 milliseconds. Big brown bats (*Eptesicus*

Bats were far more common in old-growth forests than they were in forests that had been disturbed either by logging or by fires.

fuscus) sweep from about 40 kHz to 25 kHz, stretching this low-frequency part of the call out over 8-10 milliseconds.

By capturing bats, recording their calls, and then analyzing the calls in the laboratory we found that we could easily recognize the echolocation signatures of some bats, but that others could not be separated. For instance, the California, northern long-eared, western long-eared, and western small-footed bats (*Myotis californicus, M. evotis, M. ciliolabrum*) had similar echolocation calls. Despite these limitations, we were able to assign the 12 species of bats present in the Pacific Northwest to one of seven groups.

When bats are simply commuting, say from their day roost to a feeding site, they send out calls at a relatively low rate of about 1-2 pulses per second. This allows them to emit their signals, receive the echo, and have sufficient information to allow them to navigate down paths or through forests, avoiding large obstacles.

When bats are hunting, however, they require considerably more information. They must be able to capture small insects when the combined speed of both hunter and prey covers a distance 6-11 yards per second. Once an insect is detected, most bats dramatically increase their pulse repetition rate to over 100 per second in order to get a more precise bearing on the insect and determine its position, relative speed, direction, and maybe even size and surface features. This high repetition rate "feeding buzz" may last less than a half second, but when we hear it over a bat detector, it is a solid indication that a bat is finding insects and trying to capture them.

So, by eavesdropping on bat echolocation calls I could determine not only that a bat was present, but also what kind it was and whether or not it was trying to feed. This was all the information that I needed to determine whether old-growth forests were important for bats. To get the answer, my first step was to build a series of automated bat detectors that would turn on in the evening, record both bat calls and the time on a small cassette recorder, and then turn off in the morning to save battery power.

Above: *Bat detectors helped the research team discover how and when bats use old-growth forests. They learned that bats quickly left their day roosts in the forest to feed over nearby streams and ponds where the characteristic "feeding buzzes" of hunting bats, such as this silver-haired bat, were commonly heard.*

OVER THE SUMMERS OF 1984 and 1985, we sampled bat activity in 90 different Douglas-fir forest stands in the Cascade Mountains and Coast Ranges of Washington and Oregon. From the 3,000 bats we detected in Washington and the 6,000 that we detected in Oregon, several important trends became clear.

Bats were far more common in old-growth forests than they were in forests that had been disturbed either by logging or by fires. In Washington, all

Although little brown bats (left) and western long-eared bats (right) are today more often encountered in buildings, their natural homes likely are in old-growth forests. The study indicates that all seven Myotis species found in the Pacific Northwest are far more abundant in old growth.

Without old-growth forests, I believe that we would witness a dramatic decline in populations of not just one species of bat, but of almost all of the species currently found in the Pacific Northwest.

seven *Myotis* species were three to six times more abundant in old-growth than they were in disturbed forests. The same pattern held in Oregon where the *Myotis* species were three to four times and silver-haired bats (*Lasionycteris noctivagans*) were 10 times more common in old-growth forests.

The fact that all nine bat species we commonly encountered showed a clear association with old-growth forests in Oregon or Washington is a strong indication that old-growth is important habitat for bats. But what does old-growth offer that disturbed and younger forest can't? When I examined the data carefully I found that most bats didn't remain in the forests to feed.

There was a peak of activity for 15 minutes as bats left their day roosts, but through the rest of the night the stands were almost quiet. Feeding buzzes were concentrated elsewhere; they were over 10 times more common above streams and ponds than they were in forests. This made sense because in a parallel study we showed that the small insects that most bats hunt were far more abundant over water than they were inside forest stands.

The pattern that we observed indicates that old-growth forests offer critical roosting habitat for most of the bat species that inhabit the Pacific Northwest. We know that apart from the impressive size of the trees, old-growth forests are characterized by an abundance of old or dead trees that have had the time to develop the broken tops, cracks, hollows, and scaling bark that can serve as roosting sites for bats. Without old-growth forests, I believe that we would witness a dramatic decline in populations of not just one species of bat, but of almost all of the species currently found in the Pacific Northwest.

There is reason for both pessimism and optimism when considering the

future of old-growth forests and bats on the West Coast. On the pessimistic side, old-growth harvesting continues, albeit at a reduced pace. Harvesting in the National Forests and on land controlled by the Bureau of Land Management is slowly reducing old-growth to isolated tiny patches. In Oregon and southern Washington, 39 to 50 percent of the old-growth patches are 30 acres or less. Wind penetrates to the center of patches this small and, over time, will blow down the majority of damaged and dead trees. Because these are precisely the trees that bats are likely to use as roosting sites, this fragmentation of old-growth forests may dramatically reduce the value of remaining old-growth as bat habitat.

On the optimistic side, the rate of old-growth harvest has dropped dramatically over the past few years. One of the reasons is that the Forest Service and Bureau of Land Management, who control approximately 80 percent of the remaining old-growth, are obliged by law to ensure that adequate habitat remains for the conservation of all plant and animal species.

Although bats still may not be able to stimulate the public pressure required to set aside large tracts of valuable old-growth, concern for the conservation of the northern spotted owl has done just that. Pressure from environmental groups and good government planning has resulted in the protection of sizeable tracts of old-growth Douglas-fir forests throughout Washington and Oregon to ensure adequate breeding habitat for spotted owls.

While bats and other forest species can undoubtedly benefit from efforts to ensure the survival of the spotted owl, it is unfortunate that our perception of conservation issues is so often limited to protection of single high-visibility species. It is tempting to believe that low-visibility species, such as bats, can ride on the coat-tails of high-profile conservation movements.

There are two problems, however, with this thinking. When we focus our attention on a single species like the northern spotted owl, we risk becoming complacent. If future studies show owl populations to be stable and healthy, what arguments will we use to push for continued monitoring of the low-visibility species like bats? We must also remember that bats are not owls and they almost certainly have different requirements. Setting aside tracts of forest that have been identified as good owl habitat does not necessarily mean that we have acted wisely to ensure the well-being of bat populations into the 21st century.

The Old-Growth Forest Wildlife Habitat Program is an example of good management planning, but it is just the beginning. We showed that old-growth forests are critical habitat for many other species of animals in the Pacific Northwest, but we know little about why this is so. It will be up to future studies to answer the remaining questions and provide a sound foundation for long-term planning and management.

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Do Appalachian Herbaceous Understories Ever Recover from Clearcutting?

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Abstract: *Life history characteristics of many herbaceous understory plants suggest that such species recover slowly from major perturbations such as clear cutting. We examined herbaceous cover and richness in the understories of nine primary ("old-growth") forests in the southern Appalachian Mountains and of nine comparable secondary forests, ranging in age from 45 to 87 years since clear cutting. Neither cover nor richness increased with age in the secondary forests. This suggests three possibilities: (1) that recovery is so slow or variable among sites that 87 years is insufficient time to detect it; (2) that such forests will never recover to match remnant primary forests because climatic conditions are different today than when the forests became established; or (3) that herbaceous plants colonize pit and mound microtopography caused by the death of trees, so that recovery must await the growth, death, and decomposition of the trees of the secondary forest. Whatever the mechanism, herbaceous understory communities in the mixed-mesophytic forests of the Appalachians appear unlikely to recover within the present planned logging cycles of 40–150 years, suggesting a future loss of diversity of understory herbaceous plants.*

Resumen: *Las características del período de vida de numerosas plantas herbáceas, sugiere que estas especies se recuperan lentamente de grandes perturbaciones como la tala de bosques. Nosotros examinamos la cubierta herbácea y abundancia en el sotobosque de nueve bosques primarios (antiguo crecimiento) en los Montes Apalaches del Sur, y los comparamos con nueve bosques secundarios que no han sido talados por períodos que van de 45 a 87 años. La riqueza y la abundancia no han aumentado con el tiempo en el bosque secundario. Esto sugiere tres posibilidades: (1) que la recuperación es tan lenta o variable entre sitios, que 87 años resultan insuficientes para detectarla, (2) que este tipo de bosques nunca se recuperará al nivel de los bosques primarios originales, ya que las condiciones climáticas actuales son diferentes a las existentes cuando los bosques fueron originariamente establecidos, o (3) que plantas herbáceas colonizan la microtopografía del suelo que ha sido removido a causa de la descomposición de los árboles muertos, y por consiguiente la recuperación debe esperar el crecimiento, muerte y descomposición de los bosques secundarios. Cualquiera sea el mecanismo, la cubierta herbácea de las comunidades de bosques mesofíticos mixtos en los Apalaches, no parece estar recuperándose dentro del ciclo previsto para la tala de árboles que es de 40 a 150 años. Esto sugiere una pérdida futura en la diversidad de las plantas que conforman la cubierta herbácea.*

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Introduction

"Old growth," "virgin," or primary forests in the United States have attracted scientific and cultural interest as examples of communities with high biological diversity (Whitney 1987). These forests have been much reduced in extent through clearing for wood products, farming, and urbanization; the fate of the remainder has generated considerable controversy (Norse 1989; Williams 1989).

Preservationists argue that once primary forests are harvested the resulting secondary forests lack the biodiversity of primary forests, while harvesters argue that sustainable yields of timber are compatible with maintenance of biodiversity and that sufficient areas of primary forest will remain following exploitation (Norse et al. 1986; Nyberg et al. 1987).

Most research on the effects of the exploitation of forests has focused on trees and wildlife (Wilderness Society 1986; Jackson 1989), but herbaceous understory plants of primary forests may be among the forest organisms most sensitive to clear-cutting or other forms of massive disturbance.

Recolonization of secondary forests by herbaceous species is likely to be slow (Thompson 1980). Sexual reproduction is often limited by small crops of seeds with poor dispersal by gravity or ants (Handel 1976; Beattie & Culver 1981) and low germination (Struik 1965). Herbaceous plants of primary forests typically have vegetative extension growth rates of less than 1.0 meter per decade (Whitford 1951; Sobey & Barkhouse 1977). Growth to first reproduction can take up to a decade (Bierzychudek 1982). Also, at least in the initial stages of forest regrowth, browsing by herbivores such as white-tailed deer (*Odocoileus virginianus*) may prevent seedling establishment (Alverson et al. 1988).

Studies of individual forests indicate slow recovery by herbaceous species. Hardwood forests in New Brunswick showed little evidence of recovery of late-successional herbaceous species several decades after disturbance (MacLean & Wein 1977). Following landslides in the White Mountains of New Hampshire, 72-year-old herbaceous communities had only 78% species overlap with communities in adjacent 200-plus-year-old forest (Flaccus 1959). An herbaceous community in Michigan was still recovering from a major disturbance event that had occurred 150 years earlier (Brewer 1980).

These studies suggest that the 40–150 year harvesting cycles used in southeastern deciduous forests (U.S. Department of Agriculture/Forest Service [U.S.D.A./F.S.] 1986) may not allow sufficient time for the recovery of herbaceous communities. If recovery is occurring, we predict that herbaceous communities in secondary forests should show increasing species richness and cover with age, becoming more similar to primary communities. We tested this prediction by examining one-square-meter plots of herbaceous understory plants at nine primary forest sites in the southern Appalachian Mountains and comparing them with plots in nine secondary-successional sites with similar latitudes, elevations, exposures, slopes, soil types, and geologies. We present several scenarios for forest recovery, suggested by our findings.

Methods

Terminology

Numerous terms have been used to describe forests such as *ancient, old, old-growth, over-mature, original, primary, primeval,* and *virgin,* on the one hand, and *recent secondary* and *second-growth,* on the other. Older secondary forests have been called *mature, over-mature,* and even *old-growth.* Unfortunately, several of these terms have opposite meanings when used by scientists of different disciplines or regions (see Rackham 1980; Norse 1989). Here, we use *primary* to describe forests that have never been clear cut and that have little or no evidence of past human activity. Such forests may have been grazed, they may have experienced limited exploitation of valuable tree species, and their floors may have been burned by Amerinds and European pioneers. Primary forests contain abundant downed timber in varying states of decay, standing dead trees, and live trees in a range of sizes. *Secondary* forests are those that have developed after the previous forest was extensively logged or clear cut. We use *mature* to refer to secondary forests that have existed longer than the normal harvesting rotation practiced by foresters on that particular forest type. A *mature secondary* forest may have the large trees of a primary forest but do not necessarily have the same species composition, age distribution, or community processes.

Study Sites

We examined nine sets of primary and matching secondary mixed-mesophytic forest, an ecosystem described by Braun (1950) as structurally complex, with a highly diverse species composition. The characteristic trees are *Liriodendron tulipifera, Tsuga canadensis, Fagus grandifolia, Quercus alba, Q. velutina,* and *Q. prinus* in the overstory, with *Cornus florida, Tilia heterophylla, Fraxinus americana, Ostrya virginiana,* and *Aesculus octandra* in the understory. The sites were as follows:

1. *Joyce Kilmer–Slickrock Wilderness Area,* Graham County, North Carolina. The wilderness area includes a primary stand, the Joyce Kilmer Memorial Forest on Little Santeetlah Creek, and a secondary forest on adjacent Horse Creek, dating from 1938

(U.S. Forest Service, unpublished data). Both areas are on moist, north-facing slopes at approximately 1000 m elevation. Kilmer has apparently never been cut and there is no evidence of fire scars on trees or of charcoal in the soil within the cove (Lorimer 1980).

2. *Porter's Flat*, Greenbriar Cove area, Great Smoky Mountains National Park (GSMNP), Tennessee. The primary forest, at approximately 750 m elevation on a southwest-facing slope, has never been logged, but grazing may have occurred prior to the mid-1930s (Hicks 1980). The forest has been described by Whittaker (1956, 1966) and the herbaceous community by Bratton (1976) and Hicks (1980). The secondary forest site, on the east bank of the Little River near Elkmont, GSMNP, at 800 m elevation, was established after 1926 (R. S. Lambert 1958, GSMNP, unpublished report).
3. *Upper Porter's Creek*, Greenbriar Cove area, GSMNP, Tennessee. The primary forest site is located on a southwest-facing slope at 1000 m elevation along Porter's Creek. The secondary forest site is located on Sweet Ridge, at one thousand meters elevation, on the eastern bank of the Little River near Elkmont, GSMNP; it was established after 1926 (Lambert report).
4. *Ramsey Cascade*, Greenbriar Cove area, GSMNP, Tennessee. A primary forest on a north-facing slope at 950 m elevation, this may be one of the least anthropogenically disturbed areas in the entire park (S. P. Bratton, personal communication), and the stand falls within the region described by Pyle (1986) as "high in virgin forest attributes." The secondary forest site is located at Timber Ridge, at 950 m, on the Middle Prong of the Little River. After clear cutting in the 1930s, the forest began to regrow in 1939 (Lambert report).
5. *Sosebee Cove Scenic Area*, Union County, Georgia. A primary forest of only 10 ha, the stand was "sanitized" in the 1950s by removal of snags and downed or poorly-formed trees (U.S. Forest Service records, Blairsville, Georgia). The secondary forest site is immediately adjacent to the primary forest and was established after 1903 (U.S. Forest Service, unpublished data).
6. *Lilley Cornett Woods*, Letcher County, Kentucky. This site is located in the eastern portion of the Cumberland Plateau in the center of the mixed-mesophytic forest described by Braun (1950). The primary forest site, Big Everidge Hollow, 52 ha, is described as "near-virgin," with some removal of dead trees and grazing of cattle but without logging of live trees (Martin 1975). An adjacent cove, Pollbranch Hollow, 89 ha, was harvested in 1945 (Muller 1982).
7. *Walker Cove*, Buncombe County, North Carolina. This is an upper cove site at 1300 m with numerous large sugar maples (*Acer saccharum*) and some buckeyes (*Aesculus octandra*). The date of clear cutting of the adjacent second-growth site was 1932 (U.S. Forest Service, unpublished data). This date was confirmed by coring a sugar maple of about 55 years of age.
8. *Ramp Cove*, Townes County, Georgia. This is also an upper cove (1000 m) with large, old-growth buckeyes; it is named for its population of ramps (*Allium tricoccum*). The second-growth site in Dismal Cove became reestablished during 1915–22 (Brasstown Ranger District, U.S.D.A./F.S., unpublished data).
9. *Thumpin' Dick Cove*, University of the South, Sewanee, Franklin County, Tennessee. At 460–500 m elevation, this 40 ha cove is located on the western slope of the Cumberland Plateau (Cameron & MacCrady 196[illegible]). There is no evidence of logging, and the only apparent disturbance is a dirt road constructed through the forest in 1965 (McGee 1986). The secondary site, Bennett Cove, appears, based on tree diameters, to be a two-aged stand with cutting around 1920 and 1980. Since we were unable to determine the chronology of exploitation, we excluded this site from analyses involving time.

Sampling Methods

Primary and matching secondary sites (100 m × 100 m, except Upper Porter's Creek, which was 100 m × 50 m) were sampled within thirty hours of each other at each location. We used random samples consisting of 10 to 24 one-m^2 quadrats in each of the primary and secondary sites, based on the size of the sample area (Table 1). We also avoided sampling in areas with *Rhododendron maximum* understories, as they have little groundcover and verge on the impenetrable. A modification of the Daubenmire cover-scale that separates the 0%–5% cover class into 0%–1% and 1%–5% cover classes (Bailey & Poulton 1968) was used to estimate cover for each species within the quadrats. We excluded woody shrubs from our cover measurements because many woody species still had only bare stems at the time of sampling.

Ages of secondary succession sites ranged from 45 to 87 years. We used number of species per 1 m^2 plot as an index of the species richness at each site, and total herbaceous cover as an index of abundance.

Analysis

Cover and number of species per quadrat for each pair of matching sites were compared using one-tailed, unpaired *t*-tests. We plotted mean cover and species rich-

Table 1. Means and standard errors for species richness of primary and matching secondary sites.

Site	Primary	Secondary	DF	P	Age of second growth
Thumpin' Dick Cove	11.20 ± 0.67	7.25 ± 0.49	38	<0.0001	10–70*
Lilley Cornett	9.00 ± 0.43	7.35 ± 0.42	37	0.0047	45
Ramsay Cascade	9.95 ± 0.30	8.75 ± 0.65	38	0.0475	51
Kilmer Memorial	14.53 ± 0.67	6.04 ± 0.59	37	<0.0001	52
Walker Cove	10.40 ± 0.53	7.30 ± 0.50	38	<0.0001	58
Porter's Flat	11.60 ± 0.43	4.94 ± 0.51	46	<0.0001	64
Upper Porter's Creek	11.36 ± 1.12	2.50 ± 0.67	19	<0.0001	64
Ramp Cove	10.65 ± 0.39	7.45 ± 0.31	38	<0.0001	68
Sosebee Cove	9.55 ± 0.41	7.55 ± 0.36	38	0.0003	87

* See text for details.

ness per quadrat against stand age of the secondary sites in an effort to detect any trends toward primary forest values. When comparing average cover and species-richness values, we used one-tailed paired *t*-tests.

The second-growth cove sites occurred at different latitudes, elevations, exposures, and slopes, so that the spring flowering season occurred earlier at some sites than at others. Earlier-flowering sites might appear more diverse than later-flowering sites sampled at the same time. Similarly, sites measured late in the season would appear to have greater cover values than sites sampled earlier, before full emergence of leaves. To adjust for these problems, we developed a similarity ratio where the cover and species-richness values for each second-growth site were divided by the matching values for the corresponding primary site.

Results

Mean species richness in primary forest ranged from 9.0 to 14.5 species per m^2, all significantly greater than in secondary sites with a range of 2.5–8.75 species per m^2 (Table 1). The average in primary forest was 10.9 species per m^2, and in secondary forest 6.6 species per m^2 ($P = 0.0011$, DF = 8, one-tailed paired *t*-test). Total cover values in primary forest ranged from 22.5% to 87%, whereas in secondary forests cover ranged from 10.5% to 42.5% (Table 2). Average cover in primary forest was 53% but only 21% in secondary sites ($P = 0.0001$; DF = 8; one-tailed paired *t*-test). Areas of extensive cover in secondary forests tended to be restricted to more mesic sites. Secondary forest also appeared to have more woody brush than primary sites.

We found a negative, but not significant relationship ($r^2 = 0.314$; $p = 0.148$) between the age of secondary forest stands and total herbaceous cover. In part, this was influenced by the high cover value of the youngest second-growth stand, Pollbranch Hollow, the match for Lilley Cornett Woods, which was measured late in the growing season. Species richness ($r^2 = 0.009$) and the ratios for cover ($r^2 = 0.013$) and richness ($r^2 = 0.002$) showed no trend toward recovery with age. These data provide no support at all for the hypothesis that cover and species richness of herbaceous communities in secondary forests increase with age.

Discussion

Our results suggest that even 50 to 85 years following deforestation, succession of herbaceous understory plants in secondary mixed-mesophytic forests of the southern Appalachian Mountains resulted in only half the species richness and one-third the total cover measured in primary forests. Neither community characteristic showed any trend toward recovery with age; if anything, both richness and cover appeared to be decreasing. Such decreases might be caused by the gradual loss of early-succession herbs as the tree canopy closes, reducing available light (Horn 1974).

While our data are sufficient to discount any rapid, isotonic return of secondary herbaceous communities to primary-like conditions, the period of successional time sampled (up to 87 years after perturbation) may simply be too short to distinguish between three longer term scenarios.

Table 2. Means and standard errors for cover of primary and matching secondary sites.*

	Primary	Secondary	P
Thumpin' Dick Cove	38.0 ± 3.2	10.5 ± 1.7	<0.0001
Lilley Cornett	66.6 ± 3.8	42.5 ± 2.9	<0.0001
Ramsay Cascade	66.0 ± 3.9	23.0 ± 3.1	<0.0001
Kilmer Memorial	53.0 ± 4.2	15.7 ± 2.6	<0.0001
Walker Cove	42.5 ± 3.5	12.25 ± 3.5	<0.0001
Porter's Flat	87.0 ± 1.9	27.6 ± 5.0	<0.0001
Upper Porter's Creek	62.0 ± 7.8	21.5 ± 7.7	0.0008
Ramp Cove	42.5 ± 2.9	21.3 ± 2.4	<0.0001
Sosebee Cove	22.5 ± 1.9	11.7 ± 1.2	<0.0001

* Sites are arranged by increasing age of the secondary sites (Table 1).

First, the rate of recovery may depend more on the type and severity of initial disturbance and on the ecological characteristics of each site than on time since disturbance. Our nine sites, despite all being in mixed mesophytic forest, may simply have too disparate histories to allow analysis of temporal trends.

Second, herbaceous cover and species richness may continue to decline with time until trees become large and old enough to die, fall, and decay. The resulting pit and mound micro-topography of fallen tree trunks and bare soil would provide a continual source of unvegetated areas for colonization. Gaps and pit and mound effects maintain herb diversity in primary forest (Struik & Curtis 1962; Falinski 1978; Beatty 1984; Moore & Vankat 1986); they may also initiate it. This pattern would be similar to that already proposed for trees in secondary succession forests (Bormann & Likens 1979; Peet & Christensen 1980) only on a much longer time scale: an initial increase in species richness and cover during early succession, a decrease during mid-succession, followed by an increase once again during late succession to a mature secondary equilibrium.

Finally, there is the possibility that secondary herbaceous communities in mature secondary Appalachian forests will never return to primary conditions. This appears to be the case in British mature secondary woodlands originating as early as 1600 B.P. (Peterken & Game 1984). The original Appalachian forests may have become established under cooler and moister conditions than occur at present (Delcourt & Delcourt 1987). In addition, conditions during future climate change, even several centuries into the future, might become sufficiently unfavorable to prevent complete secondary succession following present-day clear cutting (Solomon 1986).

Conclusion

Whatever the long term dynamics of herbaceous understory communities in mixed-mesophytic forests following logging or other massive disturbances, the data presented here strongly suggest that recovery requires at least several centuries, longer than the present logging cycles of 40–150 years for Appalachian cove hardwoods. Management of fully-functioning forest herbaceous communities to maintain biological diversity as mandated by the 1976 National Forest Management Act may require greatly lengthened tree harvest cycles, extraction methods less damaging to herbs, intensive management and planting of herbaceous species to speed up secondary succession, and the maintenance of sufficient primary forest to sustain intact herbaceous communities and to serve as sources for recolonization. Research is needed to address the relative ecological and economic efficiencies of these three strategies.

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Wide participation was essential to establish the legitimacy of this first-ever election open to all South Africans. Nineteen parties were on the national ballot, and 26 parties on nine regional ballots, a fair reflection of a diverse electorate of 23 million speaking a dozen languages. A weighted system of proportional voting in which runner-up parties are assured a share of cabinet seats puts a premium on [illegible] compromise.

Uncontrolled Logging Disrupts South Pacific

To the Editor:

It is dismaying that there has been no coverage of the logging of rain forest resources in the Southwest Pacific countries of Papua New Guinea, Vanuatu and the Solomon Islands. As a result of exhausted resources elsewhere and continued legality of exporting raw logs, a logging boom has hit these countries with sudden ferocity and frightening speed.

In Papua New Guinea, the largest of the three, the estimated value of the timber resource is between $70 and $100 billion, far greater than either of the other prime resources of oil or gold. These resources are being developed by foreign companies in a way that initially creates debt for the nation of Papua New Guinea, thus reducing governmental resources for financing internal development.

About 78 percent of Papua New Guinea (114 million acres) is covered with rain forest. Of this, at least 37 million acres are operable forest, 43 percent of which has already been allocated to a Malaysian company, Rimbunan Hijau, for harvest. At this rate the entire resource may be wiped out in as little as five years.

From every perspective the logging needs to be controlled much more closely. The effects of logging include widespread environmental degradation, permanent loss of the country's most valuable economic resource, and social upheaval. The rain forests of Papua New Guinea are known to be the most biologically diverse in the world, but much of their wealth of species is as yet undocumented and the ecology of the forest only vaguely understood.

Whether clear-cut or selectively harvested, the inevitable result of logging is drastic ecological simplification. Unfortunately logging practices in Papua New Guinea are such that selective harvesting usually results in the death of the remaining trees anyway.

Local people are promised infrastructure, such as roads, electricity, medical clinics and schools, but they receive only $3 to $5 per cubic meter for hardwood that sells on the international market for 80 to 100 times that price. In many cases they receive none of the promised infra-

structure, their subsistence base is destroyed, and the community is riven with disputes between those who favored and those who opposed the logging. Already tired of waiting for development that government has not provided, the citizens become increasingly cynical about the ability of government to protect their interests.

For a brief time it seemed that the Government of Papua New Guinea had taken control of the situation. As of December 1993 no new permits were to be issued, and companies were to be held to the terms of their contracts, which stipulated benefits to landowners, replanting, etc. New legislation was passed providing a legal basis for protecting the decision-making rights of customary landowners (95 percent of land in Papua New Guinea is not privately owned) and increasing local and national revenues.

Local press and non-government organizations have done much to raise local awareness of the impact of logging, but their efforts need other kinds of support. This fall, the logging companies responded by creating their own newspaper promoting the benefits of resource development. It is now apparent that they have triumphed in a four-month-long fight with government. Recent news is that the "logging companies are very happy" over a government decision to abandon the new legislation and levy a log export tax.

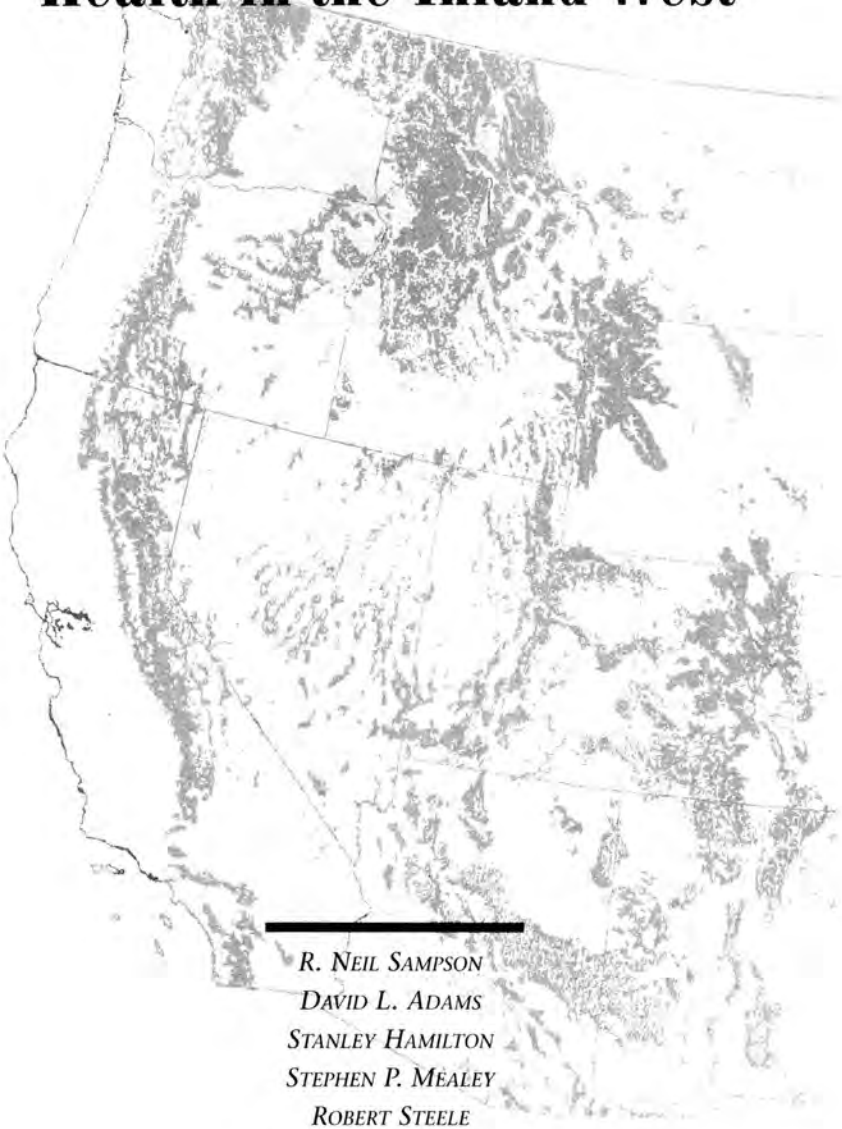
Much of this situation is a result of the remoteness of the areas in which the logging takes place. Logging companies and corrupt politicians alike assume that their greed will go unnoticed because no one will hold them accountable for what they do to these rain forests and the people who live there.

KATHLEEN BARLOW
Professor of Anthropology
University of Minnesota
Minneapolis, April 21, 1994

[illegible] Toward Peace With [illegible]

Russian Nationalism

Assessing Forest Ecosystem Health in the Inland West



R. Neil Sampson
David L. Adams
Stanley Hamilton
Stephen P. Mealey
Robert Steele
Dave Van De Graaff

Assessing Forest Ecosystem Health in the Inland West

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Forest health is a condition of forest ecosystems that sustains their complexity while providing for human needs.

This paper presents an overview of the conclusions developed by 35 participating scientists and land managers at a scientific workshop held in Sun Valley, Idaho, November 14-20, 1993. The conclusions presented here are those of the authors, but reflect discussions of the entire group, and are based on conclusions reached by those participants in working groups.

There is widespread poor health in the forests of the Inland West. Restorative, remedial, or preventative treatment and management is urgently needed—particularly on the federal lands. A brief window of opportunity of perhaps 15-30 years exists. Without timely management intervention, the region is threatened by major ecological setbacks—pest epidemics and uncontrollable wildfires—that will damage resource values and convert large areas into new even-aged forests, setting the stage for a repeat of the current problems far into the 21st century. The scientific tools to understand these problems and mitigate them do exist today but are not being applied on federal forests rapidly enough to meet the urgency of the situation. The current legal and procedural requirements faced by federal land-management agencies impose time delays that, when combined with public opposition to timber harvesting, prevent timely management, doom major forest areas to needless loss and damage, and impose large (and, perhaps, preventable) costs on both local and national economies.

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The authors acknowledge the participation and contributions of all the participants in the workshop, particularly Lance Clark, American Forests; *Robin Hartmann, Office of Congressman Larry LaRocco of Idaho; Herb Malany, Boise Cascade; Lyn Morelan, U.S. Forest Service, Boise National Forest; and Leon Neuenschwander, University of Idaho, in the discussions that produced this overview paper.*

Introduction

In many forested areas of the inland western United States, trees across wide landscapes are dying faster than they are growing or being replaced. In other areas, conditions exist that virtually guarantee an onset of serious forest health problems, which may lead to large wildfires, reburning, erosion, and loss of habitat and property. In those areas, it is not just trees and their values that are at risk. Where terrestrial ecosystems are adversely impacted, the entire range of aquatic resources, wildlife, and other values are affected as well. The current conditions—many of which are unprecedented in recent times—demand urgent response. Forest managers on both public and private lands, even though they manage for a different combination of objectives, face a common forest health challenge when the forests in their care are deteriorating.

Within the region there are also forest areas that, either through management efforts or natural controls, represent excellent examples of healthy, thriving forest ecosystems. In places, examples of healthy forests exist adjacent to lands with serious health problems. In all forests, managers are challenged to design forest health strategies that focus on:

a) the *prevention* of socially undesirable forest conditions by protecting the forest from insects, diseases, and fire within an ecological framework.
b) the *restoration* of socially desired forest conditions where needed.

This management needs to reflect a strong commitment to maintaining healthy conditions for many values, as well as to the study and understanding of the current variability in forest ecosystems.

The current conditions, many of which are unprecedented in recent times, demand urgent response.

Forest health is defined in this context as a condition of forest ecosystems that sustains their complexity while providing for human needs, and it is clear that many of the forests in the Inland West fail the test. In areas where insects, disease, and wildfire are causing total or near-total tree mortality, the evidence of forest health problems is visual and stark. In other areas, the visual evidence and widespread mortality may be lacking, but the onset of major ecosystem setbacks are assured by the existence of conditions that inevitably lead to large, stand-replacing wildfires. Managers are challenged to take rapid preventative action to restore these forests to conditions more similar to their historical range of variability or, where that is judged not possible or desirable, to strive for another sustainable condition.

Without the application of needed silvicultural and other treatments consis-

tent with ecosystem management within a fairly short period of time—15 to 30 years—a very great danger exists that the region's forest legacy over the next century will be a series of large, uniform landscapes recovering from wildfires and other ecosystem setbacks on a scale unprecedented in recent evolutionary time. These landscapes will present future societies with a set of limited options and needlessly high costs that, in many ways, will mirror today's unstable situation. Both now and in the future, the preferred situation is a more diverse, heterogeneous landscape that is more consistent with the historic range of variability, less susceptible to wide-area disturbances, and thus more easily sustainable.

Forests at Risk

The forests at greatest risk are composed of an unsustainable combination of tree species, densities, and age structures that are susceptible to the fire and drought regimes common to the region. Although the situation differs significantly from place to place, the forest areas under the most stress contain too many trees, or too many of the wrong kind of trees, to continue to thrive. As the trees get older and larger, the competition intensifies, stress increases, and the likelihood of catastrophic change goes up accordingly.

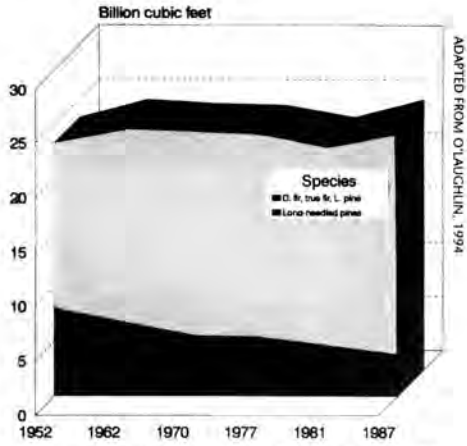
This is a particular problem in forests where the species mix has shifted away from ponderosa and other long-needled pines and toward firs. This species shift, attributable to a combination of logging, grazing, fire suppression, and related activities over the past century, has been well documented. In a review of Idaho forest data for the period 1952 to 1987, for example, Jay O'Laughlin of the University of Idaho found that western white pine and ponderosa pine components had declined 60 percent and 40 per-

BOTH PHOTOS BY LANCE R. CLARK

Boise Cascade forester Herb Malany cores a ponderosa pine in an open, healthy, park-like stand within the Boise Basin Experimental Forest, Boise National Forest. Through prescribed burning and thinnings, researchers have tried to maintain species composition and density at pre-settlement levels. Because of aggressive fire suppression, a nearby stand (right) has become crowded with firs and Douglas-fir, representing a severe fire hazard.

cent respectively, while true firs, lodgepole pine, and Douglas-fir had increased 60, 39, and 15 percent.

There are also problems where the species mix is still heavily dominated by pines, but where the lack of fire has contributed to a dense, overcrowded forest. In a study area in Arizona's Coconino National Forest, for example, Northern Arizona University's Wallace Covington and Margaret Moore estimated that stem counts on basalt-derived soils had shifted from a pre-settlement average of 23 trees per acre to a current count of 851. In a study area in the Kaibab National Forest, pre-settlement tree densities on limestone soils averaged 56 per acre, compared to 276 today.



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Conversion of long-needled pines in Idaho to selected species 1952-87. ***Replacement of ponderosa pine and western white pine with species such as lodgepole pine, true firs, and Douglas-fir (shown on graph) has set the stage for more catastrophic wildfires in the future.***

The forest areas under the most stress contain too many trees, or too many of the wrong kind of trees, to continue to thrive.

Under these altered conditions, competition for moisture and nutrients creates stress, which exacts a significant toll in reduced growth, while opening the way for catastrophic outbreaks of insects, disease, and wildfire. Wildfires in these ecosystems have gone from a high-frequency, low-intensity regime which sustained the system, to numerous high-intensity fires that require costly suppression attempts, which often prove futile in the face of overpowering fire intensity. High fuel loads resulting from the long-time absence of fire, and the abundance of dead and dying trees, result in fire intensities that cause enormous damage to soils, watersheds, fisheries, and other ecosystem components.

Wildfire Threats Have Changed

Change agents and processes such as drought, pests, and wildfires are normal components of forest environments. Unfortunately, the conditions today in many Inland West forests allow normal processes to become catastrophic

events. Unless the land conditions themselves can be improved, these catastrophic changes seem certain to continue. On the Boise National Forest, for example, wildfire consumed an average of 3,000 acres per year from 1955 to 1985. From 1985 to 1992, the average annual wildfire acreage jumped to 56,000. These include large-area, intense, stand-replacing wildfires in ponderosa pine forests, indicating a major shift away from the type of fire regime these forests experienced in the pre-settlement era.

The 1992 Foothills Fire is a prime example of the type of events that seem certain to continue. This wildfire, which started on public rangelands east of Boise, Idaho, on August 19, 1992, burned more than 257,000 acres, including about 140,000 acres of national forest land. Virtually every tree, including isolated pines and small timbered pockets, was killed throughout the fire's area. The largest ponderosa pine in Idaho—a veteran of dozens of previous fires over its centuries of life—was killed, indicating that this was the most intense wildfire the tree had ever experienced. Trees containing an estimated 300 million board-feet of merchantable timber were killed, along with young tree growth across the fire's area. One population of rare bull trout was wiped out and another seriously threatened as intense heat denuded the riparian-zone vegetation and heated small streams beyond the fishes' tolerance. The intense heat altered watershed functions through vegetative change and the creation of water-repellent soils by the intense heat.

SOURCE: US FOREST SERVICE STATISTICS
NOMINAL DOLLARS
FEDERAL OUTLAY DATA NOT AVAILABLE FOR 1974-76

Wildfire acres in 11 Western states versus federal outlays for fire suppression. ***While U.S. acres burned have declined from 40-50 million acres/year in the 1930s to around 5 million acres/year in the '70s and '80s, acres burned in the West have been on the increase since the 1970s. This accounts for most of the increase in federal suppression costs.***

Federal costs for fire suppression and emergency restoration work on the national forest totaled $24 million. The need for further management is far from over; the young ponderosa pine regeneration must be thinned and protected from future fires that could kill the seedlings before they mature sufficiently to produce new seed sources. An intense reburn in the next few years could change areas that have been forested for many decades, if not centuries, to grassland and shrub fields.

Situations similar to what existed on the land impacted by the Foothills Fire are common in many regions of the Inland West. Because these situations

Modern ecosystem theory provides a basis for corrective actions that can mitigate current levels of risk and potential damage, and facilitate improved forest health.

reflect conditions outside the historical range of variability characteristic of these sites, the authors believe natural forces are unlikely to correct them in ways that satisfy the public's expectations for healthy forests. Change will continue, that is certain, but the result of that change is far from known. The changed forest may be what people consider to be healthy and productive, or it may not. The choice we face is whether to leave the outcome to chance, or to try to guide it toward desirable conditions through what Aldo Leopold described as "intelligent tinkering" with forest ecosystems.

Inaction Poses Increased Risk

Though it is readily recognized that scientific knowledge is incomplete, modern ecosystem theory provides a basis for corrective actions that can mitigate current levels of risk and potential damage, and facilitate improved forest health. Through corrective actions and ecosystem management, we can balance forest structures across landscapes, increasing the opportunity for maintaining biological diversity and reducing the impact and scale of inevitable disturbances.

The question of risk is at the heart of the options facing society in the inland western forests. Any management action—including the option of taking no action at all—has certain costs and uncertain outcomes. It takes courage and leadership in the face of uncertainty and public cynicism to take actions that may be inconsistent with past practices. That is, however, what is demanded in the current situation facing Inland West forests and forest managers.

The authors conclude that in many Inland West forests, the costs and risks of inaction are greater than the costs and risks of remedial action. Inaction in the face of current forest conditions will likely prove to be the most costly and environmentally destructive option. The judicious control of tree density and species composition through prescribed fire, thinning, and other silvicultural methods is critical to reducing risk and restoring and maintaining forest health. These conclusions may be inconsistent with what citizens, scientists, and policymakers have learned in other forest regions where better ecosystem management is perceived to require less intensive

The costs and risks of inaction are greater than the costs and risks of remedial action.

human intervention in the forest.

The current ecological conditions in the forests of the Inland West, however, lead to the conclusion that ecosystem management will demand increased management. This new management will be more intense and cover wider areas of the forest, but it will be different in impact and appearance from what has historically been done, particularly on the federal forests. In most cases it will be a more adaptive form of management, more responsive to local conditions and needs, with results more closely monitored to study effects and continuing changes. The challenge to managers on these threatened forests is to provide preventative treatment as a means both of protecting valuable resources and reducing the effort and cost of such current management activities as fire suppression and emergency restoration.

Deterrents to Timely Response

It is imperative for national policymakers to recognize the unique and critical situation threatening the forests of the Inland West.

A concern remains about the capacity of federal land-managing agencies to respond rapidly and adaptively to take necessary action in high-risk situations. Federal forest management and environmental laws charge the land-managing agencies (primarily the Forest Service and Bureau of Land Management) with assuring continued ecosystem health and sustainability. Unfortunately, the procedural, regulatory, and judicial framework that has developed in response to that complex array of federal laws imposes time delays that, in many cases, prevent the agency from taking timely action to address fast-changing situations in the forests. This is compounded by a lack of public trust that results in appeals and litigation in most proposed actions involving tree removal or logging. The public is also generally unaware of the extreme risks to the forest and adjacent private property inherent in the current situation, so they often fail to see the potential price that will be paid for "doing nothing."

Public understanding, acceptance, and support for management intervention in unhealthy forest situations is unlikely to result from attempts simply to "educate" people or by arguing that "the experts know best." Instead, research needs to provide analytic and illustrative tools that will help concerned citizens and agencies understand forest conditions and related risks. People will need to see the forest with their own eyes, and be able to see how risk ratings and other decision tools have been calculated. They will need to understand not only the likelihood of undesirable changes in forests that are left alone,

but what those changes will mean in terms of altered values such as visual quality, wildlife habitat and numbers, fisheries, water quantity and quality, and recreational opportunity. They will have to come to a personal acceptance of the fact that while all ecosystems undergo constant change, there are ecologically sound methods by which human intervention can guide change in ways that are ecologically, economically, and socially sound.

As scientists, land managers, and concerned conservationists, the authors believe it is imperative for national policymakers to recognize the unique and critical situation threatening the forests of the Inland West. Immediate action is needed to encourage and support forest-management programs that maintain healthy forest areas, treat unsustainable conditions, restore forest health where needed, and prevent widespread ecological setbacks to protect the public and private values that are currently at risk.

Conclusions of the Working Groups

The Sun Valley workshop produced five papers representing the consensus of small working groups focusing on specific subjects. The following represents an overview of their conclusions.

Defining and Measuring Forest Health *(Jay O'Laughlin, R. Ladd Livingston, Lyn Morelan, Ralph Thier, John Thornton, Dale E. Toweill)*

◆ Forest health is a condition of forest ecosystems that sustains their complexity while providing for human needs. It is a useful communications device to help people understand the current condition of the forest.

◆ Forest scientists and managers, working with their customers, can identify, define, and determine ranges for a set of measurable characteristics in each forest ecosystem. These can be useful in evaluating the condition of the forest at any time in relation to desired conditions.

◆ Objective indicators of forest ecosystem condition can be specified and measured, but forest health assessments contain subjective value judgments that must be clearly recognized.

◆ Comprehensive and intensive inventories of a short list of indicators representing commodity and noncommodity values will improve forest health assessments, as well as forest planning and management decisions, by enabling an understanding of ecosystem characteristics of stands, habitats, streams, and landscapes.

◆ As is true in other "health"contexts, it may be easier to identify when a forest is experiencing an "unhealthy" condition in one or more aspects than it is to define exactly what "healthy" means.

The Changing Forest Ecosystems of the Inland West *(W. Wallace Covington, Richard Everett, Robert W. Steele, Larry L. Irwin, Tom A. Daer, and Allan N.D. Auclair)*

◆ The evolutionary history of the organisms that constitute today's Inland

U.S. FOREST SERVICE

Fire exclusion in fire-dependent forests creates heavy fuel loads such as this stand in the Wallowa Whitman NF in eastern Oregon. Fire weather and an ignition source in such fuels leads to a catastrophic fire, such as the 1989 Lowman fire in the Boise NF (below). This fire site burned much hotter than fires have in this area historically, and will take several decades or longer to recover.

LANCE R. CLARK

West ecosystems is characterized by natural disturbance regimes (e.g., fires, predation, defoliation), which have varied in kind, frequency, intensity, and extent.

◆ Exclusion of natural fires in the forests and woodlands of the Inland West has led to tree population explosions, dead fuel accumulations, and continuous landscape-level fuels to such an extent that the niches of some species of plants, animals, and microbes have become rare. A parallel decline in resource conditions for humans has occurred to a greater or lesser extent in all forest types.

◆ The natural functioning of these ecosystems has in many cases been severely impaired (e.g., successional processes altered, recycling processes disrupted).

◆ As a result of increased tree densities in the ponderosa pine forest climax type, the increase in late successional species in the mixed conifer climax type, and the increasing landscape homogeneity in all types, catastrophic resetting of these systems by either large crown fires, either alone or in combination with large insect and disease epidemics, is certain.

◆ Global changes in both climate and CO_2 concentrations are likely to exacerbate these problems.

◆ A fairly narrow window of opportunity—perhaps 15-30 years—exists for land managers to implement ecosystem-management treatments designed to restore more nearly natural and robust ecosystem structures and processes.

◆ Although a continuing concern of both natural resource professionals and the general public is the loss of old-growth trees due to logging,

there is an increasing consensus that disruption of fire regimes and the ensuing tree population irruptions, in conjunction with resultant catastrophic crown fires and insect and disease attacks, are a far greater threat to biological diversity and ecosystem sustainability than the general public realizes.

Human Dimensions of Forest Health Choices *(Charley McKetta, Keith Blatner, Russell Graham, John Erickson, and Stan Hamilton)*

◆ Major forest-management trends are currently centered around commodity production (market and nonmarket) and single-use noncommodity production (preservation).

◆ Decisionmaker risk adversity will lead to fewer decisions in which controversial trade-offs must be faced and more use of initiatives such as "forest health" under which preferred managerial options may be achieved with less controversy.

◆ Resource managers will be confronted with a wide array of added/new pressures—both known and unknown—that will tax their ability to respond. These will include both biological/physical and social/economic factors.

◆ Ecosystem management rose out of internal pressures, external pressures, and as a solution to forest health problems and growing resource conflicts.

◆ Among three stylized future forest-management strategies, total protection, continued commodity production management, and ecosystem management each have their own risk profiles.

◆ Management tools exist or can be modified to assess both biological and social/economic risks in evaluating forest-management strategies.

◆ Commodity forest management that adjusts stand structure can be both financially and biologically complementary to a wide range of jointly produced nontimber objectives, including forest health conditions.

◆ There is a need to develop an accounting system that more accurately reflects the true costs of producing both commodity and noncommodity goods from the forest, instead of the timber-based single resource accounting/budgeting approach currently in place.

◆ Managers should strive to prevent forest health declines because they impose four costs: commodity and noncommodity production losses (although timber salvage may temporarily rise), dissipation of the forest asset itself, increased annual protection costs, and rapidly escalating restoration costs.

◆ Planning in the context of ecosystem management introduced a plethora of complex questions regarding interactions among and between the biological/physical resources, economics, and sociology. Accommodating this complexity will require that the planning methodologies and tools used be more flexible and evolve to a further degree. These techniques should also be a means of developing a more collaborative relationship with the public.

◆ Resource planning should seek to develop agreements on such fundamental issues as the nature of the problems, what will constitute an

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Prescribed fire, shown here being ignited, is one tool managers can use to reduce fuels and reintroduce fire into fire-dependent ecosystems. Although smoke is an unwanted by-product of this technique, careful burning, unlike wildfire, can control smoke levels and minimize negative human health effects.

improvement, and the technologies and techniques to be used for problem solving.

◆ The major barriers to initiating public forest-ecosystem management targeted to forest health appears to be institutional, technical, social, and economic.

Managing Ecosystems for Forest Health *(Chadwick D. Oliver, Dennis Ferguson, Alan E. Harvey, Herbert Malany, John M. Mandzak, and R.W. Mutch)*

◆ Change is the norm; management is the art of human intervention in the process as a way of increasing the amount or duration of conditions people desire.

◆ Some natural change processes, while normal, can occur at scales or intensities that people today wish to avoid. While seeking to eliminate or suppress such change is probably illogical, managing the landscape in ways that affect their size, intensity, and duration is a feasible way of allowing normal change to occur within tolerable bounds.

◆ Management can attempt to achieve and maintain asynchronous fluctuation patterns of ecosystem structures, process, and populations across the landscape, as a means of assuring that at least minimal amounts of all ecosystem components are maintained, and no component becomes grossly overrepresented at any one time.

◆ Management that tries to improve conditions favoring forest health, in combination with actions taken to produce other desired commodity

and noncommodity outputs, will be more effective than managing for forest health alone.

◆ Adaptive management seeks to apply what is known in relation to the existing condition on each site, in comparison with the desired reference range of conditions that have been identified. Such management is inconsistent with central planning, application of uniform standards across landscapes or systems, and management by regulation.

◆ We have the knowledge, tools, and people to begin the job of maintaining and restoring forest health to the ecosystems of the Inland West, particularly if we utilize adaptive management techniques and monitoring that systematically seeks the knowledge currently lacking.

Historical Range of Variability *(Penelope Morgan, Gregory H. Aplet, Jonathan B. Haufler, Hope C. Humphries, Margaret M. Moore and W. Dale Wilson)*

◆ The concept of historical range of variability in ecosystem structure or process is valuable in helping to understand and illustrate the dynamic nature of ecosystems; the processes that sustain or change ecosystems, especially disturbances; and the current state of the system in relation to the past. Thus, the historical range of variability is useful in evaluating the sustainability of ecosystem conditions.

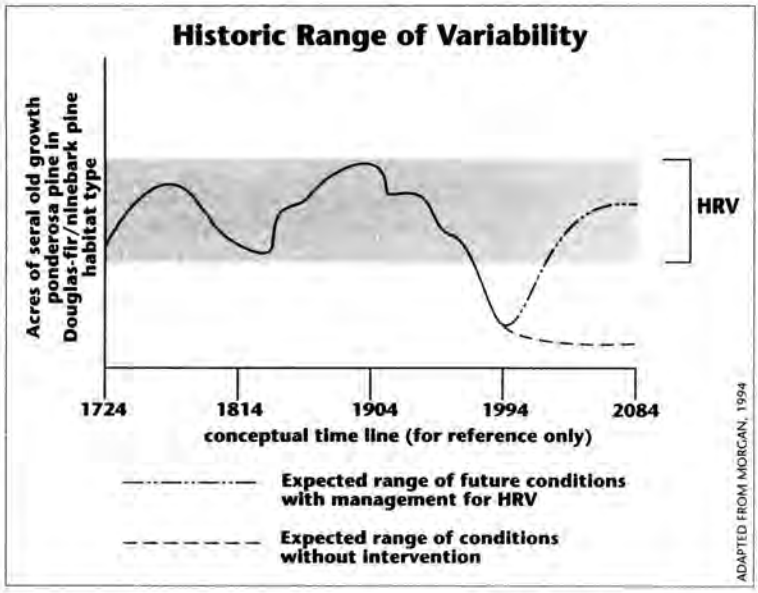
◆ The historical range of variability can become a reference for determining a range of desired future conditions. Where the range of desired future conditions is defined relative to it, the historical range of variability is useful as a baseline for monitoring.

◆ The historical range of variability can be used as a reference in establishing the limits of acceptable change in key ecosystem patterns and processes. Determining the departure of current conditions from the historical range of variability can be helpful in assessing and communicating the risk and probability of change and the action required to resist that change. Alternative future conditions can also be evaluated relative to the historical range of variability in ecosystem components and processes.

◆ Because ecosystems are structured hierarchically, historical range of variability must be characterized at multiple spatial scales appropriate to ecosystem processes. We endorse the implementation of a hierarchical ecological classification system such as ECOMAP (1993), which will help organize existing knowledge into a useful framework. In addition, we must characterize the historical range of variability at time scales that are relevant both to ecosystem dynamics and management goals.

◆ A variety of methods exist to describe the historical range of variability, such as reconstruction of past forest structure and composition from tree rings, pollen in sediment, and historical photographs.

◆ Some limitations to the approach include the lack of historical data, difficulties of interpreting the historical record, and societal values. The historical range of variability will be of limited use as an alternative future model in ecosystems drastically affected by the invasion of exotic species, air pol-



Increasingly in forest literature, the terms "historical range of variability," "current range of variability," and "desired range of variability" appear. A word of explanation and an example seem in order.

Ecologists have noted that forest systems seldom, if ever, reach a "steady state," whether they are managed by people or affected primarily by natural forces. What is constant is that forests are in a constant state of change. It appears, in fact, that many species have developed or adapted in response to these changes, and that slowing or halting the change process (for example, by excluding fire) can threaten them.

The term "historical range of variability" is an attempt to explain the kinds, amounts, and speed of the changes that tended to occur on the forest before European settlement. Obviously, the history may be fairly obscure, or, for that matter, fairly brief. In contrast, many forests have a fairly long history, written in fire scars, old trees, tree remains, bogs, and fossils.

For each forest, then, forest ecologists today seek to understand what kinds of fluctuations seemed to be normal (a range) for the site. These historical variations can then be compared to today's conditions, as one guideline on the health and well-being of today's forests. For managers looking to the future, the concept of "range of variability" offers the chance to set a realistic, achievable range of targets toward which their current management can aim.

In the example above, managers can look at how many acres of old-growth ponderosa pine could be found historically in a certain area. It is assumed that decline in forest health is linked to conversion of forest type, significantly reducing old growth. Another possible assumption is that managing for old growth will lead to improved forest health, as was inferred from the past.

lution, climate change, or the extinction or near elimination of some native species. However, even in these situations, the historical range of variability is a useful tool for understanding ecosystem function, which is essential to predicting the behavior of altered as well as natural ecosystems.

We must identify and maintain reference areas from which we can draw data to substitute for historical information. Where particular ecosystems are not well-represented within research natural areas, wilderness, or other appropriate reference areas, additional sections should be identified and managed as reference areas. The few parcels that remain relatively unaltered by human activity are of unquestionable value as a window to the past. Even so, many designated reserves have been affected by air pollution, fire exclusion, grazing, mining, and other human activities both within and adjacent to them.

◆ Many important sources of information—including old trees, old records, and old people—are succumbing to the pressures of time. There is an urgent need to ascertain historical ranges of variability for many ecosystems before these records are irretrievably lost.

For References and Further Study

This workshop was convened in Sun Valley, Idaho, November 14-19, 1993, through a partnership involving AMERICAN FORESTS, Boise Cascade Corporation, Idaho Department of Lands, the Boise National Forest and the Intermountain Forest and Range Research Station of the U.S. Forest Service, and the University of Idaho College of Forestry, Wildlife, and Range Sciences. The workshop brought together a diverse group of scientists and forest managers to assess the current state of scientific knowledge about the health of the forests in the Inland West. The goal was to produce a current, accurate, credible synthesis of information, from across disciplines, about forest health in the Inland West.

The full publication contains this overview paper, five synthesis papers, and 16 individual scientific papers. The manuscript is not merely a compilation of papers; it reflects a combination of processes that made this scientific workshop unique. The sponsors of the workshop defined five basic questions that related to the spectrum of issues surrounding forest health in the Inland West, and formed five groups to address these questions. Each group was instructed to draw upon the diverse expertise of their members, as well as the knowledge of all the scientists, managers, academics, and field people participating in the workshop. The working group papers represent the combined expertise of the authors and the synergy of their collective knowledge. These papers, along with the individual ones, provide a thorough reference on current conditions and their historical origins, assess available management tools, and lay out analyses of biophysical, economic, and social ramifications of the various choices available to policymakers. Their conclusions are listed in brief form in the previous section.

Omission of scientific references and footnotes from this version are meant to facilitate general reading. The complete manuscript will appear as Volume 2 of the *Journal of Sustainable Forestry* (JSF). Information on subscribing to the *Journal* is available by writing to: JSF, 10 Alice St., Binghamton, NY 13904-9981, or calling 800/342-9678. In addition, a hard-cover book is being produced by Haworth Press, to be available in mid-1994. For prices and availability, inquire to AMERICAN FORESTS, P.O. BOX 2000, Washington, DC 20013 or call (202) 667-3300.

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FOREST POLICY CENTER

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The Ruffed Grouse Society
DEDICATED TO IMPROVING THE ENVIRONMENT
FOR RUFFED GROUSE, WOODCOCK,
AND OTHER FOREST WILDLIFE

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WRITTEN STATEMENT OF
DANIEL R. DESSECKER
FOREST BIOLOGIST
RUFFED GROUSE SOCIETY

Submitted to:
Subcommittee on National Parks, Forests and Public Lands
Committee on Natural Resources
United States House of Representatives

Concerning:
H.R. 1164 "Forest Biodiversity and Clearcutting Prohibition Act of 1993"

5 May 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to comment on the future management direction of our nation's federally-owned forest lands. These comments are generated by my concerns regarding the substantial, negative impact that H.R. 1164 would have on the ability of natural resource professionals to employ an ecosystems approach in the management of our nation's forest communities.

Our nation's federally-owned forest lands encompass approximately 285 million acres (Darr 1989). Resource management on these lands is of critical importance to the people of the United States.

An ecosystems approach to forest management of federally-owned lands demands that all native forest communities be represented on the landscape. This may require drastic shifts from current land-use policy in certain locales. However, the maintenance of viable ecosystems necessitates that all appropriate means of forest stand manipulation, including clearcut harvests, be available to resource management professionals.

Forest ecosystems across the North American continent have evolved with, and adapted to periodic and oftentimes drastic disturbance (Allen 1962, Curtis 1971, DeGraaf 1993). Today, resource managers have two options if they are to ensure that these forest systems are managed in a manner consistent with natural ecosystem processes:

1. Reintroduce fire to the forest landscape.
2. Utilize mechanical means to remove existing vegetation.

The former is unlikely given current social and political constraints. The latter is called a timber sale.

The Ruffed Grouse Society understands only too well the negative connotation normally associated with timber sales and, specifically clearcut regeneration harvests. Clearcut harvests are often inappropriately portrayed as the rape or destruction of the forest. Purveyors of this wholly inappropriate characterization are either ignorant of the basic concepts of forest ecology, or choose to ignore the facts in their desire to promote a specific objective. Even-age management prescriptions, such as clearcut harvest operations, are essential to the regeneration of shade-intolerant forest stands in North America.

Shade-intolerant forest communities, those forests that require full sunlight for regeneration and development, owe their very existence to periodic disturbance. Historically, this disturbance was caused by wildfires that, in some instances, raced across vast portions of the forested landscape (Leyburn 1962, Komarek 1965 and 1974, Keel 1976, Aschmann 1978, Van Lear and Waldrop 1989). Since the initiation of fire detection and suppression measures in the early 1930's, man has, to a large degree, precluded this type of natural disturbance from reshaping our forests, particularly in the eastern United States. Today, carefully planned and implemented clearcut timber harvest operations best mimic the effects of past fires by creating a mosaic of forest stands of varying ages, yet on a much smaller scale than historic conflagrations.

Despite periodic man-made disturbance, today's hardwood forests are maturing at a dramatic rate. The following table illustrates this disturbing trend in states located throughout the Appalachians.

TRENDS IN FOREST LAND ACREAGE CLASSIFIED AS HARDWOOD SEEDLING/SAPLING, (< 20 YEARS OLD).

State	Trend	Interval
Connecticut (Dickson and McAfee 1988c)	- 43%	1972 - 1985
Kentucky (Alerich 1990)	- 46%	1975 - 1988
Maine (Powell and Dickson 1984)	- 42%	1971 - 1982
Massachusetts (Dickson and McAfee 1988b)	- 68%	1972 - 1985
New Hampshire (Frieswyk and Malley 1985)	- 58%	1973 - 1983
Pennsylvania (Alerich 1993)	- 24%	1965 - 1989
Rhode Island (Dickson and McAfee 1988a)	- 80%	1972 - 1985
South Carolina (Tansey and Hutchins 1988)	- 24%	1978 - 1986
Tennessee (Birdsey 1983)	- 40%	1971 - 1980
Vermont (Frieswyk and Malley 1985)	- 28%	1973 - 1983
Virginia (Bechtold et al. 1987)	- 17%	1977 - 1986
West Virginia (DiGiovanni 1990)	- 61%	1975 - 1989

This rapid rate of decline of the seedling/sapling age class within the various hardwood forest types of the eastern United States is detrimental to the many species of forest wildlife that prefer dense, recently disturbed habitats. The ruffed grouse is one such species.

However, ruffed grouse are not alone in their preference for young, newly-regenerated habitats. Numerous species of songbirds breed almost exclusively in young forest stands. These species include numerous neotropical migrant landbirds that are at present experiencing significant population declines. The following table illustrates these trends.

POPULATION CHANGE SINCE 1980 FOR VARIOUS NEOTROPICAL MIGRANT LANDBIRDS IN THE EASTERN UNITED STATES
(US Fish & Wildlife Service - Breeding Bird Survey Data)

Species	Trend
field sparrow	- 24%
mourning warbler	- 18%
brown thrasher	- 16%
rufous-sided towhee	- 16%
white-throated sparrow	- 15%
chestnut-sided warbler	- 12%

Evidence to support the importance of early-successional (young) forest habitats comes from research conducted in New Hampshire (Welsh and Healy 1993) and Missouri (Thompson et al. 1992). These studies documented the species composition of avifaunal communities within large, contiguous forested landscapes that exhibited a great variety of stand age classes due to extensive silvicultural treatment over time, including clearcutting, and other contiguous forest landscapes that were relatively homogeneous with regard to vegetation structure due to a lack of either natural or man-made disturbance.

As one would expect, the managed landscape supported species that required young forests, these species were not found on the unmanaged, homogeneous landscape. Yet, this disturbed landscape also supported densities similar to those encountered on the undisturbed landscape for those species of neotropical migrant landbirds commonly characterized as "forest interior species", those species that ostensibly require large blocks of unbroken, mature forest.

Clearly, the presence of early-successional habitats on a landscape that is predominantly forested does not automatically preclude the presence of species that require mature forests. Quite the contrary, a vegetative matrix comprised of both early- and late-successional forest stands increases both the local and regional diversity of breeding avifauna. The complete absence of either component, young or mature stands, will negatively impact local and regional biodiversity.

We can't, as some have suggested, expect that these important, early-successional habitats will be produced on privately-owned forest lands. Nonindustrial private forest landowners are, as a general rule, far less apt to harvest forest products (Hodge 1991) and, thereby, set-back succession, than are public resource management agencies. Data from the Great Lakes area clearly show that shade intolerant forest types on nonindustrial private forest lands, those forest types that absolutely require clearcutting if they are to be regenerated in a manner consistent with ecosystem processes, are experiencing significant declines (Raile 1985). It is, therefore, imperative that our federally-owned forests be actively managed to promote the development of dense, young forest stands to ensure the continued viability of wildlife species that require these habitats.

The ephemeral nature of early-successional habitats necessitates the identification and implementation of a program of sound forest management, including clearcutting, that will ensure the appropriate spatial and temporal distribution of this important habitat component. The development of these habitats is a direct and a positive benefit of a timber management program designed with multi-disciplinary involvement.

On-the-ground management decisions must be prompted not by administrative "targets", but by a demonstrated resource need. Much of the current debate regarding "below-cost" timber sale programs on our National Forests stems from mandates that specific levels of harvest be attained by each Region, Forest and District, regardless of the cost to ecosystem integrity. A very vocal portion of the public is convinced that these mandated harvest levels are proof that resource management on our National Forests is driven far more by commodity production than by ecosystem enhancement.

This perception must be altered. The public must be confident that a timber sale is not an end unto itself, rather, it is a means to an end - that end being the management of critical ecosystem components through the manipulation of existing vegetation.

Public confidence could be engendered if the costs associated with the enhancement of non-timber resources, via a timber sale, were assigned to appropriate program budgets within the Forest Service, rather than the timber sale program budget as is currently the case. Wildlife habitat development should be charged to the wildlife program budget, the establishment of recreational access should be charged against the recreation program budget, and so on. This would allow for a more realistic appraisal of timber sale programs than is currently possible.

Obviously, appropriate program budgets would have to be increased to cover these costs. However, this would necessitate no net increase in Forest Service appropriations because these funds could simply be "reassigned" from what would become a greatly reduced budget for the timber sale program.

A balanced approach to the future of resource management on our nation's federally-owned forests demands that all biologically-sound silvicultural options, including clearcutting, be available for use by agency professionals, as they deem appropriate, to meet specific resource objectives. The elimination of even-aged silvicultural practices and, specifically clearcutting, as management options would eventually ensure that our federally-owned forests become nothing more than small, isolated fragments of young forest surrounded by a vast expanse of mature forest, a scenario equally as unacceptable as would be the converse.

The Ruffed Grouse Society is extremely concerned about the impact that the elimination of even-age management would have on ruffed grouse populations. However, in that the ruffed grouse is an excellent indicator of early-successional habitat conditions, these concerns are rightly extended to the well-being of local populations of numerous species of forest wildlife.

Despite it's intentions, H.R. 1164 would unquestionably lead to a reduction in the ability of resource managers to maintain important components of local and regional biodiversity. For this reason, the Ruffed Grouse Society is adamantly opposed to this ill-founded, broad-brush approach to forest resource management as the course along which our federal lands will navigate well into the 21st century.

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May 12, 1994

The Honorable Bruce Vento, Chairman
Subcommittee on National Parks, Forests and Public Lands
Committee on Natural Resources
House Office Building
Washington, D.C. 20515

Dear Congressman Vento:

The Wildlife Management Institute appreciates the opportunity to express serious reservations about H.R. 1164.

As professional wildlife ecologists, we believe firmly that any legislation which ejects three of the four primary silvicultural systems from public lands is patently threatening to forest resource management. Such restrictions totally ignore the great variance in situations and resource needs nationwide. This bill is directly confrontational to wildlife management, including habitat enhancement for endangered species such as the red-cockaded woodpecker and Kirtland's warbler.

No one should defend the historical misuse of clearcutting that has taken place on public lands. Conversely, all should defend rational use of that technique against over-zealous attacks, such as embodied in H.R. 1164.

The subcommittee has been told ad nauseam about the good, bad and ugly of clearcutting. And inherently, it is none of these. The result is a function of application. Sensitively applied, clearcutting is a valuable tool. Irreverently administered, it can be devastating.

Aside from eliminating important management options, H.R. 1164 is replete with misleading and even untrue claims. Among the bill's findings, for example, are: "Even-age logging kills immobile species and the very young of mobile species of wildlife and depletes the habitat of deep-forest species of animals, including endangered species." And, "Even-age logging decreases the capability of the soil to retain carbon and, during the critical periods of felling and site preparation, reduces capacity of the biomass to process and to store carbon, with a result of loss of carbon to the atmosphere, thereby aggravating global warming." And, "Even-age logging causes a substantial reduction in native biodiversity...."

These statements are misleading to the point of being humorous. Neither a box turtle nor a nest of young thrushes is less smashed when hit by a tree cut selectively as opposed to one clearcut. Also, it is widely held that an acre of grasses and forbes (which naturally follows clearcutting) processes

more carbon dioxide than an acre of trees, because the process is a function of surface area rather than immensity. And, the knowledge abounds among ecologists that clearcutting in hardwoods produces more diverse forests than selective cutting, simply because most tree species are shade intolerant. H.R. 1164 seems embarrassingly unaffected by these facts.

Consequently, the subcommittee should reject H.R. 1164, if for no other reason than it is bad for wildlife and forest management. The Institute would support strongly any committee efforts to prevent the misuse of clearcutting, or any other silvicultural technique, on public land.

We request that these comments be part of the hearing record.

Sincerely,

Lonnie L. Williamson

Lonnie L. Williamson
Vice-President

LLW

FOREST
TRUST

May 11, 1994

The Honorable Bruce Vento, Chairman
National Parks, Forests and Public Lands Subcommittee
of the Natural Resources Committee
U.S. House of Representatives,
Room 812-O'Neill Building
Washington, DC 20515

STATEMENT OF HENRY CAREY, DIRECTOR OF FOREST TRUST
BEFORE THE SUBCOMMITTEE ON
NATURAL RESOURCES, PARKS, FORESTS AND PUBLIC LANDS
IN THE U.S. HOUSE OF REPRESENTATIVES
CONCERNING HR 1164
FOREST BIODIVERSITY AND CLEARCUTTING PROHIBITION ACT OF 1994

Dear Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to express my support of HR 1164, the Forest Biodiversity and Clearcutting Prohibition Act of 1993. As a forester and the director of an environmental organization working to protect our national forests, I strongly support this bill.

This bill would restrict even-aged management as a silvicultural alternative. I feel this is appropriate, in light of two factors: (1) too much emphasis has been placed on this silvicultural method; and (2) incorrect application of this method increases the hazard of environmental degradation. Evidence for this has been widely provided through past failures of applied even-aged management throughout the country. In addition, restrictions on even-aged logging would provide greater stability for forest-based rural communities over the long term.

In sum, this bill would serve to protect both native ecosystems and the communities dependent upon them.

Sincerely,

Henry Carey
Director

A Division of the Tides Foundation
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Intertribal Timber Council

May 19, 1994

The Honorable Bruce Vento, Chairman
Natural Resources Subcommittee on National
Parks, Forests and Public Lands
812 O'Neill House Office Building
U.S. House of Representatives
Washington, DC 20215

Dear Chairman Vento:

I am writing to covey the comments of the Intertribal Timber Council regarding H.R. 1164, the Forestry Biodiversity and Clearcutting Prohibition Act of 1993, on which your Subcommittee held a hearing May 5, 1994. I request that this letter be made a part of the Subcommittee's hearing record on H.R. 1164.

The Intertribal Timber Council

The Intertribal Timber Council (ITC) is a seventeen year old organization of sixty-four Indian Tribes and Alaska Native organizations with substantial forest lands. Collectively, the ITC member Tribes hold more than 90% of the 5.7 million commercial forest acres, and a substantial portion of the 8.7 million woodland acres, that are under trust management for tribes by the Bureau of Indian Affairs in the U.S. Department of the Interior.

H.R. 1164's application to Tribes

Mr. Chairman, the Intertribal Timber Council requests that Section 6 of H.R. 1164 be deleted from that legislation on the grounds that Indian trust lands are <u>not</u> U.S. public lands and that restriction of tribal rights and interests on Indian lands in order to confer benefits on the U.S. public-at-large is improper. Section 6 would apply restrictive Federal forest management policies intended for U.S. public lands to Indian lands held in trust for the tribes by the U.S. government. Section 6 would amend the National Indian Forest Resources Management Act (PL 101-630, Title III) to restrict the management of Indian trust forest lands by imposing requirements to

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conserve and restore biodiversity and prohibit even-aged practices. Section 6 could also authorize any U.S. citizen to sue an Indian tribe for alleged violations of the Act.

Impact of H.R. 1164 on Tribes

The application of H.R. 1164's restrictions to Indian trust forests would be devastating to Indian tribes. The restrictions would diminish the tribal governments' sovereign authority to determine, within the bounds of the trust, the use of their land, and would infringe on the tribal governments' sovereign immunity from suit. H.R. 1164 would interfere with the Federal government's legal obligations as trustee to manage the land for its Indian beneficiaries. The bill would violate the long-established Federal policy of Self-Determination for Indian tribal governments, and would impose financial hardship on many already impoverished Indian communities, depriving the tribes and their members of needed employment and other economic benefits of the forest. And H.R. 1164's restrictions could expose the Federal government to liability for the conversion of private property to public purposes.

We hope that the application of H.R. 1164's restrictions to Indian forest is mistaken, due to an unfamiliarity with the unique nature of Indian trust lands and the historic, treaty-based relationship between tribes the Unites States.

Indian trust land

Indian trust lands, including their forests, are <u>not</u> U.S. public property. They are held in trust by the U.S. for the exclusive use and benefit of the Indian people thereon. The great majority of these trust lands are Indian reservations specifically retained for the tribes in treaties with the U.S. that ceded vast amounts of aboriginal tribal territory. To preserve and protect these reservations and other Indian land for the Indian people, the United States takes the land's title into trust. As trustee, the U.S. has a fiduciary obligation to manage the land for the benefit of the Indians for whom it is held in trust, not the U.S. public. The rights to the land, including rights to determine its use, enjoy its benefits, restrict entry and to receive compensation for 5th Amendment conversion to public use, are retained by the tribe or its individual Indian owner. This trust relationship is unique; the holding of title to trust lands by the Federal government should not be construed as meaning Indian trust lands are U.S. public lands that are subject to management for public benefit.

Tribal sovereignty

Within Indian reservations, tribal governments exercise inherent sovereign powers, including jurisdiction over Indian people, sovereign immunity from law suits, and authority over the use of their lands. The preservation of these powers is essential to continued tribal governmental existence, and we resist any effort to diminish or infringe on these powers. It is inappropriate for the U.S. Congress, in an effort to convey some benefit to the U.S. public at large, or to offset some mismanagement of U.S. public lands, to impose restrictions on tribal lands, diminishing both the tribes' sovereign rights to administer their own land and their ability to enjoy its benefits. These Federal restrictions are particularly inappropriate when the very purpose of the Federal government assuming title to Indian land is to protect it for the tribes' exclusive use and benefit.

Tribal governments must determine the management practices most appropriate to apply to their lands. Tribal governments are keenly aware of their limited land bases, their community's needs, and their obligations to future generations. They have been living with their land and its resources for a very long time, and fully recognize that the decisions how best to address all these issues are not easy. But, the decisions are the tribes' to make, and must not be imposed upon the tribes in response to some outside concern.

Accordingly, we ask that Section 6 be deleted from H.R. 1164.

We hope that, in any Subcommittee or Committee consideration of H.R. 1164, you will accommodate our request. If you have any questions, please do not hesitate to contact me.

Sincerely,

Jaime A. Pinkham
President

cc: ITC Executive Board
Senator Daniel Inouye
Senator John McCain
M. Phillips

Original will be sent Federal Express

A STATEMENT FOR THE RECORD SUBMITTED TO THE HOUSE NATIONAL PARKS, FORESTS & PUBLIC LANDS SUBCOMMITTEE ON H.R. 1164, THE "FOREST BIODIVERSITY AND CLEARCUTTING PROHIBITION ACT OF 1993"

by Gary J. Taylor, Legislative Counsel
International Association of Fish and Wildlife Agencies
May 6, 1994

The Association appreciates the opportunity to submit a statement for the record on H.R. 1164. While the Association does not endorse the universal application of even-aged management or any other specific silvicultural system for fish and wildlife conservation, we conversely do not support a prohibition against even-age management on public lands. The Association advocates that this or any other technique should remain available for use, where appropriate, by the professionally trained natural resource managers based on their professional judgment using sound resource management science. The Association thus must oppose the passage of H.R. 1164.

The International Association of Fish and Wildlife Agencies, founded in 1902, is a quasi-governmental organization of public agencies charged with the protection and management of North America's fish and wildlife resources. The Association's governmental members include fish and wildlife agencies of the states, provinces, and federal governments of the U.S., Canada, and Mexico. All 50 states are members. The Association has been a key organization in promoting sound resource management and strengthening federal, state, and private cooperation in protecting and managing fish and wildlife and their habitats in the public interest.

The State fish and wildlife agencies have a vital and vested interest in forest habitat management on Federal public lands. During the last 20 years, a number of Congressional enactments have expanded federal jurisdiction over certain species of fish and wildlife traditionally managed by the States. However, except for certain species of marine mammals, under these Congressional enactments, state jurisdiction remains concurrent with federal authority for endangered and threatened species, migratory birds, and anadromous fish. State authority for fish and resident wildlife remains the comprehensive backdrop applicable in the absence of specific, overriding Federal law. This authority applies in most cases to Federal public lands.

On national forests and BLM-administered lands, authority with respect to fish and wildlife resources is shared, with land management and habitat authority residing in the federal administrators, while direct authority relating to surveys, inventories and the regulation of taking of fish and wildlife being reserved explicitly by Congress to the States. Jurisdiction is also concurrent on units of the National Wildlife Refuge System and of the National Recreation Area System. I refer you to the provisions of the Multiple Use-Sustained Yield Act of 1960; the Federal Land Policy and Management Act of 1976; Sikes Act; National Wildlife Refuge Administration Act of 1966; the Endangered Species Act of 1973; and the Magnuson Fishery Conservation and Management Act as references for these statutory provisions.

Concurrent jurisdiction with respect to fish and wildlife, and its application to U.S. Department of Interior administered lands, is also discussed generally in the Department of Interior Fish and Wildlife Policy: State-Federal Relationships, 43 CFR Part 24. U.S. Department of Agriculture policy (Secretary Memorandum at 9500-3) and regulation regarding management of the National Forests and Grasslands recognize that States have broad trustee and stewardship responsibility over fish and wildlife conservation and the regulation of their use, even on Federal lands. We establish this long and successful history of Federal-State partnership in managing fish and wildlife on Federal public lands to share with the subcommittee our member agencies' standing on the subject of the bill before the subcommittee.

The Association also certainly embraces many of the concepts and application of uneven-aged forestry as a legitimate, useful and appropriate technique for balanced forest conservation in certain habitats. Modifications of harvest rotation length and schedules using selection harvest, amending guidelines for forest stand composition and age regimes, and different silviculture systems including varying harvests methods are valid and useful techniques for the conservation of forest habitats and the biota that they support, and to provide for sustained fiber production. We see this as the appropriate role of the professionally trained foresters, fisheries and wildlife biologists, and other disciplines to apply these techniques on a local basis as a result of scientifically conducted surveys and inventories of both the forest stand and the fauna and flora that it supports, while integrating the multiple resource objectives into the forest management plans.

However, the Association has serious concerns about a Congressional mandate to apply specific silvicultural and management techniques as a mandate for management of Federal forest lands. In our opinion, Congress should not be dictating specific management techniques such as the prohibition against even-aged logging as outlined in H.R. 1164. Rather, Congress should establish and promote policy and general guidelines and frameworks within which professional managers employ their expertise and a consideration of the local conditions to carry out specific management for forest ecosystems. We are concerned with what appears to be increasing interest by Congress in preempting, through legislative fiat, the application of scientific management by resource professionals. Natural resource professionals in forestry, fisheries and wildlife, and other related fields of conservation biology, have extensive academic and field training which enables them to make the many detailed land management decisions including reconciling a number of different resource conservation and production objectives. Congress should not, in our opinion, seek to micro-manage our public lands.

Without belaboring the point, the Association also respectfully suggests that "one size fits all" policy solutions are generally both inappropriate and unsuccessful at resolving an issue. The great abundance and benefit of the natural resources of the United States derive, in part, from the diversity represented in the many ecosystems of this country. It is simplistic to suggest that a prohibition on even-aged forest management would universally benefit the many habitats and ecosystems represented in the U.S. The Association again strongly urges that the application

of the appropriate silvicultural techniques for the conservation of the different forest ecosystems remain at the direction of the professionally trained natural resource managers. It would not be prudent, in our opinion, to remove even-aged management as a tool from these professionals.

As you are aware, even-aged management (including clearcutting) is a necessary and appropriate technique in some forest ecosystems to promote the health, vitality and regeneration of those habitats, and the fish and wildlife that are supported by those habitats. Early successional habitat, such as that created by even-aged management, occurred historically through fire, disease and other natural events, creating a diverse landscape of vegetative types. Today, we attempt to control these natural events as much as possible, to minimize their harmful effects. In the absence of these natural factors, properly planned even-aged management through clearcutting can be an important and financially efficient management tool to achieve the structural and biological diversity on the forest once created by natural events. Where appropriate, and as applied by professionally trained resource managers, this practice can create and maintain a mosaic of vegetative species and age classes on Federal forest land for wildlife species requiring these types of habitat for all or part of their life needs.

Forest openings created by even-aged management are necessary habitat components for several species. For example, wild turkey utilize these as feeding areas for sources of required insect protein for young birds. The fruits and berries produced by these habitats are beneficial to black bears, white tailed deer and many songbirds. Small raptors, such as the kestrel, and the Eastern bluebird require cavities found in snag trees left in clearcuts for nesting. Ruffed grouse find food and cover in the habitat created by clearcuts, and even-aged management is necessary to ensure the regeneration of the appropriate stand composition and age and size class for this species. Without even-aged management on southwestern forests, objectives for grazing habitat for deer, antelope and other large ungulates may not be met. Many raptors which nest in forest ecosystems need open areas in which to hunt and secure prey. These few examples illustrate the need to maintain even-aged management, as applied by professionally trained resource managers, as a technique for wildlife management.

In summary, the Association must oppose the specific Congressional mandate against even-aged forest management on Federal public lands, which would be imposed by H.R. 1164. Even-aged harvest as a silvicultural tool is beneficial, under the appropriate circumstances in certain habitat, for maintaining the habitat required by various wildlife species. The use of this tool should remain in the hands of the professionally trained natural resource manager, and applied using their best judgment based on the principles of sound resource management science.

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Statement of
Stewart M. Brandborg
before the
House Subcommittee on National Parks and Public Lands

In support of H.R. 1164
May 6, 1994

I am Stewart M. Brandborg, a resident of the Bitterroot Valley, Montana, living near Darby, Montana.

It is a special privilege for me to present testimony to this Committee on H.R. 1164, legislation that will provide new direction for the U.S. Forest Service in its management and protection of the National Forests. This is sorely needed in the absence of discernable improvements in forest management practices within the expectations that many of us have had for the new Forest Service leadership. These changes for management reform have been repeatedly sought in the requests and demands of citizen conservationists over the nation.

For over 50 years I have been professionally involved in forest, wildlife and public land management. In my early career I worked for the Forest Service as a lookout-fireman and in range and timber survey work. After graduating from the University of Montana I went on to receive my Master of Science Degree in Forestry at the University of Idaho. In the period 1947 through 1953 I conducted various wildlife and range studies in National Forests of the Northern Rockies and Oregon: the Lolo, Lewis and Clark, Gallatin and Bitterroot in Montana; the Salmon, Nez Perce, Clearwater, St. Joe, Coeur D Alene and Kaniksu in Idaho; and the Umatilla in Oregon. I have revisited all of these - except for the Umatilla - since my return to Montana eight years ago.

Public land, wildlife and wilderness preservation concerns dominated my professional life over a 32 year period in Washington D.C. where I served for some 20 years with The Wilderness Society, twelve years as Executive Director, four years as Assistant Conservation Director of the National Wildlife Federation, and four years as a Special Assistant to the Directorate of the National Park Service and the Assistant Secretary of Interior for Fish, Wildlife and Parks.

The shocking impacts of clearcut logging, excessive roading with their resulting destruction of wildlife, fisheries, recreational and scenic resources of these National Forests, make, in my perspective, a first priority the passage of H.R. 1164 and implementation of major reforms in Forest Service forest management policies. The tragic consequences of over cutting with the application of grossly inflated National Forest Plan allowable sale quantities are in evidence everywhere throughout the Northwest. In my lifetime I have witnessed the transformation from expansive old growth forests to vast areas of denuded mountains riddled with roads and logging gullies.

The losses are many: Communities and local people who have had their livelihood sacrificed by the "cut-out and get out" practices of largely out-of-state owned multi-national logging corporations. The loss of water quality and quantity for farms and ranch lands as watersheds were clearcut, exacerbating spring runoffs and critical dry months of July, August and September when stream flows were reduced by as much as 40 percent. Sacrifice and disruption of incomparably rich wildlife and fish habitats have seriously reduced critically important ranges of endangered species - the grizzly bear, wolf, bull trout, native cut throat and Columbia River salmon and steelhead trout. Perhaps the greatest losses are measured in mountain streams where siltation from logging has destroyed the spawning beds and biota of the streams so essential to the survival of our fisheries. Many in the Northern Rockies would point to the severe losses inflicted upon natural habitats of huntable wildlife populations: elk, mule deer and black bear populations as well as smaller mammals - martin, wolverine, bobcat, lynx, etc.. All suffer impacts of clear-cutting and roading. Grouse and bird populations have suffered direct losses from destruction of the forests on which they depend.

It is apparent, in my personal perspective, that we have lost nearly all of our lower elevation old growth forests in the 1960-1994 period of excessive cutting. Few are managed with the pre-clearcut era selective cutting practices that proved themselves so successful and so important in supporting our local economies with sustained yields of timber while protecting scenic, recreational, fish, wildlife and watershed values. H.R. 1164 provides the mandate for major change, change that will not come about through internal reform measures that many had hoped for with the new leadership of the Forest Service. There are many Forest Service employees - both in management and research areas - who will welcome the legal mandates of H.R. 1164. These will strengthen them in their desire to manage the National Forests within the dictates of careful eco-system protection.

Their hands will be reinforced in overcoming the pressures and demands of the multi-national corporations and those in agency leadership positions who, over the past thirty years, have inflicted such devastation upon our publicly owned forests.

Specifically, this bill assures protection against even-age management and its destructive impacts on natural and plant communities. Its specificity in delineating bio-diversity requirements gives statutory support to those within our public land agencies who wish to adhere to the principle of careful eco-system protection. It also greatly strengthens those citizen organizations and individuals who have fought, at great expense through appeals and in the courts, for the protection and more intensive management of federally administered forests. The bill's establishment of a committee to provide guidance and direction for sensitive ecological management is also an important step in strengthening scientific management and the restoration of native bio-diversity.

Prescriptions in the bill for selective harvest are essential in gaining new direction for the protection of our forests. Selective cutting in forests of the Northwest, including higher elevation lodgepole pine stands, must be written into law if compliance of the agencies is to be achieved.

Vitally important are H.R. 1164's provisions that strengthen legal procedures and citizen recourse in gaining enforcement of this legislation and other laws pertaining to management of federal forest lands. Also of priority importance is the prohibition in the bill of new road entry into remaining roadless lands in our National Forests. Language of H.R. 1164 should be broadened to explicitly protect all remaining roadless lands, some of which were not inventoried in the Roadless Area Review and Evaluation or which are not defined in current forest management plans.

It is with deep appreciation of the work of this bill's sponsors that I offer my strong support and endorsement of H.R. 1164. I have been witness to the mis-management of these publicly owned lands, mis-management that has inflicted terrible losses upon our forest heritage. We must gain enactment of this legislation if we are to stop these abuses and begin the slow process of restoring millions of acres to their highest levels of productivity and enjoyment for the American people.

I very much appreciate the opportunity to present this testimony.

Supplement to the Statement of
Stewart M. Brandborg
before the
House Subcommittee on National Parks and Public Lands

In support of H.R. 1164
May 6, 1994

Questions have arisen concerning the applicability of selection management to certain types of ecosystems.

I have personally observed the employment of selection management in Douglas fir and lodgepole pine stands. This practice is being used more widely in recent years and with success.

We find that careful control of cutting leaves needed cover for wildlife as well as protection of soil and watershed values.

Matthew Miller, Ph.D.
P.O. Box 8121
St. Paul, MN 55108

May 4, 1994

Honorable John Bryant
Canon House Office Building
United States Congress
Washington D.C.

Dear Mr. Bryant,

I am writing to you because I am very concerned about the health of our National Forests. In Minnesota, most of the logging is done by even-aged, clearcutting methods. Clearcutting has significant negative consequences on the soils, biodiversity, and subsequent regrowth of the forest.

While researching forest soils in northern Minnesota, I became aware of the damage to the soil and the long-term forest productivity by clearcutting of aspen. Unfortunately, machines used for harvesting are able to work even when the soil conditions are too wet and therefore not able to support the machinery. The resultant rutting and compaction of the soil promotes anaerobic conditions in the root zone on soils lower in the landscape, leading to poorer regeneration, and lower productivity.

Because aspen suckers after cutting it is looked upon as a favorable tree species since less effort is necessary to revegetate an area. Continually harvesting aspen over large areas by clearcutting, creates a monoculture. This sets back the natural succession that would occur if the forest were not harvested. Our national experience with monocutural production techniques in agriculture has shown us that simplistic plant communities are more susceptible to disease and insect organisms.

The best example of sustainable forestry practices in the Midwest is on the lands of the Menominee Indian Reservation in Wisconsin. Most of their forest is harvested by selective cutting, only when soil conditions are optimal, and the result has been a sustained yield of timber for the last 135 years! Unlike the surrounding forests that were liquidated and high-graded at the beginning of this century up to the present day, the Menominee have removed only the oldest and diseased trees. Their forest is healthier today than in the past and it contains more merchantable timber than when the Menominee Reservation was established. Selective cutting of an all-aged managed forest ensures a forest that is more mature and diverse, yielding higher-quality and higher-value forest products.

Most striking is the realization that if sustainable methods of forest management had been used, there would not be the numerous scars upon the landscape, nor the current forest ecological and economic crises that confront us today.

I strongly urge all members of Congress to endorse H.R. 1164. Implementation of H.R. 1164 would improve the profitability of our National Forests and set a positive example of stewardship for state and county forest management agencies.

Sincerely, Matthew Miller, Ph.D.

Matthew Miller, Ph.D., Soil Science

SIERRA CLUB
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TESTIMONY OF BILL THOMAS, CHAIR
FOREST REFORM WORKING GROUP
SIERRA CLUB

May 19, 1994

Before the House Natural Resources Committee,
Subcommittee on National Parks, Forests and Public Lands,
on H.R. 1164, the Forest Biodiversity and Clearcutting
Prohibition Act of 1993

Please include the following testimony in the record of the May 5, 1994, hearing on H.R. 1164 before this subcommittee.

On behalf of our more than half a million members nation-wide, I would like to express the Sierra Club's strong support for this bill which addresses two of the most serious and urgent problems on our national forests and other public lands where logging is allowed--widespread alteration of the native biodiversity of our forests and the use of logging methods which are the most damaging to the forest ecosystem. Such activities are not appropriate on our public lands--lands where managers should give priority to forest ecosystem sustainability and benefits not supplied on private land. This bill will help wean public land managers away from managing the public's forest lands as timber crops first and forests second.

Monoculture tree farming has left our public lands a patch-work of areas where native forests have become simplified timber crops. What were once richly diverse communities of many interdependent plant and animal species have often been transformed into mostly single-species crops of commercially preferable trees. Logged-over areas are often replanted with so-called "genetically improved pine seedlings" (GIPS) intended to grow fast and out-compete other species. Strangely enough, the "genetically improved" trees need the assistance of massive amounts of "management" annually costing tens of millions of dollars to out-compete the native vegetation. Non-favored hardwood and other species which compete with the GIPS or other favored species are suppressed by various methods including burning, herbiciding, girdling and other manipulation techniques.

Such tree farming increases our forests' susceptibility to insects and disease. It robs citizens of their natural heritage and associated recreation opportunities. In parts of the South, for example, forests containing commercially-favored pine trees also contain a majority of or significant percentages of hardwoods--the glorious oaks, beeches, hickory, redbuds, service berry, maples, basswood, wild plum, magnolia and dogwoods that ARE the southern woodlands. Passage of this bill will help to ensure that what is left of the rich living communities of America's native ecosystems will remain intact for future generations.

It is urgent that Congress pass the biodiversity protections in this bill. Already, in many forests, because of "modern" monoculture tree farming by even-age logging and associated widespread burning, herbiciding, site preparation, etc., we estimate that federal land managers have drastically altered our native woods on a majority of lands (in many cases no accurate records were kept of where burning and herbiciding was used). In the next decade, in many forests, if current management plans are followed, the burning, herbiciding, and even-age logging could complete the drastic alteration of native ecosystems on virtually all of the forests except those areas that are designated wilderness or otherwise not attractive enough from a timber standpoint to warrant alteration. Our natural heritage on millions of acres of public lands will have been relegated mostly to high elevation ridge tops, stream bottoms and (often nutrient-poor) wilderness areas.

A second serious and urgent problem that this bill addresses is the public land managers' choice of logging method. Public values such as recreation, wildlife, biological diversity and watershed protection suffer under the timber-dominated attitude and the even-age logging methods chosen. Even-age management is a prescription for disaster that erodes topsoil, wastes soil nutrients, silts streams, hurts fish and wildlife habitat, and diminishes recreation and tourism opportunities. It is also a great detriment to private inholders within and adjacent to public forests whose property values, water quality and other amenities suffer from the government's choice of logging method.

In most public forests in the country, even-age logging is the rule rather than the exception. The less environmentally damaging alternative of selection management that is allowed under this bill better holds the soil, maintains more ground cover, a more continuous forest canopy, and better preserves the native ecosystem. It is practiced on more than two million acres of private timberlands in the South alone.

Selection management uses our tax dollars more wisely than even-age management. Per dollar of cost, it brings us both more wood and more dollars of return because of its freedom from plantation setup costs and its greater sawtimber production.

Another important provision of this bill would prevent road construction or reconstruction in any inventoried roadless areas. Timber sales in these areas habitually cost the U.S. Treasury money because of their high road construction costs due to rugged terrain and their low timber values. This provision is one of the quickest and surest ways to prevent money-losing timber sales while fulfilling other multiple-use objectives of federal lands--recreation, watershed protection, biological diversity and wildlife. However, there are many roadless areas that exist that were not documented in inventories and we feel that they should also be included in this bill. We would recommend that the bill be amended to prohibit new road construction and reconstruction in any roadless area regardless of whether they were included in inventories or defined in management plans.

In sum, the two major reforms found in this bill--requiring management for the native ecosystem and prohibiting even-age logging--are two of the most important and urgent reforms needed in public land management. We would like to mention, however, that this bill is not a cure for all our

public forest ills, and we would encourage this committee to keep in mind other badly needed reforms. These reforms include drastically reducing the demand for wood and fiber by eliminating wasteful uses, increasing recycling of wood and paper products, developing alternative materials, halting the construction of new and reconstructed roads, permanently preserving ancient forest areas based on solid science, permanently protecting from logging other ecologically important and large roadless areas, setting the annual allowable timber sale quantity on public lands at environmentally responsible levels, halting money-losing timber sales, protecting trails and streams, and monitoring and maintaining permanent records of the actual effects of logging and other activities on forest ecosystems.

Two particular existing laws need to be addressed:

•The 1930 Knutsen-Vandenburg Act, a well-intentioned attempt by Congress to encourage reforestation (but which now encourages clearcutting and other forms of even-age management, as well as massive burning and cutting of hardwoods), should be repealed and authorization and appropriation powers for these funds should be returned to Congress. Under this Act, unappropriated federal money becomes available for the large amount of site preparation, planting and/or thinning that clearcutting and other forms of even-age management requires.

•Payments to Counties-in-Lieu-of-Taxes and Turnback Funds, an attempt to compensate local counties for federal land ownership, but which perversely promotes logging (including money-losing logging) rather than longer-range forest health and biodiversity. The formula needs to be changed to guarantee local counties and schools a reasonable and reliable base rate regardless of timber or other commodities sold from federal lands. This will allow the schools and counties to do some long term budgeting, which they now find almost impossible to do, and will free them from the financial boom and bust cycles of the timber markets.

H.R. 1164 obviously will not accomplish these reforms, but it does address two very important and urgent problems. We offer the attached suggested language changes, with brief explanation as follows (all suggestions should be applied to all pertinent sections of the bill):

LANGUAGE CHANGES PROPOSED FOR H.R. 1164

1. p. 2, line 7. Delete "in all timberland owned or operated by the United States where logging is permitted," and substitute "on all federal public lands," [to clarify that biodiversity requirements in the bill apply to lands where no logging is permitted as well as those where logging is permitted.]

2. p. 2, lines 20-21. Delete "reduction" and substitute "alterations." [to guard against repeat of current ecologically-detrimental interpretation of existing law in which the Forest Service perceives a permission or mandate to "increase" the kinds of plants or trees or the number of age classes of trees that currently occupy an ecosystem.]

3. p. 4, lines 20-24. Delete subsection (9) in its entirety and renumber subsequent sections accordingly. [Although the subsection accurately describes oneof the negative effects of even-age logging, this effect can also be the result of selection logging. In many areas of the forest, the

most ecologically sound approach to best avoid the harmful effects mentioned is to avoid all logging. Deletion of the discussion makes clearer to the pertinent agency that the bill's biodiversity requirements must be met independently of choice of logging method and that choosing selection logging in no way legitimizes logging if sound biological science indicates that logging prohibition is the appropriate course.]

4. p. 5, lines 1-2. Delete "diversity," substitute "values,". [The substitution removes possible agency confusion of the biological definition of "diversity" in the bill with diversity of recreational experiences mentioned in the findings.]

5. p. 5, line 14. Delete "Reduction in" and substitute "Alteration of". [same reason as #2.]

6. p. 5, line 18. Delete "Reduction" and substitute "Alteration". [same reason as #2.]

7. p. 6, lines 4-5. Add a comma after "selection management" and delete "and native biodiversity protection,". Lines 8-10, delete "or eliminate", the comma after "environment", and "would maintain vital native ecosystems in Federal forests,". Add a separate subsection numbered accordingly: "By protecting native biodiversity, as prescribed in this Act, federal agencies would maintain vital native ecosystems and would improve the quality of life of the American people." Renumber subsequent subsections accordingly. [to make clear that any logging poses potential devastation to the environment, and to clarify (by separating completely) that the two reforms in this bill are two distinct requirements, i.e. that practicing selection logging in no way presumes that the bill's diversity requirements have been met.]

8. p. 7, lines 8-9. Delete "that is managed or operated for timber purposes". Also delete identical phrases in pertinent sections of the bill directing agencies other than the Forest Service. Clarify in lines 13-18 of p. 8 (and other pertinent sections of the bill repeating this provision for other agencies) that the requirements of Sec. 3(a) of this Act override any permissive language in this section, i.e. that use of selection logging per se does not comply with the diversity requirements in this Act. [Since the bill substitutes diversity requirements in existing law that apply to both logging and non-logging areas of the forest, this language must apply to both, lest the agency feel free to alter native ecosystems on "non-logging" parts of the forest (there are many examples where this has been done).]

9. p. 8, line 25. Delete the line and substitute a Section entitled "Definitions". Follow suit on comparable subsequent sections referring to agencies other than Forest Service. (Renumber subsequent sections accordingly.) [to clarify that these definitions apply to terms used throughout this Act as it amends existing law, not just to terms used in new subsection (n).]

10. p. 10, line 19. Delete "forest", substitute "biological". Follow suit on pertinent definitions in other sections. [clarification.]

11. p. 9, line 15. Add "and passive" between "active" and "measures". Follow suit on pertinent definitions in other sections. [clarification that

"passive"measures may also be used to maintain native biological diversity.]

12. p. 10, line 18. Add at the end "The foregoing limitation shall not be deemed to establish a 100-year projected felling age as the standard at which individual trees in a stand are to be cut, nor shall "native biodiversity" be limited to that which occurs within the context of a 100-year projected felling age. [another clarification that native biodiversity requirements in the bill must be met and that no logging per se, or particular kind of logging, is considered to automatically meet the diversity requirements.]

We appreciate this subcommittee's attention to public forest management issues and urge speedy passage of H.R.1164.

Sincerely,

Bill Thomas

Bill Thomas
Chair
Forest Reform Working Group
Sierra Club

(Bill Thomas
P.O. Box 272
Cedar Mountain, NC 28718)

NWCSF Northwoods Citizens for a Sustainable Forest

8333 Bemidji Rd Bemidji, MN 56601

May 9, 1994

U.S. House of Representatives
Washington D.C.

Dear Representative Vento:

Thank you for scheduling the recent hearing of ***H.R. 1164 Forest Biodiversity and Clearcutting Prohibition Act*** before the subcommittee on National Parks, Forests and Public Lands. I understand it now has 94 co-sponsors but sadly, not one from Minnesota. Why?? ***Are not our two national forests (Chippewa and Superior) worthy of protection?***

I'd also like to thank you for attending the recent town meeting held in St. Paul on re-inventing the U.S. Forest Service with Chief Jack Ward Thomas. No other U.S. House Representative from Minnesota was in attendance. What does that imply? I have spent two years of my life and $10,000 to date on the forest issue in an effort to make a difference. ***So far, it seems I have not been able to make a difference with my political representatives.*** I am forwarding the comments from the citizen participants (150) of the St. Paul Town Meeting and it is quite clear ***I am not alone in my sentiments.***

Lastly, I lament an era my Finnish Grandfather knew of North Central Minnesota (Chippewa National Forest) ***Once covered with pine.*** My father, a sawmill owner from 1922-1962 knew the area less of what was ***Once covered with pine*** and today, I risk passing to my children and grandchildren a heritage of what was ***Once covered with pine*** only a memory. So, at this late date, a 100 years later, ***I ask your help in seeking a moratorium on the cutting of all red and white pine in both the Chippewa and Superior National Forests that are 100 years of age and older.*** The two forests contain only a small percentage (Chippewa less than 1%) of the original white and red pine. These relic stands are all we have left of our virgin forests. Surely, their historic and ecological values out-weigh value to the saw-log timber industry. I have also solicited support from Chief Jack Ward Thomas.

In closing, I'd like to quote Winston Churchill ***"You can always rely on America to do the right thing–after they have exhausted all the possibilities!" It is with recognition that our National Forests have been exhausted and it is now time to do the right thing. It must be realized that decisions made today will impact future generations who have the most to gain or lose. Minnesota forests have only recently began to make a healthy recovery after the deforestation (White Pine Era) of the turn of the century.*** It would be a tragedy to have not learned from our own history.

Thank you.

Respectfully,

Judy Johnson

CC: Representative James Oberstar
Representative Collin Peterson
Representative David Minge
Representative Martin Sabo
Representative Tim Penny

Small is the number of them that see with their own eyes and feel with their own hearts. All of us who are concerned for peace, triumph of reason and justice must be keenly aware how small an influence reason and honest good will exert upon events in the political world - Albert Einstein.

At some point we must draw a line across the ground of our home and our being, drive a spear into the land, and say to the bulldozers, government and corporations, ***"thus far and no farther."*** If we do not, we shall later feel, instead of pride, the regret of Thoreau, that good but overly bookish man, who wrote, near the end of this life, ***"If I repent of anything it is likely to be my good behavior"*** - Edward Abbey.

Declaration of Robert F. Mueller, Ph.D., October 20, 1993

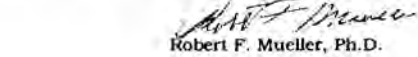
I, Robert F. Mueller, Ph.D., of Route 1, Box 250, Staunton Virginia 24401-9617, do declare as follows under penalty of perjury:

For more than a decade I have observed and closely monitored Central Appalachian ecosystems and actions by the U.S. Forest Service therein. Monitoring has included not only the period before and immediately after timber cutting but also the type and quality of regeneration in older cuts. Virtually without exception I have found that even age timbering — clearcut, shelterwood, seedtree etc. — in these forests has been highly destructive of ecosystems in terms of the forest floor, loss of topsoil, soil compaction, siltation of streams, and most serious of all, the failure to regenerate not only the desired timber species but also the host of herbaceous understory species that count for most of the vegetative diversity. This is in close agreement with recent studies of Duffy and Meier (1992) (attachment #1). I have also seen signs of detrimental effects on amphibians as documented by Raymond and Hardy (1991) and Petranka *et al* (1993) (attachment #1). Frequently, also, I have found that regenerated tree species are not those desired and predicted by the Forest Service, namely chiefly oaks, but undesirable species such as Red and Striped Maples, Gum, etc. (Mueller, 1992a) (attachment #2). In some cases the Forest Service has gone to pains to conceal this result and has issued falsified reports (Mueller, 1992b) (attachment #3). Many of the negative aspects of even age timber management have been summarized by Robinson (1988) (Attachment #1).

Contrasting with the generally destructive character of even age management selective cutting —single tree, group selection— has far less impact, especially with respect to the soil and forest floor plant communities. A stipulation here, however, is that selective cutting must not be unduly dependent on new road construction and must be confined to timber stands mature enough to yield a profit. The so-called group selection — really patch clearcutting — and management in general by the U.S. Forest Service has resulted in excessive roading and cutting much immature timber which has been sold at a loss for pulpwood. The result has been degradation of ecosystems and losses to the U.S. Treasury. I believe that with stipulations against excessive roading, with preservation of existing roadless areas, and avoidance of frequent entries to retain solitude and achieve tree maturity, H. R. 1164 could provide a far greater degree of protection to Central Appalachian forests than exists at present.

Recently the U.S. Forest Service has attempted to answer critics of their even age management and other abuses. One tack they have employed is a continuing change in rhetoric. New names for even-age cutting methods have multiplied. In the Monongahela National Forest for example "Two age" cuts have recently been introduced. Recently also "ecosystem management" has become a buzzword but little more. In the analysis of the High Knob Opportunity Area of the Jefferson's Clinch River District the now "old hat" "New Perspectives" is said to be "in transition to Ecosystem Management." On May 7, 1992, Supervisors of the George Washington and Jefferson National Forests invited forest activists "to become involved with our scientists in the development...of specific old growth forest descriptions." However when a splendid stand of old growth was called to their attention in the proposed Stillhouse Timber Sale they rejected all appeals and decided to cut this stand anyway. So much for "Ecosystem Management."

signed,



Robert F. Mueller, Ph.D.

Vitæ of R. F. Mueller, Ph.D.

Route 1, Box 250, Staunton, Virginia 24401-9617

Ph.D. geology, University of Chicago, 1959; Research associate and adjunct professor, University of California, San Diego, 1960—1962; Assistant Prof., University of Chicago, 1962—1967; Senior Scientist, Goddard Space Flight Center, National Aeronautics and Space Administration, 1967—1976; While at NASA did planetary (chiefly Venus) and environmental research. Authored numerous publications in geology, planetology and environmental science. Since retirement in 1976 has been a student of Central Appalachian ecosystems and has monitored them and the activities of the U.S. Forest Service.

Attachment #1
Declaration of Robert F. Mueller, Ph.D.

Literature References

1. Duffy, David Cameron and Albert J. Meier (1992). "Do Appalachian Herbaceous Understories Ever Recover from Clearcutting?" *Conservation Biology* 6, (2), pages 196-201.

2. Raymond, Larry R. and Laurence M. Hardy (1991). "Effects of a Clearcut on a Population of the Mole Salamander, *Ambystoma talpoideum*, in an Adjacent Unaltered Forest." *Journal of Herpetology* 25, (4) pages 509-512.

3. Petranka, James W., Matthew E. Eldridge and Katherine E. Haley (1993). "Effects of Timber Harvesting on Southern Appalachian Salamanders." *Conservation Biology* 7 (2) pages 363-370.

4. Robinson, Gordon (1988). *The Forest And The Trees*, Island Press, Washington, DC, 257 pages

A Handout #2

Appalachian Clearcutters Flunk Silviculture

by R.F. Mueller

To hear the U.S. Forest Service tell it, our primitive Appalachian forests in all their virgin splendor, were really impossibly decadent, scarcely alive. And to hear these bureaucrats, the ancient trees lacked only one ingredient to cure their ills: clearcutting. A simple remedy!

To get this message across to an initially gullible but increasingly skeptical public, these industrial foresters use a well-honed rhetoric and lexicon of terms ranging from euphemistic to scary. Thus the present forest, with trees far younger than those of the primary forest, dating mostly to the turn of the century or later when it arose from the holocaust of logging and fires, is said to be "aging." This characterization is almost invariably used for 80-90 year old trees in environmental assessments of timber sales despite the Forest Service's own literature (Agricultural Handbook No. 271, USDA Forest Service, 1965) which shows that some major tree species add their greatest yearly growth increment at 100 years of age and that some species live 500 years or more. Stands of trees 80 years of age are sometimes said to be "falling apart," and one ranger admonished citizens at a public hearing that "it's a dying forest out there." Obviously there is no appreciation here for the dead trees and downwood characteristic of old growth, traits essential for the health of the forest. Such a forest doesn't "age" but exhibits dynamic equilibrium between all ages of trees including the dead and dying.

We frequently hear or read that clearcutting is required to revitalize "stagnant stands of timber" which then "regenerate" as "vigorous" and "thrifty" sprouts. The forest is said to be in need of "opening up" or "daylighting," implying that shade intolerant but commercially desirable species such as oaks and tuliptree could not grow but for the aid of chainsaws and bulldozers. To discredit gentler methods of logging involving selection of trees or small groups of trees, they raise the spectre that the forest in the dry oak-rich George Washington and Jefferson National Forests might be overrun by shade tolerant and commercially inferior species such as Beech, Red Maple and Black Gum. This argument has also been made in the Monongahela National Forest where shade tolerant species such as Sugar Maple and Beech are common and where oaks are not as common because of moist conditions. How puzzling then that both shade tolerant and intolerant species were abundant in the original virgin mixed mesophyte forests of the moist Cumberland and Allegheny Mountains, while intolerant oaks thrived without management in the dryer forests elsewhere (Lucy Braun, Deciduous Forests of Eastern North America, Macmillan, 1950)! As pointed out by the prominent ecologist forester Dr. Leon Minckler in numerous publications (e.g. *Journal of Forestry* vol. 72, 1974), the large openings of clearcuts are not required to generate intolerant species. In the old-growth primary forest this was simply accomplished by tree fall gaps and other disturbances that generally left openings far smaller than clearcuts, or by fire, whose role in most Appalachian forest types is still not well understood.

When we carefully examine clearcut areas, the picture that emerges is quite at variance with Forest Service propaganda. Since most clearcuts done under Forest Service management date back no further than the 1960s, its silviculturists haven't seen their handiwork mature. However, some private lands have older cuts of a similar nature and some of these are informative. Even for the Forest Service the trends are disquieting, as reflected in their reports. Valuable species such as Northern Red Oak, White Oak and Black Oak are frequently replaced by less valuable Scarlet Oak, Black Gum or a plague of Red and Striped Maples. A striking example is revealed in a 12 April 1990 scoping notice on Timber Stand Improvement in compartments 1 and 6 of the Lee Ranger District of the George Washington National Forest. Original stands consisting of 45% Northern Red and Black Oaks of "good quality" were replaced (in descending order of abundance) by Red Maple, White Pine (planted), Scarlet Oak, White Oak, Virginia Pine, and a mixture of seven other hardwoods and Virginia Juniper. A similar example may be observed in a 10 year old clearcut near the popular North River Campground of the Dry River R.D. in the GWNF. Here the uncut forest surrounding the clearcut consists dominantly of upland oaks with little Red Maple. However, Red Maple has practically taken over the clearcut.

Also, in many areas in which the Forest Service has tried to use clearcutting to convert hardwoods on poor sites to pine, this fight against nature has proved expensive and frustrating for the industrial mindset. Thus in a 16 May 1990 letter from the James River Ranger District of the GWNF relative to a "White Pine Release" E.A. we read: "From experience we can say that the majority of stems which are overtopping the pines are Red Maple, Scarlet Oak and several types of brushy species." In these cases the FS uses herbicides, adding to the general degradation of the watershed. In a Virginians for Wilderness examination of many clearcuts, these appear to be common trends. Certainly this challenges the Forest Service axiom that Red Maple and other relatively shade tolerant species pose a threat only in small selection cuts and clearings.

We are told that one advantage of clearcuts is that they provide numerous sprouts which, since they utilize the root systems of the large trees they replace, grow faster than seedlings, at least initially. However this proliferation of sprouts also has disadvantages. The sprouts are usually crowded on and around the stumps. The straightest of these sprouts are at the center of the clump and usually originate on the stump, sometimes high up. However, this exposes them to basal rot as the stump underneath rots away. Sprouts that originate on the roots around the stump are sounder but tend to be bowed outward and so may yield crooked timber. Although vigorous, clearcut sprouts may not be thrifty. Of course, clearcuts result in numerous sprouts only if the trees cut are hardwoods and sufficiently small, since large hardwoods seldom sprout much, and conifers almost never do so. Most of the existing clearcuts in the Central Appalachians were done in very immature stands less than 50 years in age, hence the sprouting success. However, the trees clearcut were by and large derived from seedlings that resulted from

cutting the original primary forest of large trees. In view of the characteristics of sprouts as previously discussed, trees being clearcut are probably straighter and sounder than those now developing from these sprouts in clearcuts.

The many small trees cut in clearcuts have resulted in other disadvantages. Because most of the nutrients in the tree, exclusive of those in leaves, limbs and roots, reside in the inner bark or cambium, and since small trees contain a larger proportion of cambium than do large ones, their removal depletes the soil disproportionately when compared with the removal of large trees. It is likely that this effect contributes to the disproportionate growth in clearcuts of Red Maple and Scarlet Oak, species adapted to poor soil. Also an analogous process affects the economics of clearcutting. This point is discussed in Gordon Robinson's book *The Forest and the Trees* (Island Press, 1988), with tables showing that small trees cost considerably more to cut, limb, buck, skid, load and transport than do large trees. This helps explain the below-cost timber sales associated with clearcutting.

Proponents of clearcutting usually say that opponents object to the method because its results are unsightly and then patronizingly assure them that nature will soon heal the scars. Yet no informed critics of clearcutting base their criticism on mere appearances. To many people, fire scars and blowdowns would seem as unsightly as clearcuts. However, natural disturbances have few if any of the negatives of timber extraction. Nutrients are not hauled away with wood products. Compaction of soils and destruction of the forest floor do not occur unless the fire burns very hot—usually as a result of human-induced fuel loads. Most important, unless human intervention via fire suppression and salvage logging occur, naturally disturbed areas have little contact with the outside human-modified world. Consequently there are fewer avenues of entry (i.e., roads) for alien species —including humans. Still, appearances do count for something, and the ugliness of clearcuts also indicates their destructiveness. Striking examples showing gross erosion scars, acres of barren ground, and poor regeneration are found in the ecologically distinctive Hidden Valley Special Management Area in the Warm Springs Ranger District of the GWNF. Here, on dry low site index land west of the Jackson River, a forest of largely Scarlet, White and Chestnut Oak trees less than 10 inches in diameter was clearcut with disastrous results. Bare sandy eroding soil is exposed over wide areas, while regeneration is confined to widely spaced clumps of crowded and inferior sprouts. These clearcuts are in gross violation of the forest plan and were done despite citizen objections. Policies of rape and run clearcutting continue on all Appalachian National Forests.

Here we have confined our discussion largely to silvicultural effects of clearcutting on National Forests. The same arguments apply to State and private lands except that in the case of private lands government subsidies are lacking or smaller. Unfortunately, clearcutting on State lands, where it is justified as wildlife habitat improvement (as it is on National Forests), is as yet little challenged. We have barely touched upon the many negative ecological effects of clearcutting. Many of these have been documented in our widely distributed flier "Clearcuts: Why They're the Worst."

This paper is a contribution of Virginians for Wilderness to Alternative Forest Plans for the George Washington, Jefferson, and Monongahela National Forests. The enthusiastic assistance of Mike Jones, Steve Krichbaum and Gus Mueller is appreciated. Virginians for Wilderness can be reached at

...idise — but in the ny become human

...its taking away the pleasure of enjoying our hometown!"

Other detractors from that pleasure, I might add, are those

World War II. It was a major blow to the Allies because the island controlled an important sea route.

Editor

Attachment #3
News Virginian 5-8-92

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Mrs. Linda Smith,
532 Cambridge Dr.,
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Forest Service an 'Outlaw Agency'

The U.S. Forest Service is an outlaw agency that continuously uses duplicity to accomplish its ends, to perpetuate its bureaucracy. In doing so it loses millions of taxpayer dollars on timber sales and for needless and destructive projects that jeopardize ecosystems.

One recent example is the illegal clearcutting of ecologically important dwarf forest habitat of the rare Cow Knob Salamander so that a few yuppy hang-glider enthusiasts might benefit.

This instance, on Reddish Knob of the George Washington National Forest, was perpetrated without authorization and review in a scoping notice and environmental assessment as required by regulation.

Of more widespread occurrence are Forest Service cover-ups of their silvicultural failures. In a recent discovery by Virginians for Wilderness they were caught falsifying reports on regeneration in the Deerfield District of the GWNF.

According to the FS, major species growing in a 10-year-old clearcut and a shelterwood cut on Signal Corps Knob are Black Locusts and Oaks.

However, in extensive surveys, Virginians for Wilderness determined that red and striped maples are dominant species in these cuts and form up to 60 percent of the clearcut. Yet their records obtained through the Freedom of Information Act don't mention the word "maple."

Indeed, maples, pariah species in their view, are common unwelcome guests in many of their clearcuts, a circumstance that runs contrary to their silvicultural theories and wishful thinking.

Apparently the results were so negative on Signal Corps Knob that they decided to hide them. However, Virginians for Wilderness stands ready to support these assertions with documents (signed by the forest supervisor) and in the field.

The U.S. Forest Service and the GWNF in particular need reform, especially with the revision of the Forest Plan now under way.

They must be forced to practice ecologically based management and fundamental honesty.

Robert F. Mueller,
Virginians for Wilderness,
Route 1, Box 250,
Staunton.

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