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Director, U.S. Fish and Wildlife Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 000202022-0022-01; I.D. 012100F]

RIN 0648-AN58

Endangered and Threatened Species: Threatened Status for One Evolutionarily Significant Unit of Steelhead in California

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: Based on a comprehensive status review of west coast steelhead (*Oncorhynchus mykiss*, or *O. mykiss*) populations throughout Washington, Oregon, Idaho, and California, NMFS proposed to list 10 Evolutionarily Significant Units (ESUs) as threatened or endangered under the Endangered Species Act (ESA) in 1996. One of these steelhead ESUs, the Northern California ESU, was proposed for listing as a threatened species. Because of scientific disagreements, NMFS deferred its final listing determination for five of these steelhead ESUs, including the Northern California ESU, in August 1997. After soliciting and reviewing additional information to resolve these disagreements, NMFS issued a final determination in March 1998 that the Northern California ESU did not warrant listing under the ESA because available scientific information and conservation measures indicated the ESU was at a lower risk of extinction than at the time of the proposed rule. Because the State of California has failed to implement conservation measures that NMFS considered critically important in its decision not to list the Northern California steelhead ESU, NMFS completed an updated status review and has reconsidered the status of this ESU under the ESA.

Based on this review, NMFS has determined that the Northern California steelhead ESU warrants listing as a threatened species at this time. Accordingly, NMFS is now issuing a

proposed rule to list this ESU as threatened under the ESA.

DATES: A public hearing on this proposal will be held on March 15, 2000, from 6:30 p.m.–9:00 p.m. Requests for additional public hearings must be received by March 27, 2000. Comments on this proposal must be received at the appropriate address or fax number (See **ADDRESSES**), no later than 5 p.m. pacific standard time, on April 11, 2000. Comments will not be accepted if submitted via e-mail or Internet.

ADDRESSES: The public hearing will be held at the Eureka Inn, 518 Seventh St., Eureka, California. Comments on this proposed rule and requests for additional public hearings or reference materials should be sent to the Chief, Protected Resources Division, NMFS, Southwest Region, 401 West Ocean Blvd., Suite 4200, Long Beach, CA 90802-4213. Comments may also be sent via facsimile (fax) to 562-980-4027.

FOR FURTHER INFORMATION CONTACT: Craig Wingert, 562-980-4021, or Chris Mobley, 301-713-1401.

SUPPLEMENTARY INFORMATION:

Previous Federal ESA Actions Related to West Coast Steelhead

The history of petitions NMFS has received regarding west coast steelhead is summarized in a final rule and notice of determination for five steelhead ESUs (Lower Columbia River; Central Valley, California; Oregon Coast; Klamath Mountains Province; and Northern California ESUs) that was published on March 19, 1998 (63 FR 13347). The most comprehensive petition was submitted by Oregon Natural Resources Council and 15 co-petitioners on February 16, 1994. In response to this petition, NMFS assessed the best available scientific and commercial data, including technical information from Pacific Salmon Biological Technical Committees (PSBTCs) and interested parties in Washington, Oregon, Idaho, and California, and convened a Biological Review Team (BRT), composed of staff from NMFS' Northwest and Southwest Fisheries Science Centers and Southwest Regional Office, as well as a representative of the U.S. Geological Survey Biological Resources Division (formerly the National Biological Service) to conduct a coast-wide status review for west coast steelhead (Busby *et al.*, 1996).

Based on the results of the BRT's status review, an analysis of Federal, state, and local conservation measures, and other information which NMFS determined constituted the best scientific and commercial data

available, NMFS published a proposed listing determination (61 FR 41541, August 9, 1996) that identified 15 ESUs of steelhead in the states of Washington, Oregon, Idaho, and California. Ten of these ESUs, including the Northern California ESU, were proposed for listing as threatened or endangered species, four were found not warranted for listing, and one was identified as a candidate for listing.

On August 18, 1997, NMFS published a final rule listing five ESUs as threatened and endangered under the ESA (62 FR 43937, August 18, 1997). In a separate document published on the same day, NMFS determined substantial scientific disagreement remained for five proposed ESUs, including the Northern California steelhead ESU (62 FR 43974, August 18, 1997). In accordance with section 4(b)(6)(B)(i) of the ESA, NMFS deferred its decision on these five steelhead ESUs for 6 months for the purpose of soliciting additional data. During this 6-month period of deferral, NMFS received new scientific information regarding the status of these proposed steelhead ESUs. This new information was evaluated by NMFS' BRT which prepared both an updated status review for these five ESUs [Memorandum to William Stelle and William Hogarth from M. Schiewe, December 18, 1997, Status of Deferred and Candidate ESUs of West Coast Steelhead (NMFS, 1997a), and a review of the associated hatchery populations [Memorandum to William Stelle and William Hogarth from Michael Schiewe, January 13, 1998, Status Review Update for Deferred ESUs of West Coast Steelhead: Hatchery Populations (NMFS, 1998a)].

Based on a review of the updated scientific information for these ESUs, as well as a review and evaluation of Federal, State, and local conservation measures reducing the threats to these ESUs, NMFS issued a final rule (63 FR 13347, March 19, 1998) listing two ESUs as threatened (Lower Columbia River and Central Valley California), and a notice of determination that three ESUs (Oregon Coast, Klamath Mountains Province, and Northern California) did not warrant listing. NMFS' determination that these three ESUs did not warrant listing was based on the best available scientific and commercial data, which indicated these ESUs were at a lower risk of extinction than at the time of the proposed listing determination. Even though the risks confronting these ESUs had been reduced to a point at which listing was not warranted, NMFS still expressed concerns about the status of these three ESUs in the notice of determination,

and therefore, identified them as candidate species which the agency would continue to monitor.

Rationale for Reconsideration of Northern California ESU

NMFS's March 19, 1998 (63 FR 13347), decision not to list the Northern California steelhead ESU was based largely on a determination that sufficient Federal and state conservation measures were in place to reduce threats to the ESU such that the proposed threatened listing was unnecessary. The Federal and state conservation measures upon which NMFS based this determination included: (1) implementation of a March 11, 1998, Memorandum of Agreement (MOA) between NMFS and the State of California (NMFS/California MOA, 1998), with particular importance given to implementation of those provisions in the MOA which were intended to improve non-Federal forest land protections in the ESU (81 percent of land ownership is non-Federal land); (2) implementation of more restrictive in-river harvest regulations by California which were intended to reduce mortality and increase the viability of naturally reproducing steelhead populations; and (3) improved protections to habitat and naturally reproducing steelhead from expanded habitat protection and restoration efforts, improvements in the management of hatchery steelhead stocks, and expanded population monitoring.

At the time of its decision not to list the Northern California ESU, NMFS considered the protection and restoration of freshwater spawning, rearing, and migratory habitat on non-Federal lands to be essential for the long-term survival and recovery of this ESU because non-Federal lands represented such a large portion of the available habitat (81 percent) (63 FR 13347, March 19, 1998). Because of NMFS' concerns regarding the preponderance of private timber lands and timber harvest in the Northern California ESU, the NMFS/California MOA contained several provisions calling for the review and revision of California's forest practice rules (FPRs), and a review of their implementation and enforcement by January 1, 2000. NMFS considered full implementation of these critical provisions within the specified time frame to be essential for achieving properly functioning habitat conditions for steelhead in this ESU.

In accordance with the NMFS/California MOA, a scientific review panel was established by the state to review the California FPRs, including

their implementation and enforcement. The scientific review panel completed its review and provided the State's Board of Forestry with its findings and recommendations in June 1999. In its findings, the review panel concluded that California's FPRs, including their implementation through the existing timber harvest plan process, do not ensure protection of anadromous salmonid habitat and populations. To address these shortcomings, and as specified in the NMFS/California MOA, the California Resources Agency and CalEPA jointly presented the Board of Forestry with a proposed rule change package in July 1999. Following several months of public review, the Board of Forestry took no action on the package in October 1999, thereby precluding any possibility of implementing improvements in California's FPRs by January 1, 2000, as the State committed to do in the NMFS/California MOA.

Although NMFS' March 19, 1998, decision not to list the Northern California ESU concluded that improvements in steelhead harvest and hatchery management would provide immediate conservation benefits to this ESU, an essential component of the decision was based on NMFS' expectation that changes in the State's FPRs would be implemented by January 1, 2000. Because these critical conservation measures are not being implemented by the State of California and, therefore, are not reducing threats to this ESU that were anticipated at the time of its March 19, 1998, decision not to list the ESU, NMFS determined that a formal reconsideration of the status of this ESU was warranted (December 3, 1999, Memorandum from Rodney R. McInnis and William Stelle, Jr. to Penelope D. Dalton (NMFS, 1999).

Steelhead Life History and Background

Biological information for west coast steelhead (*Oncorhynchus mykiss*) and the Northern California ESU in particular, can be found in steelhead status assessments conducted by NMFS (Busby *et al.*, 1996; NMFS, 1997a; NMFS, 2000) and in previous **Federal Register** documents (61 FR 41541, August 9, 1996; 63 FR 13347, March 19, 1998). A summary of steelhead life history follows.

O. mykiss exhibits one of the most complex suites of life history traits of any salmonid species. Individuals may exhibit anadromy (meaning they migrate as juveniles from fresh water to the ocean, and then return to spawn in fresh water) or freshwater residency (meaning they reside their entire life in fresh water). Resident forms are usually referred to as "rainbow" or "redband"

trout, while anadromous life forms are termed "steelhead." Few detailed studies have been conducted regarding the relationship between resident and anadromous *O. mykiss*, and as a result, the relationship between these two life forms is poorly understood. The scientific name for the biological species that includes both steelhead and rainbow trout has been changed from *Salmo gairdneri* to *O. mykiss*. This change reflects the premise that all trouts from western North America share a common lineage with Pacific salmon.

Steelhead typically migrate to marine waters after spending 2 years in fresh water. They then reside in marine waters for typically 2 or 3 years prior to returning to their natal stream to spawn as 4- or 5-year-olds. Unlike other Pacific salmon, steelhead are iteroparous, meaning they are capable of spawning more than once before they die. However, it is rare for steelhead to spawn more than twice before dying; most that do so are females. Steelhead adults typically spawn between December and June (Bell, 1990; Busby *et al.*, 1996). Depending on water temperature, steelhead eggs may incubate in "redds" (nesting gravels) for 1.5 to 4 months before hatching as "alevins" (a larval life stage dependent on food stored in a yolk sac). Following yolk sac absorption, young juveniles or "fry" emerge from the gravel and begin actively feeding. Juveniles rear in fresh water from 1 to 4 years, then migrate to the ocean as "smolts."

Biologically, steelhead can be divided into two reproductive ecotypes, based on their state of sexual maturity at the time of river entry and the duration of their spawning migration. These two ecotypes are termed "stream maturing" and "ocean maturing." Stream maturing steelhead enter fresh water in a sexually immature condition and require several months to mature and spawn. Ocean maturing steelhead enter fresh water with well developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer (stream maturing) and winter steelhead (ocean maturing)). The Northern California ESU contains populations of both winter and summer steelhead.

Two major genetic groups or "subspecies" of steelhead occur on the west coast of the United States: a coastal group and an inland group, separated in the Fraser and Columbia River Basins approximately by the Cascade crest (Huzyk & Tsuyuki, 1974; Allendorf, 1975; Utter & Allendorf, 1977; Okazaki, 1984; Parkinson, 1984; Schreck *et al.*,

1986; Reisenbichler *et al.*, 1992). Behnke (1992) proposed classifying the coastal subspecies as *O. m. irideus* and the inland subspecies as *O. m. gairdneri*. These genetic groupings apply to both anadromous and nonanadromous forms of *O. mykiss*. Both coastal and inland steelhead occur in Washington and Oregon. California is thought to have only coastal steelhead while Idaho has only inland steelhead. The Northern California steelhead ESU is part of the coastal grouping.

Historically, steelhead were distributed throughout the North Pacific Ocean from the Kamchatka Peninsula in Asia to the northern Baja Peninsula. Presently, the species distribution extends from the Kamchatka Peninsula, east and south along the Pacific coast of North America, to at least Malibu Creek in southern California. There are infrequent anecdotal reports of steelhead occurring as far south as the Santa Margarita River in San Diego County (McEwan & Jackson, 1996). In 1999, juvenile *O. mykiss* suspected of being the progeny of steelhead were reported from San Mateo Creek which is in northernmost San Diego County, just north of the Santa Margarita River. Historically, steelhead likely inhabited most coastal streams in Washington, Oregon, and California as well as many inland streams in these states and Idaho. However, during this century, over 23 indigenous, naturally reproducing stocks of steelhead are believed to have been extirpated, and many more are thought to be in decline in numerous coastal and inland streams in Washington, Oregon, Idaho, and California. Forty-three stocks have been identified by Nehlsen *et al.* (1991) as being at moderate or high risk of extinction.

Consideration as a "Species" Under the ESA

To qualify for listing as a threatened or endangered species, the identified populations of steelhead must be considered "species" under the ESA. The ESA defines "species" to include "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." NMFS published a policy (56 FR 58612, November 20, 1991) describing how the agency will apply the ESA definition of "species" to anadromous salmonid species. This policy provides that a salmonid population will be considered distinct, and hence a species, under the ESA, if it represents an ESU of the biological species. A population must satisfy two criteria to be considered an ESU: (1) It

must be reproductively isolated from other conspecific population units; and (2) it must represent an important component in the evolutionary legacy of the biological species. The first criterion, reproductive isolation, need not be absolute, but must be strong enough to permit evolutionarily important differences to accrue in different population units. The second criterion is met if the population contributes substantially to the ecological/genetic diversity of the species as a whole. Guidance on the application of this policy is contained in Waples (1991), a NOAA Technical Memorandum entitled "Definition of 'Species' Under the Endangered Species Act: Application to Pacific Salmon," which are available upon request (see ADDRESSES). The genetic, ecological, and life history characteristics, as well as human-induced genetic changes that NMFS assessed to identify the number and geographic extent of steelhead ESUs on the west coast, including the Northern California steelhead ESU, are discussed in detail in Busby *et al.* (1996) and in the August 9, 1996, proposed listing determination for west coast steelhead (61 FR 41541).

Northern California Steelhead ESU Determination

The Northern California steelhead ESU has been described in previous Federal Register documents (61 FR 41541, 62 FR 43937 and 63 FR 13347) based on analyses conducted by NMFS and summarized in the following documents: "Status Review for West Coast Steelhead from Washington, Idaho, Oregon, and California" (Busby *et al.*, 1996) and "Status Review Update for West Coast Steelhead from Washington, Idaho, Oregon, and California" (NMFS, 1997). The relationship between hatchery steelhead populations and naturally spawned steelhead within this ESU was also assessed in: "Status Review Update Deferred ESUs of West Coast Steelhead: Hatchery Populations" (NMFS, 1998a). Copies of these NMFS documents are available upon request (see ADDRESSES). NMFS has received no new scientific information indicating that a change in the Northern California ESU definition is warranted.

This Northern California coastal steelhead ESU occupies river basins from Redwood Creek in Humboldt County, CA to the Gualala River, inclusive, in Mendocino County, CA. Dominant vegetation along the coast is redwood forest, while some interior basins are much drier than surrounding areas and are characterized by many endemic species. This area includes the

extreme southern end of the contiguous portion of the Coast Range Ecoregion (Omernick, 1987). Elevated stream temperatures (greater than 20° C) are a factor in some of the larger river basins, but not to the extent that they are in river basins farther south. Precipitation is generally higher in this geographic area than in regions to the south, averaging 100–200 cm of rainfall annually (Donley *et al.*, 1979). With the exception of major river basins such as the Eel, most rivers in this region have peak flows of short duration. Strong and consistent coastal upwelling begins at about Cape Blanco and continues south into central California, resulting in a relatively productive nearshore marine environment.

The Northern California ESU includes both winter and summer steelhead, including what is presently considered to be the southernmost population of summer steelhead, in the Middle Fork Eel River. Half-pounder juveniles also occur in this geographic area, specifically in the Mad and Eel Rivers. Snyder (1925) first described the half-pounder from the Eel River; however, Cramer *et al.* (1995) suggested that adults with the half-pounder juvenile life history may not spawn south of the Klamath River Basin. As with the Rogue and Klamath Rivers which are located in the Klamath Mountains Province ESU, some of the larger rivers in this ESU have migrating steelhead year-round, and seasonal runs have been named. River entry ranges from August through June and spawning from December through April, with peak spawning in January in the larger basins and in late February and March in the smaller coastal basins.

Based on the review of steelhead hatchery programs in this ESU (NMFS, 1998a), NMFS' steelhead BRT concluded that the following steelhead hatchery stocks are part of this ESU because they were established from indigenous natural populations and there is limited impact from the inclusion of out-of-basin fish in the broodstock: Van Arsdale Fisheries Station stock (Eel River), the Yager Creek stock (Eel River tributary), Ten Mile River stock, and North Fork Gualala River stock. The BRT concluded that the Mad River hatchery summer steelhead stock is not part of the ESU based on its origin from out-of-basin steelhead populations combined with the mixing of Eel River summer steelhead in the broodstock. Rearing of this stock was terminated at the Mad River hatchery in 1996. The majority of the BRT concluded that the Mad River hatchery winter steelhead stock is not part of this ESU although a minority of

the BRT was uncertain regarding its relationship to the naturally spawning population. This stock was founded from South Fork Eel River steelhead (within the ESU, but out of the Mad River basin) and some local Mad River steelhead.

Status of Northern California Steelhead ESU

Section 3 of the ESA defines the term "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." The term "threatened species" is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. In its previous status reviews for west coast salmon and steelhead, NMFS has identified a number of factors that should be considered in evaluating the level of risk faced by an ESU, including: (1) absolute numbers of fish and their spatial and temporal distribution; (2) current abundance in relation to historical abundance and current carrying capacity of the habitat; (3) trends in abundance; (4) natural and human-influenced factors that cause variability in survival and abundance; (5) possible threats to genetic integrity (e.g., from strays or outplants from hatchery programs); and (6) recent events (e.g., a drought or changes in harvest management) that have predictable short-term consequences for abundance of the ESU.

Based on these factors and the best available scientific information, NMFS' BRT first reviewed the status of the Northern California ESU in its original coast-wide status review for steelhead (Busby *et al.*, 1996). The BRT concluded that the Northern California steelhead ESU was likely to become endangered in the foreseeable future. Population abundance was determined to be very low relative to historical estimates (1930's dam counts), and recent trends were downward in stocks for which data were available with the exception of two summer steelhead stocks. Summer steelhead abundance in particular was very low in this ESU. The BRT expressed particular concern regarding sedimentation resulting in part from poor land management practices and channel restructuring due to floods. The abundance of the pikeminnow as a predator in the Eel River was also identified as a significant concern. For the Mad River, in particular, the BRT was concerned about the influence of hatchery stocks both in terms of genetic introgression and the potential for ecological

interactions between introduced stocks and native stocks.

The status of the Northern California ESU was reassessed by NMFS' BRT in an updated status review following the 6-month period of deferral because of scientific disagreements (NMFS, 1997a). Based on this updated status review, NMFS' BRT once again concluded that Northern California steelhead ESU was likely to become endangered in the foreseeable future. The BRT reported that there was very limited abundance data available for this ESU, particularly for winter-run steelhead. The most complete data set available in this ESU is a time series of winter steelhead dam counts on the Eel River at Cape Horn Dam. The updated abundance data (through 1997) showed moderately declining long-term and short-term trends in abundance, and the vast majority of these fish were believed to be of hatchery origin. These data show a strong decline in abundance prior to 1970, but no significant trend thereafter. Additional winter steelhead data are available for Sweasy Dam on the Mad River which show a significant decline, but that data set ends in 1963. For the seven populations where recent trend data were available, the only runs showing recent increases in abundance in the ESU were the relatively small populations of summer steelhead in the Mad River which has had high hatchery production, and winter steelhead in Prairie Creek where the increase may be due to increased monitoring or mitigation efforts.

As in its original assessment, the BRT continued to be concerned about the risks associated with interactions between naturally spawning populations and hatchery steelhead in this ESU. Of particular concern to the BRT was the potentially deleterious impact to wild steelhead from past hatchery practices at the Mad River hatchery, primarily from transfers of non-indigenous Mad River hatchery fish to other streams in the ESU and the production of non-indigenous summer steelhead. These potentially deleterious hatchery practices for summer steelhead ended in 1996.

Habitat degradation and other factors were also of concern to the BRT in its reassessment of the long-term risks to this ESU. Specific factors which the BRT identified included dams on the upper Eel and Mad Rivers, the likely existence of minor blockages throughout the ESU, continuing impacts of catastrophic flooding on the 1960s, and reductions in riparian and instream habitat and increased sedimentation from timber harvest activities. The BRT also cited poaching of summer steelhead

and predation from pikeminnow in the Eel River as factors for concern. NMFS' supplemental review of factors affecting west coast steelhead also identified water diversion and extraction, agriculture, and mining as factors affecting habitat conditions for steelhead in this ESU (NMFS, 1996).

In conjunction with this reconsideration of the Northern California steelhead ESU, NMFS' Southwest Fisheries Science Center (SWFSC) recently completed another updated status review for this ESU (January 2000 Memorandum from Pete Adams, Southwest Fisheries Science Center (SWFSC) to Rodney R. McInnis, Regional Administrator, Southwest Region (NMFS, 2000)). Based on a review of updated abundance and trend information that was available for this ESU, the SWFSC concluded that the current status of the ESU has not changed significantly since it was last evaluated by NMFS' BRT in December 1997 (NMFS, 1997a). Updated abundance and trend data show small increases for winter and summer steelhead in the Eel River, but current abundance is well below estimates in the 1980s and even further reduced from levels in the 1960s. Redwood Creek summer steelhead abundance remains very low. There are no new data suggesting substantial increases or decreases in populations since the last updated status review was completed. The Eel River winter and summer steelhead populations, which represent the best available data set for this ESU, are still severely reduced from pre-1960's levels.

Summary of Factors Affecting the Species

Section 4(a)(1) of the ESA and NMFS' implementing regulations (50 CFR part 424) set forth procedures for listing species. The Secretary of Commerce (Secretary) must determine, through the regulatory process, if a species is endangered or threatened based upon any one or a combination of the following factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or education purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors affecting its continued existence.

NMFS has prepared a report that summarizes the factors leading to the decline of steelhead on the west coast entitled: "Factors for Decline: A supplement to the notice of determination for west coast steelhead"

(NMFS 1996). This report, available upon request (see **ADDRESSES** section), concludes that all of the factors identified in section 4(a)(1) of the ESA have played a role in the decline of the species. The report identifies destruction and modification of habitat, overutilization for recreational purposes, and natural and human-made factors as being the primary causes for the decline of steelhead on the west coast. NMFS (1996) identified several factors that were considered to have contributed to its decline of the Northern California steelhead ESU including: impacts from historic flooding (principally in 1964), predation, water diversions and extraction, minor habitat blockages, poaching, timber harvest, agriculture, and mining. NMFS's steelhead BRT also identified the potentially adverse impacts of the release of non-indigenous hatchery-produced steelhead in this ESU as an important factor, and expressed concerns regarding the lack of reliable abundance and trend data for assessing the status of steelhead in this ESU (NMFS, 1997a). Finally, NMFS was also concerned about the impacts of recreational angling because of the depressed status of steelhead populations and the uncertainty regarding the status of this ESU (March 11, 1998, Memorandum from William Hogarth to Rolland Schmitt (NMFS, 1998e)). The following discussion briefly summarizes findings regarding factors for decline across the range of west coast steelhead, including the Northern California ESU.

The Present or Threatened Destruction, Modification, or Curtailment of Steelhead Habitat or Range

Steelhead on the West Coast of the United States have experienced declines in abundance in the past several decades as a result of natural and human factors. Forestry, agriculture, mining, and urbanization have degraded, simplified, and fragmented habitat. Water diversions for agriculture, flood control, domestic, and hydropower purposes have greatly reduced or eliminated historically accessible habitat. Among other factors, NMFS (1996) specifically identified timber harvest, agriculture, mining, habitat blockages, and water diversions as important factors for the decline of steelhead in the Northern California ESU. NMFS (1998a) discussed these factors in more detail. Studies estimate that during the last 200 years, the lower 48 states have lost approximately 53 percent of all wetlands and the majority of the rest are severely degraded (Dahl 1990; Tiner 1991). Washington and

Oregon's wetlands are estimated to have diminished by one-third, while California has experienced a 91-percent loss of its wetland habitat (Dahl, 1990; Jensen *et al.*, 1990; Barbour *et al.*, 1991; Reynolds *et al.*, 1993). Loss of habitat complexity has also contributed to the decline of steelhead. For example, in national forests in Washington, there has been a 58-percent reduction in large, deep pools due to sedimentation and loss of pool-forming structures such as boulders and large wood (FEMAT, 1993). Similarly, in Oregon, the abundance of large, deep pools on private coastal lands has decreased by as much as 80 percent (FEMAT, 1993). Sedimentation from land use activities is recognized as a primary cause of habitat degradation in the range of west coast steelhead, including the northern California steelhead ESU.

Overutilization for Commercial, Recreational, Scientific, or Education Purposes

Steelhead are not generally targeted in commercial fisheries. High seas driftnet fisheries in the past may have contributed slightly to a decline of this species in local areas, but could not be solely responsible for the large declines in abundance observed along most of the Pacific coast over the past several decades.

Steelhead support an important recreational fishery throughout most of their range. During periods of decreased habitat availability (e.g., drought conditions or summer low flows when fish are concentrated), the impacts of recreational fishing on native anadromous stocks may be heightened.

Although harvest of steelhead in the Northern California ESU was not originally identified as a major factor for decline (NMFS 1996), NMFS is concerned about the impacts of recreational angling because of depressed steelhead population levels and the lack of reliable abundance and trend data for accurately assessing the status of individual populations and the ESU as a whole. Because of NMFS' concerns about recreational angling impacts to naturally reproduced steelhead populations in coastal watersheds in California north of the Russian River, the California Department of Fish and Game (DFG) proposed and the California Fish and Game Commission adopted new steelhead angling regulations in 1998 for all watersheds in the Northern California ESU. These new regulations prohibited retention of naturally spawned adult steelhead; eliminated fishing for juvenile steelhead in tributary streams; minimized impacts on

juvenile steelhead in mainstem rearing and migratory areas through a combination of gear restrictions and delayed seasonal openings; prohibited retention of summer steelhead during their upstream migration and prohibited fishing in their summer holding areas; and provided for directed harvest and retention of hatchery-produced steelhead which are fully marked statewide. NMFS (1998b,c,d) analyzed these new regulations and concluded that they would substantially reduce fishing effort and reduce mortality to that associated with catch-and-release of naturally produced steelhead in the Northern California ESU. These regulations remain in effect and are enforced by DFG.

Disease or Predation

Infectious disease is one of many factors that can influence adult and juvenile steelhead survival. Steelhead are exposed to numerous bacterial, protozoan, viral, and parasitic organisms in spawning and rearing areas, hatcheries, migratory routes, and the marine environments. Specific diseases such as bacterial kidney disease, ceratomyxosis, columnaris, furunculosis, infectious hematopoietic necrosis virus, redmouth and black spot disease, erythrocytic inclusion body syndrome, and whirling disease, among others, are present and are known to affect steelhead and salmon (Rucker *et al.*, 1953; Wood, 1979; Leek, 1987; Foott *et al.*, 1994; Gould and Wedemeyer, undated). Very little current or historical information exists to quantify changes in infection levels and mortality rates attributable to these diseases for steelhead. However, studies have shown that naturally spawned fish tend to be less susceptible to pathogens than hatchery-reared fish (Buchanon *et al.*, 1983; Sanders *et al.*, 1992).

Introductions of non-native species and habitat modifications have resulted in increased predator populations in numerous river systems, thereby increasing the level of predation experienced by salmonids. In the Northern California steelhead ESU, predation from Sacramento pikeminnow that were released into the Eel River is a major problem. Predation from pikeminnow is discussed in more detail in NMFS (1996). DFG is engaged in an aggressive campaign to control pikeminnow predation in the Eel River. Ongoing efforts to implement improved downstream flow releases from the Potter Valley hydroelectric project in the upper Eel River may assist the State in its efforts to control pikeminnow predation.

Predation by marine mammals is also of concern in some areas experiencing dwindling steelhead run sizes. NMFS (1997b) reviewed the available literature concerning the impacts of California sea lion and Pacific harbor seal predation on west coast anadromous salmonids, and concluded that there was insufficient data in all but one instance (i.e., Ballard Locks in Puget Sound) to conclude that pinnipeds were having a significant impact on wild salmon or steelhead populations. For this reason, and because of the high likelihood that impacts might be occurring, the study concluded that substantial additional research was needed to address this issue further. Based on this research recommendation, NMFS has initiated several field studies in coastal watersheds on the west coast designed to assess the magnitude of pinniped predation on individual salmon or steelhead populations. In California, these studies are being conducted in the lower Klamath River, Scott Creek, and the San Lorenzo River.

Inadequacy of Existing Regulatory Mechanisms

1. Federal Land and Water Management

The Northwest Forest Plan (NFP) is a Federal land management policy with important benefits for west coast steelhead. While the NFP covers a very large area, the overall effectiveness of the NFP in conserving steelhead is limited by the extent of Federal lands and the fact that Federal land ownership is not uniformly distributed in watersheds that comprise individual ESUs. The extent and distribution of Federal lands limits the ability of the NFP to achieve its aquatic habitat restoration objectives at watershed and river basin scales, and highlights the importance of complementary salmon habitat conservation measures on non-Federal lands within the subject ESUs.

Federal land ownership and management in the Northern California steelhead ESU is very limited; representing only 19 percent of the total land area. Federal lands (i.e., Redwood National Park, portions of Mendocino National Forest, and the Kings Range National Conservation Area) that do occur in this ESU are also highly fragmented, unlike some other steelhead ESUs (e.g., Klamath Mountains Province and Snake River Basin). Although Federal lands are limited in extent and fragmented in this ESU, NMFS believes that implementation of the NWFP on Mendocino National Forest lands (upper reaches of Eel and Mad Rivers) and implementation of other habitat protections in Redwood National Park

(lower reach of Redwood Creek) will provide some limited benefits to steelhead. Nevertheless, long-term habitat protection and the key to achieving properly functioning habitat conditions in this ESU continues to be improvement in non-Federal land management, particularly those lands used for timber harvest.

Because listed coho salmon occur on Federal lands in the Northern California steelhead ESU, NMFS routinely engages the U.S. Forest Service, Bureau of Land Management, and Redwood Creek National Park in ESA section 7 consultations to ensure that ongoing or proposed activities do not jeopardize coho salmon or adversely modify its critical habitat. Through this section 7 consultation process, NMFS ensures that the NFP and other protective measures are fully implemented on Federal lands that occur in this ESU. These measures are also expected to benefit steelhead.

The Pacific Gas and Electric Company's (PG&E) Potter Valley hydroelectric project is a major diverter of water from the mainstem Eel River, which is located in the Northern California ESU. This water is diverted into the Russian River basin to generate hydroelectric power and provide water for agriculture and urban uses. Pursuant to a Federal Energy Regulatory Commission (FERC) licensing requirement, PG&E implemented a 10-year monitoring program in the Eel River for the purpose of developing recommendations for modifying the flow release schedule and other project facilities and/or operations necessary to protect and maintain fishery resources, including steelhead. This study was completed in 1996, as was construction of a \$14 million dollar fish screen facility at the Van Arsdale Dam diversion on the Eel River. Based on the results of the monitoring study, PG&E has developed a proposal for project operations that, along with several others, are the subject of National Environmental Policy Act review for ongoing FERC license amendment proceedings. FERC is currently conducting environmental review of this proposal with input from NMFS, DFG and the U.S. Fish & Wildlife Service (USFWS). Implementation of an alternative that provides additional instream flows in the Eel River, and provides for Sacramento pikeminnow control, in conjunction with the new fish screening facility, would be expected to improve habitat quality and benefit steelhead in this ESU by increasing survival.

On March 1, 1999, the Pacific Lumber Company, the State of California, the

Department of the Interior, and the Department of Commerce entered into a complex land purchase, land exchange and Habitat Conservation Plan (PALCO HCP) transaction covering the Headwaters Forest, Elk Head Springs Forest and the remainder of Pacific Lumber Company's land holdings in Humboldt County California. The Federal and state governments acquired approximately 10,000 acres of conifer and hardwood forest, over 3,000 acres of which is ancient redwoods, some of which are over 1,000 years old. This land is now subject to Federal and state control under conservation easements.

The PALCO HCP, which has a 50-year term, covers 211,000 acres of non-Federal land timber lands in several drainages that occur in the northern portion of Northern California steelhead ESU. These include portions of several tributaries to Humboldt Bay (Elk River, Jacoby Creek, Freshwater Creek, and Salmon Creek), and portions of the Van Duzen River (including Yager Creek), Eel River, Bear River, Salt River, and Mattole River watersheds. The PALCO HCP affects the following federally listed and candidate anadromous salmonid ESUs: (1) Southern Oregon/Northern California coho salmon (threatened), (2) Northern California steelhead (candidate), and (3) California Coastal Chinook salmon (threatened). The HCP also covers numerous terrestrial species listed under the ESA and California Endangered Species Act.

The PALCO HCP's Operating Conservation Program (Program) contains the conservation and management measures and prescriptions necessary to minimize, mitigate, and monitor the impacts of take of the covered species resulting from timber operations. The Program incorporates specific conservation plans for all terrestrial and aquatic species covered under the HCP, along with measures to conserve habitat diversity and structural components.

An Aquatics Conservation Plan (ACP) is an integral part of the overall Program. The goal of the ACP is to maintain or achieve over time properly functioning aquatic habitat conditions, which are essential to the long-term survival of salmonids. The reduction in land management impacts and habitat improvement that will be realized through implementation of the ACP will also benefit other species.

Monitoring for implementation, effectiveness, and trends is a critical component of the Program. The monitoring component includes an independent third-party monitor to determine if the provisions of the aquatics plan are effective and whether

the aquatic habitat is responding as expected. There is also a provision for adaptive management if the results are not as predicted.

NMFS believes that the conservation measures contained in the HCP will protect and provide for long-term conservation of steelhead populations occurring on PALCO lands in the Northern California ESU.

2. Land Management

The California Department of Forestry and Fire Protection (CDF) enforces California's forest practice rules (FPRs) on non-Federal (private and State managed forests) lands. These rules are promulgated through the State Board of Forestry (BOF). Timber harvest activities have been documented to result in adverse effects on streams and stream side zones including the loss of large woody debris, increased sedimentation, loss of riparian vegetation, and the loss of habitat complexity and connectivity (NMFS 1996).

The vast majority of freshwater habitat in the Northern California steelhead ESU (approximately 81 percent of total land) is on non-Federal lands, with the majority being privately owned. For the major river basins in this ESU (i.e. Redwood Creek, Mad River, Eel River, Mattole River, Ten Mile River, Noyo River, Big River, Albion River, Navarro River, Garcia River, and Gualala River), private forest lands average about 75 percent of the total acreage, with a range of 42 percent (Eel River) to 94 percent (Gualala River).

NMFS reviewed the California FPRs as part of its listing determination for the Northern California steelhead ESU (53 FR 13347; March 19, 1998). That review concluded that although the FPRs mandate protection of sensitive resources such as anadromous salmonids, the FPRs and their implementation and enforcement do not accomplish this objective. Specific problems with the FPRs include: (1) protective provisions that are not supported by scientific literature; (2) provisions that are scientifically inadequate to protect salmonids including steelhead; (3) inadequate and ineffective cumulative effects analyses; (4) dependence upon registered professional foresters that may not possess the necessary level of multi-disciplinary technical expertise to develop timber harvest plans (THPs) protective of salmonids; (5) dependence by CDF on other State agencies to review and comment on THPs; (6) failure of CDF to incorporate recommendations from other agencies; and (7) inadequate enforcement due to

staffing limitations. NMFS further concluded that until a comprehensive scientific peer review process was implemented and appropriate changes to the FPRs and the THP approval process were made, properly functioning habitat conditions would not be ensured on non-Federal lands in the Northern California steelhead ESU.

The NMFS/California MOA which was entered into in March 1998 to ensure the conservation of north coast steelhead in California contained specific provisions to address NMFS' concerns over the California FPRs. In the NMFS/California MOA, the State committed to: (1) conduct a scientific review of the State's FPRs, including their implementation and enforcement; (2) make appropriate changes in implementation and enforcement of the FPRs based on this review; and (3) make recommendations to the BOF for changes in the FPRs if they were found to be necessary for the conservation of Northern California coastal anadromous salmonids. Full implementation of these provisions in the NMFS/California MOA, including implementation of changes in the FPRs by January 1, 2000, was a critical factor in NMFS's decision to not list this ESU.

In accordance with these provisions, a subcommittee of the state's scientific review panel for its Watershed Protection Program was appointed to undertake an independent review of the FPRs. The subcommittee's review and recommendations were completed and presented to the BOF in June 1999. The scientific review panel concluded that California's FPRs, including their implementation through the timber harvest plan process, do not ensure protection of anadromous salmonid populations. Based in part on the scientific review panel report and findings in July 1999, the California Resources Agency and CalEPA jointly presented the BOF with a proposed rule change package designed to address shortcomings in the state's existing FPRs. The BOF circulated the proposed rule package for public review, held several meetings and two public hearings on the proposals from July until October 1999, but failed to take action to adopt any of the proposed FPR changes.

As a result of the listing of coho salmon in coastal watersheds in northern California, the counties of Del Norte, Siskiyou, Trinity, Humboldt, and Mendocino developed and have implemented a multi-county, regional approach to assessing and improving county-controlled activities in order to enhance the quality and increase the quantity of salmonid habitat that is

potentially affected by those county activities. NMFS and the State of California have contributed funding to this multi-county planning effort.

This county-level conservation planning approach involves a thorough review of general plans, ordinances, procedures, practices, and policies developed and implemented at the county level. Through the assessment and evaluation of these county-controlled mechanisms, a process is being developed that will enable the counties to exert control at the local level over human activities that can adversely affect anadromous salmonid populations and habitat. This multi-county planning effort culminated in a Memorandum of Agreement (Multi-County MOA) which was signed by all five counties in late 1997. Under the terms of the Multi-County MOA, the counties agreed to embark on a cooperative planning and restoration effort; assess the adequacy of existing general plans, county policies and practices, zoning and other land use ordinances; review county management procedures that affect anadromous salmonid habitat in each county; recommend changes to specific county ordinances and/or practices as necessary; develop a watershed-based education and technical assistance/training program for local agencies and decision-makers that will foster better understanding of the linkages between land use and county maintenance practices and salmonid habitat; and seek to establish some form of regulatory recognition at the state and/or Federal level.

This multi-county assessment is being used to document the effectiveness of existing regulations. Where the assessment identifies areas for improvement, the planning effort will develop alternative policies, ordinances and practices that are suitable for maintaining or enhancing anadromous salmonid habitat. The assessment will address the need to focus public works projects on sites that improve fisheries habitat. A watershed-based approach will be used, even where watersheds cross county boundaries, to ensure that enhancement efforts are complementary to natural ecosystem processes.

The outcome of this county-level effort is expected to be a comprehensive and coordinated analysis of local land use regulations. Where it is found that development standards such as subdivision restrictions, zoning, and capital improvement programs may not adequately maintain or restore salmonid habitat, model ordinances will be developed for consideration by each of the participating counties. Conversely,

innovative approaches for land use (such as density modifications and standards that preserve habitat functions) developed by some counties will be presented as options for the other counties. This collaborative, regionally based planning effort is designed to be complementary with state and national salmonid recovery efforts. The planning process encourages public participation through direct contact with interested public agencies, landowners, community organizations, environmental groups, industry representatives, and others. The public process is being implemented through public hearings, meetings, scoping sessions, forums and other avenues.

Agricultural activity has had multiple and often severe impacts on salmonid habitat. These include depletion of needed flows due to irrigation withdrawals; blocking of fish passage by diversion or other structures; destruction of riparian vegetation and bank stability by grazing or cultivation practices; and channelization resulting in loss of side-channel and wetland-related habitat (NMFS, 1996).

Impacts from agricultural and grazing practices have not historically been closely regulated in California. This is an important concern to NMFS because a significant portion of the acreage in the Northern California ESU is comprised of farmland. For example, farmland constitutes approximately 25–30 percent of the total acreage of Humboldt and Mendocino counties, which in turn constitutes much of the Northern California ESU. Private lands, and public lands not administered by the Federal government, are now being addressed by the California Rangeland Water Quality Management Program (CRWQMP), which was adopted by the State Water Resources Control Board and CDF in 1995. The CRWQMP is a water quality improvement program based on the voluntary participation of landowners for compliance with state and federal non-point source pollution reduction requirements. The CRWQMP was initiated as a cooperative effort among the livestock industry, conservation organizations, and state and Federal agencies, to address the impacts of grazing and land use practices on water quality in streams that flow through private property. Through this program, private landowners will be able to maintain rangeland productivity and enhance landowners' abilities to manage these lands in a manner that maintains water quality standards necessary for the survival and recovery of listed salmonids.

Between 1995–1998, rangeland plans were developed under the CRWQMP for more than 250,000 acres on the north coast, ranging from San Francisco to the Oregon border. The State plans to review the implementation status of these plans at intervals of 3, 5 and 10 years, provided that sufficient resources are available. NMFS is encouraged by these ongoing efforts. Plans that are consistent with this guidance are likely to result in meeting state water quality standards, but the program is voluntary and it is uncertain to what extent their implementation will contribute to improved habitat conditions and riparian function.

The USDA Natural Resources Conservation Service (NRCS), NMFS, USFWS, the U.S. Environmental Protection Agency (EPA), the California Association of Resource Conservation Districts (CARCD), and the State of California have recently developed a joint approach that is expected to encourage the voluntary use of improved conservation management practices for agriculture on private land. Recognizing that recovery of listed and other at-risk salmonid populations depends on the willing participation of private landowners, these agencies have the goal of providing an incentive to landowners to enhance the quality and quantity of habitat needed by species of concern. To accomplish this goal, the agencies have agreed to support cooperative approaches and consensus-building activities, foster communication among agencies and private landowners, share resources and information, and establish strong, effective working relationships that instill trust and promote sound stewardship.

This agreement is the subject of a draft Memorandum of Understanding (MOU) among the partner agencies. Through the procedures described in the MOU, practices contained in the NRCS Field Office Technical Guides (FOTG) will undergo ESA section 7 review by NMFS and USFWS. For those practices that NMFS and USFWS determine are not likely to adversely affect listed species or critical habitat, the landowner should have confidence that those practices, if implemented in accordance with the FOTG standards and specifications, will not result in any additional permitting requirement or penalties under the ESA. The objective of this MOU is to encourage the adoption of protective land use practices on private lands, to provide some regulatory assurance for landowners, to improve habitat conditions for sensitive species, to continue sustainable economic

production on private lands, to facilitate better coordination among the partner agencies, and to foster better awareness and support for conservation programs throughout the State.

The next step in the NRCS MOU process will be to incorporate the specific interests of the State of California. The current draft MOU lacks language describing the roles and responsibilities of the State. The draft MOU is under review by the state and upon completion is expected to be formally signed by all parties.

3. Dredge, Fill, and In-water Construction Programs

The Army Corps of Engineers (COE) regulates removal/fill activities under section 404 of the Clean Water Act (CWA), which requires that the COE not permit a discharge that would "cause or contribute to significant degradation of the waters of the United States." One of the factors that must be considered in this determination is cumulative effects. However, the COE guidelines do not specify a methodology for assessing cumulative impacts or how much weight to assign them in decision-making. Furthermore, the COE does not have in place any process to address the additive effects of the continued development of waterfront, riverine, coastal, and wetland properties.

The COE, state, and local governments have developed and implemented procedures reviewing, approving, and monitoring gravel mining activities in Del Norte and Humboldt counties which are authorized under a Letter of Permission (LOP) process. This process regulates gravel mining in a substantial portion of the Northern California ESU (including the Mad, Eel and Van Duzen Rivers) where listed coho salmon and chinook salmon populations also occur. These procedures are designed to provide substantially improved protection for anadromous salmonids and their habitats, including steelhead. Important elements of the process include: a prohibition on gravel mining in the active channel and on trenching except in limited instances, a restriction on gravel operations to the dry season, monitoring of channel cross sections to detect changes in channel morphology and habitat conditions, fisheries monitoring, and gravel mining on a sustained yield basis. An additional element of the process in Humboldt County is the participation of an independent scientific review committee, which makes annual recommendations on gravel extraction limits and site design features in order to minimize adverse impacts.

Additionally, any channel crossings must be designed to allow for fish passage. NMFS participated in the development of these procedures and has concluded, through section 7 consultation with the COE, that these procedures will not jeopardize the continued existence of coho salmon or steelhead. NMFS recently reinitiated formal consultation with the COE on the LOP process to address the final critical habitat designation for coho salmon and the recent listing of California Coastal chinook salmon as threatened.

Section 1603 of the California Fish and Game Code requires that any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel or river bank of any river, stream or lake, or use materials from a streambed, notify the DFG before beginning any work. The authorization for these activities under section 1603 is called a Lake or Streambed Alteration Agreement. Beginning May 1, 1999, the 1603 process was significantly modified to require a higher level of review by DFG that is in compliance with the California Environmental Quality Act (CEQA). Any proposed project that DFG determines may substantially adversely affect existing fish and wildlife resources will need to comply with the CEQA standard of mitigating project impacts to the level of insignificance. The new standard for project review has resulted in increasing the time needed for project approval from 2 weeks to 60–120 days.

Although the state has substantially improved the level of project review under the 1603 process to comply with the new CEQA standard, the state has not submitted the program to NMFS for review to determine whether it adequately protects anadromous salmonids. The state currently issues 1603 streambed alteration agreements to project applicants with the disclosure that the applicant may still need to obtain incidental take authorization from NMFS. In most cases, however, where a project proposes a stream or watercourse modification and listed species are present, a Clean Water Act, section 404 permit from the COE is required. Within the geographic area encompassing the Northern California steelhead ESU, the presence of listed coho and chinook salmon populations requires the COE to consult with NMFS under section 7 of the ESA prior to the issuance of 404 permits.

4. Water Quality Programs

Under Clean Water Act section 303(d), states, territories, and authorized Tribes are required to establish lists of

impaired water bodies, set priorities for addressing the pollutant source, and write pollutant control plans to achieve and maintain water quality standards. These plans, Total Maximum Daily Loads (TMDLs), provide an effective mechanism for determining the causes of water body impairment, quantifying the various pollutant sources, and setting targets for reducing pollutant discharges. Generally, states are responsible for developing TMDLs and related implementation plans, which are subject to EPA review and approval. If the EPA disapproves a TMDL or if a state fails to establish one, the EPA is required to step in and establish the TMDL. The TMDL is then implemented through existing regulatory and non-regulatory programs to control, reduce, or eliminate pollution from both point and non-point sources.

The TMDL process provides a flexible assessment and planning framework for identifying load reductions or other actions needed to attain water quality standards such as protection of aquatic life, provision of safe drinking water, etc. The TMDL should address all significant stressors (e.g., chemicals, temperatures, sediment loads) that cause or threaten to cause deleterious effects to water quality. The TMDL assessment is the sum of the individual waste load allocations from point sources, non-point sources, natural sources, and an appropriate margin of safety to account for uncertainty. The TMDL may address single or multiple pollutants but must clearly identify the links between the water quality impairment (or threat) of concern, the causes of the threat or concern, and the load reductions or conservation actions needed to remedy or prevent the impairment.

As TMDL assessments and implementation plans are developed and approved, the State of California, through the State Water Resources Control Board and the nine Regional Water Quality Control Boards, will adopt and implement the TMDLs. The TMDL contains a problem statement, numeric targets, source analysis, allocations of loads or controls, and a monitoring plan. The implementation component includes descriptions of land management practices, remediation activities, and restoration projects necessary to attain the goals established in the TMDL assessment. It is through the implementation plan that necessary controls and restoration actions are assigned to specific parties and attainment schedules are promulgated.

In coastal watersheds of northern California, 38 water body segments have been identified as impaired and have

been scheduled for development of TMDLs. The schedule for development of TMDLs in northern California extends to the year 2011 (Russian River and Lake Pillsbury). The schedule in this area is driven in part by a consent decree (*Pacific Coast Federation of Fishermen's Associations, et al. v. Marcus*, No. 95–4474 MHP, March 11, 1997). Under this consent decree, EPA agreed to oversee the development of TMDLs on 18 rivers on the north coast of California, 12 of which are located within the Northern California steelhead ESU.

The consent decree establishes a schedule for developing TMDL criteria for listed rivers. Under this schedule, seven river basins in the Northern California ESU would have TMDLs developed within the next 2 years, with the remaining rivers having TMDLs developed by 2002. This legally-binding schedule is expected to result in significant progress on improving the beneficial uses of these watersheds, where the beneficial use has been identified as habitat for salmonids.

On May 28, 1998, the North Coast Regional Water Quality Control Board approved a TMDL for the Garcia River. The TMDL contains the following elements: (1) Findings that the Garcia River is impaired due to sediment and temperature impacts resulting from land use practices, primarily timber operations and related activities; (2) adoption of the Water Quality Attainment Strategy as part of the Water Quality Control Plan for the North Coast Region (Basin Plan) that would eliminate 90 percent of total controllable road-related sediment sources within 20 years and 50 percent of controllable upslope sediment sources within 40 years; (3) numeric targets including specified numerical values for percent fine sediments, frequency of pools in stream habitat profiles, and improving trends in large woody debris; (4) an implementation plan which specifies that either default prescriptions be observed or a site-specific plan be implemented that provides assurances that source reduction targets will be met; (5) assurances that sediment reduction or control goals are capable of being met and that site-specific planning and implementation by landowners provides a flexible framework; and (6) a monitoring plan to verify that conservation practices are implemented and are effective.

The TMDL process provides a flexible, adaptive management approach that relies on substantial public input and participation to set targets, identify protection measures, and implement

and monitor corrective practices. The completion of the Garcia River TMDL, and the initiation of TMDLs for the other listed rivers, represents a significant step forward in improving watershed health for steelhead and other salmonids on the north coast of California. In the long-term, the development and implementation of these TMDLs should be beneficial for steelhead. However, their development and implementation will be difficult and it will take many years to assess their efficacy in protecting steelhead habitat. Furthermore, it is essential that the EPA consults with NMFS on the formulation of TMDLs in waters that contain listed salmonids. Such consultations will help ensure that TMDLs adequately address the needs of these species.

5. State Hatchery and Harvest Management

In an attempt to mitigate the loss of habitat and enhance fishing opportunities, extensive hatchery programs have been implemented throughout the range of steelhead on the west coast. While some of these programs have succeeded in providing fishing opportunities, the impacts of these programs on native, naturally reproducing stocks are not well understood. Competition, genetic introgression, and disease transmission resulting from hatchery introductions may significantly reduce the production and survival of native, naturally-reproducing steelhead (NMFS, 1996). Collection of native steelhead for hatchery broodstock purposes often harms small or dwindling natural populations. On the other hand, when properly managed, hatcheries can play an important role in steelhead recovery through carefully controlled supplementation programs.

In the past, non-native steelhead stocks have been introduced as broodstock in hatcheries and widely transplanted in many coastal rivers and streams in California (Bryant, 1994; Busby *et al.*, 1996; NMFS, 1997a). Because of problems associated with this practice, DFG has developed and implemented a Salmon and Steelhead Stock Management Policy. This policy recognizes that mixing of non-native stocks with native stocks is detrimental, and seeks to maintain the genetic integrity of all identifiable stocks of salmon and steelhead in California, as well as to minimize interactions between hatchery and natural populations.

NMFS's BRT identified the potentially adverse impacts of interactions between hatchery (Mad

River hatchery) and wild steelhead as an important concern with regard to the Northern California ESU (NMFS, 1997a). As part of its strategic management plan for this ESU, DFG has implemented several changes in its hatchery practices. In addition, DFG has implemented several additional measures pursuant to the 1998 NMFS/California MOA. These hatchery management measures include: (1) marking of all hatchery steelhead released from the Mad River hatchery and all cooperative rearing facilities in the Northern California ESU; (2) continuation of long-standing hatchery management practices aimed at minimizing hatchery and wild steelhead interactions including prohibitions on stocking of resident trout in anadromous waters; releasing hatchery steelhead only at times, sizes and places that minimize impacts on naturally produced fish; only releasing hatchery fish that are determined to be healthy; (3) initiation of monitoring efforts intended to measure hatchery fish stray rates; and (4) a joint NMFS/DFG review of the Mad River hatchery including its stocking history, analysis of current broodstock, and its consistency with the strategic management plan for the Northern California ESU.

In conjunction with the improved hatchery management practices, in-river sport fisheries in the Northern California ESU now focus on harvest of marked, hatchery-produced steelhead, and sport fishing regulations have been modified to protect wild adult and juvenile steelhead.

Other Natural or Human-Made Factors Affecting Continued Existence of Steelhead

Natural climatic conditions have exacerbated the problems associated with degraded and altered riverine and estuarine habitats. Persistent drought conditions have reduced already limited spawning, rearing and migration habitat. Climatic conditions appear to have resulted in decreased ocean productivity which, during more productive periods, may help offset degraded freshwater habitat conditions (NMFS, 1996a).

Efforts Being Made to Protect West Coast Steelhead

Section 4(b)(1)(A) of the ESA requires the Secretary of Commerce to make listing determinations solely on the basis of the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts being made to protect the species. Therefore, in making its listing

determinations, NMFS first assesses the status of the species and identifies factors that have led to the decline of the species. NMFS then assesses conservation measures to determine if they ameliorate risks to the species.

In judging the efficacy of existing conservation efforts, NMFS considers the following: (1) The substantive, protective, and conservation elements of such efforts; (2) the degree of certainty such efforts will be reliably implemented; and (3) the presence of monitoring provisions that determine effectiveness and that permit adaptive management (NMFS, 1996b). In some cases, conservation efforts may be relatively new and may not have had time to demonstrate their biological benefit. In such cases, provisions for adequate monitoring and funding of conservation efforts are essential to ensure that intended conservation benefits are realized.

As part of its west coast steelhead status review, NMFS reviewed an array of protective efforts for steelhead and other salmonids, ranging in scope from regional strategies to local watershed initiatives. NMFS has summarized some of the major efforts in a document entitled "Steelhead Conservation Efforts: A Supplement to the Notice of Determination for West Coast Steelhead under the Endangered Species Act" (NMFS, 1996c). NMFS also reviewed conservation measures being implemented by the State of California for steelhead at the time of its final listing determination for the Northern California, Klamath Mountains Province, and Central Valley steelhead ESUs (63 FR 13347). The following sections update the current status of the State of California's conservation efforts for steelhead with particular emphasis on the Northern California steelhead ESU.

The State of California's conservation efforts that address steelhead in the Northern California ESU include: (1) development of the state's Watershed Protection Program, which includes funding and implementation of an expanded watershed planning and habitat restoration program; (2) implementation of the DFG's strategic management plan for the Northern California ESU; and (3) implementation of the 1998 NMFS/California MOA which addresses management of coastal steelhead in northern California. The status of these conservation efforts is discussed in more detail here.

California Watershed Protection Program and Implementation of SB 271

In July 1997, California's Governor created the state's Watershed

Restoration and Protection Council (WPRC) for the purpose of: (1) overseeing all state activities aimed at watershed protection and enhancement, including the conservation and restoration of anadromous salmonids in California; and (2) directing the development of a California Watershed Protection Program that would provide for the conservation of anadromous salmonids in the State of California. A working group of the WPRC issued a detailed report in December 1998 entitled "Protecting California's Anadromous Fisheries." The Executive Order that established this program expired in January 1999. However, continued coordination of the program is occurring under the auspices of the California Biodiversity Council. NMFS is encouraged that the State initiated a comprehensive, watershed-based approach to salmon management and restoration, but the California Watershed Protection Program is still under development and has not been implemented as originally envisioned.

To support the Governor's WPRC and its efforts to develop a Watershed Protection Program, DFG implemented a \$3 million Watershed Initiative in 1997-98 for coastal watershed projects north of San Francisco, through its Fishery Restoration Grants Program. These projects focused on watershed and riparian habitat restoration, instream habitat restoration, and watershed evaluation, assessment, planning, restoration project maintenance, and monitoring. Beginning in 1998-1999, DFG funded additional staff positions to assist in watershed planning efforts and grant proposal development.

A key element of the state's Watershed Protection Program that is also specified in the 1998 NMFS/California MOA is DFG's implementation of an expanded habitat restoration program for coastal salmonids, including steelhead. In 1997, the California legislature enacted Senate Bill 271 which provided DFG with \$43 million over 6 years for habitat restoration and watershed planning to benefit anadromous salmonids in coastal watersheds, including the geographic area which encompasses the Northern California steelhead ESU. The program was initiated in 1997-98 and has expanded since that time. Based on the SB 271 legislation, funding is expected to continue through at least 2002. Substantial funding from this program has been committed to habitat restoration, enhancement, and watershed planning efforts within the Northern California steelhead ESU since 1997-98. Throughout Humboldt and Mendocino counties, which constitute

much of the geographic area comprising the Northern California steelhead ESU, DFG has funded over 200 projects costing in excess of \$7.5 million during the past 3 years (1997-98 through 1999-2000). NMFS participates as an ex-officio member of the Advisory Committee that reviews the distribution of SB 271 grant funding, to help ensure that available funds are spent on projects that will contribute to the conservation of listed salmonids, including north coast steelhead. In addition to the expanded habitat restoration program funded by SB 271, DFG has added additional staff positions to assist in administering the program, provide technical support in the development of watershed plans and habitat restoration projects, and implement a new steelhead monitoring and adaptive management program throughout coastal northern California.

Northern California Steelhead ESU Strategic Plan

In February 1998, DFG completed its strategic management plan for steelhead stocks in the Northern California ESU (DFG 1998). In March 1998, the state and DFG formally committed to implement this plan as part of the NMFS/California MOA. The plan describes existing and new management measures for recreational steelhead angling, steelhead hatchery programs, and steelhead monitoring, assessment, and adaptive management efforts in this ESU. In addition, the plan describes DFG's ongoing efforts to protect and enhance steelhead habitat within this ESU. These management measures were intended to provide immediate protection for steelhead populations in this ESU, while longer-term measures were implemented to protect anadromous fish habitat on non-federal lands through the Watershed Protection Program and the SB 271 habitat restoration program. The main elements of the Northern California steelhead strategic management plan are briefly discussed here.

(a) Harvest Measures

The strategic management plan includes several harvest management actions which are intended to reduce impacts on adult and juvenile steelhead in the Northern California ESU. These include: (1) no retention of unmarked (i.e., naturally produced) adult and juvenile steelhead in all rivers and streams; (2) fishing closures in steelhead rearing tributaries to protect juveniles; (3) expanded closures in mainstem rivers through May to protect outmigrating juvenile steelhead; and (4) various gear and bait restrictions

designed to reduce mortality associated with incidental hooking of steelhead.

In February and March 1998, the California Fish and Game Commission (Commission) adopted emergency changes to the State's inland fishing regulations which were intended to implement the harvest regulation changes contained in the Northern California steelhead strategic management plan. In conjunction with the final listing determination for this ESU in March 1998 (63 FR 13347), NMFS reviewed these regulatory changes and concluded that they would substantially reduce impacts to adult and juvenile steelhead and also assist in the conservation of the ESU (NMFS 1998). These emergency regulations were formally enacted by the Commission in June 1998 following public review and comment, and they currently remain in place. NMFS believes that these angling regulations continue to provide the reduction in impacts and conservation benefits that were expected at the time the decision was made not to list this ESU in March 1998.

(b) Hatchery Measures

The strategic plan for the Northern California ESU contains a wide range of existing and new hatchery management measures that are intended to reduce the impacts of hatchery steelhead programs on wild steelhead populations in this ESU. Measures incorporated into the plan include: (1) release strategies that require a minimum 6 inches (15.2 cm) size and release at the hatchery rather than off-site; (2) marking of all hatchery-produced fish that are released and the implementation of spawner surveys to assess the extent to which hatchery fish stray into natural spawning areas; (3) a commitment to reduce hatchery releases or implement other changes in hatchery practices if significant straying of hatchery fish is found to occur; (4) a cap on hatchery production to current levels, regular health checks during each rearing cycle, and the destruction of diseased fish that cannot be effectively treated; (5) a review of the existing operating procedures for all cooperative rearing facilities permitted by the state; and (6) adoption of a requirement that all cooperative facilities develop and submit 5-year management plans to the State for approval. NMFS previously reviewed these existing and new hatchery management measures and concluded that they would substantially reduce potential impacts to wild steelhead (NMFS 1998d). Because of NMFS concerns regarding the operations of the the Mad River Hatchery which is

located in this ESU, DFG also committed in the 1998 NMFS/California MOA to: (1) undertake a comprehensive review of the hatchery program, including its stocking history and genetic analysis of current broodstock; and (2) develop a plan to eliminate any adverse impacts of hatchery operations on Northern California steelhead if necessary.

DFG implemented a statewide mass-marking program for its hatchery steelhead programs beginning in 1997 which includes the hatchery steelhead programs in the Northern California steelhead ESU. DFG is also requiring all cooperative rearing programs that produce steelhead in this ESU to mark all released fish. This marking program has continued since its implementation in 1997 and DFG is committed to continuing this program into the future. DFG and the NMFS have also initiated a comprehensive review of DFG's hatchery programs in this ESU (Mad River Hatchery and cooperative rearing programs), with the objective of ensuring that these programs are compatible with the conservation of naturally produced steelhead. This review is expected to be completed in 2000. Comprehensive monitoring of stray rates for hatchery produced fish has not been implemented in this ESU, but DFG expects to begin a north coast steelhead stray rate monitoring program in 2000.

(c) Steelhead Monitoring and Adaptive Management

The strategic management plan for the Northern California ESU identifies ongoing and expanded monitoring programs to assess steelhead abundance. A commitment to implement these programs is contained in the 1998 NMFS/California MOA. A key element of this monitoring program was a commitment to establish a joint scientific and technical team including representatives from DFG and NMFS to design appropriate detailed monitoring programs for steelhead in this ESU. NMFS considered these monitoring efforts critically important given the uncertain status of steelhead populations in these ESUs, and indicated that adequate State funding was critical to implementing the program (63 FR 13347). As part of the NMFS/California MOA, both DFG and NMFS committed to seek adequate funding for this program. The DFG has taken significant steps to implement this expanded steelhead monitoring program in the Northern California steelhead ESU, but the full program has not yet been fully developed or implemented. The DFG has committed significant

fiscal resources to hire and redirect existing staff resources to create a north coast steelhead monitoring team and program that will address the Northern California steelhead ESU as well as areas further north in California, and has established a scientific and technical team to guide development of this effort. Comprehensive monitoring proposals have been developed and are under review by the scientific and technical team. NMFS expects the finalized monitoring program for this ESU to be implemented in early 2000.

NMFS/California Memorandum of Agreement

NMFS evaluated a wide range of conservation efforts that California had adopted or was in the process of developing in conjunction with its decision not to list the Northern California steelhead ESU (63 FR 13347). NMFS concluded that DFG's harvest and hatchery programs for this ESU would contribute to increasing escapement of adults, substantially reduce impacts on juveniles resulting in increased survival, and reduce adverse impacts of hatchery populations on wild fish. In the near-term, NMFS expected these measures would contribute to improved survival and population stability for steelhead. In addition, DFG's monitoring and adaptive management programs were expected to provide state and Federal managers with the ability to assess the status of steelhead populations and their response to harvest and hatchery management changes. However, NMFS was also concerned that California's habitat protection efforts, (e.g., development of a Watershed Protection Program and implementation of the expanded habitat restoration program established by SB 271), were not adequate to secure properly functioning habitat conditions for this ESU over the long-term. To address these concerns, NMFS entered into a MOA with the State (NMFS/California MOA 1998).

Under the terms of the NMFS/California MOA, the State committed to a broad range of measures including: (1) compliance with existing State regulations, with particular emphasis on the management measures contained in the strategic management plans for north coast steelhead; (2) implementation of harvest and hatchery management measures contained in the strategic management plan for Northern California steelhead; (3) implementation of a monitoring evaluation and adaptive management program for steelhead, including those elements contained in the strategic management plan for Northern California steelhead; (4)

continued implementation of a California Watershed Protection Program, including the SB 271 watershed planning and habitat restoration program in coastal watersheds, and the joint review and revision of the State's forest practice rules (FPRs), in conjunction with a scientific review panel to ensure that the revised FPRs were adequate to conserve anadromous salmonids, including steelhead. As previously discussed, because of the preponderance of private timber lands and timber harvest activity in the Northern California ESU, NMFS considered this to be a critically important provision in the MOA. Many of the provisions in the NMFS/California MOA relating to the Northern California steelhead ESU have been or are being implemented by the state; however, critically important provisions related to revision of the FPRs have not been implemented. The current status of the State's effort to implement the MOA, with particular regard to the Northern California steelhead ESU, is discussed here.

(a) Compliance with Existing State Regulations

In accordance with section 4 of the NMFS/California MOA, DFG made recommendations to the Fish and Game Commission to implement detailed angling regulation changes contained in the strategic management plan for Northern California steelhead. The Commission adopted these recommendations on an emergency basis in February 1998 and permanent regulations became effective in August 1998. Within this ESU, these regulations specifically prohibit retention of naturally spawned adult steelhead, prohibit fishing for naturally produced juvenile steelhead in tributary streams, minimize the angling impacts on juvenile steelhead in mainstem rearing areas through gear/bait restrictions, prohibit retention of summer steelhead and prohibit fishing in their summer holding areas, and provide for the retention of marked, hatchery-produced steelhead.

(b) Harvest and Hatchery Management

In accordance with section 6 of the NMFS/California MOA, two provisions have been implemented. First, the DFG recommended and the Fish and Game Commission adopted permanent regulations that provide only for the retention of non-listed, hatchery-produced steelhead. Second, the DFG has implemented a statewide mass marking program for hatchery produced steelhead. This program was initiated

with brood year 1997 steelhead released in winter 1998, and the marking program has continued annually since that time. This program has resulted in complete marking of all steelhead produced at the Mad River Hatchery which is located in this ESU. In addition, DFG is requiring that all cooperative rearing programs that produce steelhead mark them prior to release.

Three additional provisions contained in section 6 of the NMFS/California MOA have not yet been implemented, but are either in progress or will be initiated shortly. To date, DFG has not implemented a process for establishing recovery and strategic goals for north coast steelhead, including this ESU, nor has it initiated a monitoring program to measure stray rates of hatchery produced steelhead. However, the DFG has established a North Coast Steelhead Monitoring Program to develop and implement a monitoring program, which will include the Northern California steelhead ESU, and a joint scientific and technical team to provide guidance to the program. DFG has developed a preliminary monitoring program and is consulting the joint scientific and technical team to refine that program, and is exploring options for establishing recovery and strategic goals within this ESU. NMFS anticipates that this program will commence in 2000. Although the monitoring program specified in the NMFS/California MOA has not been fully implemented, DFG has continued to carry out several monitoring and research programs on the north coast, primarily in the Klamath Mountains Province ESU, which have provided data useful for the management of steelhead. Finally, NMFS and DFG have recently undertaken a state-wide review of the state's hatchery programs, including the Mad River Hatchery which is located in this ESU, as well as the state's cooperative rearing program which has a small number of projects within this ESU. This review is expected to be completed by June 2000.

(c) Monitoring, Evaluation, and Adaptive Management

In accordance with section 7 of the NMFS/California MOA, the DFG has implemented, at least in part, two key provisions. First, DFG has established a joint scientific and technical team to assist it with the development of a comprehensive monitoring program for steelhead on the north coast, including the Northern California ESU. The NMFS/California MOA called for this program to be developed by June 1998; however, as discussed in the preceding

section, DFG has not yet completed development of the study plan or initiated a comprehensive monitoring program. Second, DFG has secured the necessary funding to establish a north coast steelhead monitoring program, including the dedication of professional staff and the acquisition of necessary equipment and facilities. A preliminary monitoring program plan has been developed by the monitoring program staff and this plan is currently under review by the joint scientific and technical team.

(d) California's Watershed Protection Program

Section 9 of the NMFS/California MOA commits the State to continue development of its Watershed Protection Program, with a specific element addressing salmonid conservation, and to coordinate with NMFS in establishing a scientific review panel that would advise the State in its development of this program. In addition, Section 9 commits the state to direct personnel and fiscal resources to implement an expanded habitat restoration program in coastal watersheds using SB 271 funds. Details of the state's Watershed Protection Program and DFG's efforts to implement expanded watershed planning and habitat restoration in coastal watersheds were described previously (see Efforts Being Made to Protect West Coast Steelhead).

Section 9 of the NMFS/California MOA contains several measures relating to the review and revision of the State's FPRs because of NMFS's concerns regarding the effects of State-regulated timber harvest on freshwater habitat conditions for anadromous salmonids, including steelhead in the Northern California ESU. Specifically, the NMFS/California MOA calls for: (1) a joint review of the FPRs by NMFS and the State, including their implementation and enforcement; (2) the State to make appropriate changes in implementation and enforcement, if necessary; (3) the state, in consultation with NMFS, to make recommendations to the BOF for changes in the FPRs necessary to conserve anadromous salmonids; and (4) the BOF to complete action on the recommended changes in the FPRs by January 2000. Full implementation of these NMFS/California MOA provisions, including implementation of changes in the FPRs by January 1, 2000, was a critical factor in NMFS's decision to not list the Northern California steelhead ESU.

In accordance with these provisions, the state established a subcommittee of the scientific review panel for its

Watershed Protection Program to undertake an independent review of the State's FPRs. In June 1999, this subcommittee submitted a report to the BOF which concluded that the state's FPRs, including their implementation through the timber harvest plan process, do not ensure protection of anadromous salmonid populations. Based in part on the scientific review panel's findings, the Secretaries of the California Resources Agency and CalEPA jointly presented a proposed package of FPR revisions to the BOF in July 1999 that was designed to address shortcomings identified by the scientific review committee. At its October 6-7, 1999, meeting, the BOF failed to take action to adopt the proposed rule changes, thereby eliminating to possibility of implementing improvements in California's FPRs by January 1, 2000.

Proposed Determination

The ESA defines an endangered species as any species in danger of extinction throughout all or a significant portion of its range, and a threatened species as any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Section 4(b)(1) of the ESA requires that the listing determination be based solely on the best scientific and commercial data available, after conducting a review of the status of the species and after taking into account those efforts, if any, being made to protect such species.

In December 1997, the NMFS' BRT concluded that the Northern California steelhead ESU was likely to become endangered within the foreseeable future based on a review of the best available biological information (NMFS 1997). Based on a review of updated abundance and trend information that was available for this ESU, NMFS's Southwest Fisheries Science Center (NMFS/Tiburon Lab 1/2000), concluded that the current biological status of the ESU has changed little since it was last evaluated by NMFS' BRT. Updated abundance and trend data show small increases for winter and summer steelhead in the Eel River, but current abundance is well below estimates in the 1980s and even further reduced from levels in the 1960s. Redwood Creek summer steelhead abundance remains very low. There are no new data suggesting substantial increases or decreases in populations since the last updated status review was completed. The Eel River winter and summer steelhead populations, which represent the best available data set for this ESU, are still severely reduced from pre-1960s levels.

After taking into consideration state and Federal efforts for the conservation of steelhead, NMFS previously decided that threats to the ESU were sufficiently reduced that a listing of the Northern California steelhead ESU as threatened was unnecessary. The key Federal and state conservation measures which NMFS concluded reduced threats to this ESU were: (1) implementation of the NMFS/California MOA, with particular emphasis on the provisions intended to improve non-Federal forest land protections because of the predominance of non-Federal lands in the California portion of this ESU (81 percent non-Federal land); (2) substantial changes to in-river harvest regulations by California; and (3) general improvements in the ESU resulting from implementation of the DFG's strategic management plan for this ESU, the State's Watershed Protection Program, and other provisions in the NMFS/California MOA which serve to implement steelhead angling regulation changes, hatchery steelhead management changes, habitat protections and restoration, and expanded steelhead monitoring.

As previously discussed in this document, California has implemented several of the conservation measures that NMFS relied upon in making its decision not to list the Northern California ESU. Specifically, the state has enacted substantial changes to the state's in-river angling regulations in 1998 to protect coastal steelhead populations including steelhead in this ESU. These regulations, with slight modification, remain in effect, and NMFS believes they continue to provide the substantial protection and conservation benefits that were expected to occur at the time of the decision not to list this ESU. The State has also implemented, or begun to implement, several other conservation measures for this ESU, including extensive watershed planning and/or habitat restoration through the SB 271 program, marking of hatchery produced steelhead and other improvements in hatchery practices, and steelhead monitoring. Although implementation of some of these measures has been delayed, as is the case for the steelhead monitoring program, NMFS continues to believe that these efforts will collectively benefit steelhead in this ESU and will eventually contribute to an improved understanding of its status.

Although these conservation efforts are expected to benefit steelhead in this ESU, NMFS continues to believe that improved habitat protection and restoration of properly functioning

freshwater habitat conditions for spawning, rearing, and migration are essential to the long-term survival and recovery of this ESU. Because Federal land ownership is both fragmented and limited in this ESU (approximately 19 percent of ESU), the key to achieving habitat protection and properly functioning habitat conditions in this ESU is the improvement of land management activities on non-Federal lands (approximately 81 percent of ESU). To ensure improved protection of habitat on non-Federal lands in this ESU, the NMFS/California MOA contained several provisions for the review and modification of the state's FPRs. Full implementation of these provisions, including implementation of changes in the FPRs by January 1, 2000, was a critical factor in NMFS's previous decision not to list this ESU. Because the State has failed to implement changes in the FPRs as called for in the NMFS/California MOA, critically important conservation measures are not being implemented to reduce the threats to this ESU from timber harvest activities on non-Federal lands. For this reason, NMFS concludes that the conservation measures fail to provide for the attainment of properly functioning habitat conditions necessary to provide for the long-term protection and conservation of this ESU.

Based on a review of the best available information, therefore, NMFS concludes that the Northern California steelhead ESU warrants listing as a threatened species at this time. In arriving at this determination, NMFS carefully considered the December 1997 scientific conclusions of the BRT regarding this ESU, the results of an updated status review for the ESU, and the current status of all Federal, state, and local conservation efforts directed at this ESU, including implementation of provisions for the NMFS/California MOA for steelhead.

NMFS has previously examined the relationship between hatchery and natural populations of steelhead in this ESU, and also assessed whether any hatchery populations are essential for their recovery. At this time, NMFS does not believe any specific hatchery populations warrant listing.

At this time, NMFS is only proposing to list the anadromous life forms of *O. mykiss*.

Prohibitions and Protective Measures

Section 4(d) of the ESA requires NMFS to issue protective regulations it finds necessary and advisable to provide for the conservation of threatened species. Section 9 of the ESA prohibits violations of protective regulations for

threatened species promulgated under section 4(d). The 4(d) protective regulations may prohibit, with respect to the threatened species, some or all of the acts which section 9 of the ESA prohibits with respect to endangered species. These section 9 prohibitions and 4(d) regulations apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. NMFS intends to develop and promulgate a 4(d) protective regulation for the Northern California steelhead ESU in a separate rulemaking. The process for completing the 4(d) rule will provide the opportunity for public comment on the proposed protective regulations.

In the case of threatened species, NMFS has flexibility under section 4(d) to tailor the protective regulations to provide for the conservation of the species. Even though existing conservation efforts and plans are not sufficient to preclude the need for listing at this time, they are nevertheless valuable for improving watershed health and restoring fishery resources. In those cases where well-developed, reliable conservation plans exist, NMFS may choose to incorporate them into the recovery planning process, starting with the protective regulations. For example, the interim 4(d) rule for the Southern Oregon/Northern California coho (62 FR 24588, May 7, 1997) does not prohibit habitat restoration activities conducted in accordance with approved plans, nor does it prohibit fisheries conducted in accordance with an approved state management plan. NMFS has recently proposed 4(d) regulations for all threatened ESUs of steelhead (64 FR 73479). Future 4(d) rules may contain limited take prohibitions applicable to activities such as forestry, agriculture, and road construction, when such activities are conducted in accordance with approved conservation plans.

Sections 7(a)(2) and 7(a)(4) of the ESA require Federal agencies to consult with NMFS to ensure that activities they authorize, fund, or conduct are not likely to jeopardize the continued existence of a listed species or a species proposed for listing, or adversely modify critical habitat or proposed critical habitat.

Examples of Federal actions likely to affect steelhead in the Northern California ESU include authorized land management activities of the U.S. Forest Service and Bureau of Land Management, operation of hydroelectric and storage projects permitted by FERC, and activities permitted by the COE. Such activities may include timber sales and harvest, permitting livestock grazing, hydroelectric power generation, and flood control. Other Federal actions,

including the COE section 404 permitting activities under the CWA, COE permitting activities under the River and Harbors Act, FERC licenses for non-Federal development and operation of hydropower, and Federal salmon hatcheries, may also require consultation.

Sections 10(a)(1)(A) and 10(a)(1)(B) of the ESA provide NMFS with authority to grant exceptions to the ESA's "take" prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) for scientific purposes or to enhance the propagation or survival of a listed species. NMFS has issued section 10(a)(1)(A) research/enhancement permits for listed chinook salmon and steelhead for a number of activities, including trapping and tagging, electroshocking to determine population presence and abundance, removal of fish from irrigation ditches, and collection of adult fish for artificial propagation programs.

Section 10(a)(1)(B) incidental take permits may be issued to non-Federal entities performing activities which may incidentally take listed species, so long as the taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The types of activities potentially requiring a section 10(a)(1)(B) incidental take permit include the operation and release of artificially propagated fish by state or privately operated and funded hatcheries, state or academic research not receiving Federal authorization or funding, logging, road building, grazing, and diverting water onto private lands.

NMFS Policies on Endangered and Threatened Fish and Wildlife

On July 1, 1994, NMFS, jointly with USFWS, published a series of policies regarding listings under the ESA, including a policy for peer review of scientific data (59 FR 34270) and a policy to identify, to the maximum extent possible, those activities that would or would not constitute a violation of section 9 of the ESA (59 FR 34272).

Role of Peer Review

The intent of the peer review policy is to ensure that listings are based on the best scientific and commercial data available. Prior to a final listing, NMFS will solicit the expert opinions of at least three qualified specialists, concurrent with the public comment period. Independent peer reviewers will be selected from the academic and scientific community, Native American tribal groups, Federal and state agencies, and the private sector.

NMFS and USFWS published in the **Federal Register** on July 1, 1994 (59 FR 34272), a policy that NMFS shall identify, to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the ESA. The intent of this policy is to increase public awareness of the effect of this listing on proposed and ongoing activities within the species' range. At the time of the final rule for the Northern California steelhead ESU, NMFS will identify to the extent known specific activities that will not be considered likely to result in violations of section 9 once a 4(d) rule has been adopted, as well as activities that will be considered likely to result in violations. NMFS believes that, based on the best available information, the following actions will not be prohibited in a 4(d) rule and therefore will not result in a violation of section 9:

1. Possession of steelhead from any steelhead ESU listed as threatened which are acquired lawfully by permit issued by NMFS pursuant to section 10 of the ESA, or by the terms of an incidental take statement pursuant to section 7 of the ESA.

2. Federally funded or approved projects that involve activities such as silviculture, grazing, mining, road construction, dam construction and operation, discharge of fill material, stream channelization, or diversion, for which section 7 consultation has been completed, and when activities are conducted in accordance with any terms and conditions provided by NMFS in an incidental take statement accompanying a biological opinion.

Activities that NMFS believes could potentially harm steelhead in the Northern California ESU and therefore may be prohibited in a 4(d) rule applying section 9 take prohibitions, include, but are not limited to:

1. Land-use activities that adversely affect steelhead habitat in the proposed ESU (e.g., logging, grazing, farming, urban development, road construction in riparian areas and areas susceptible to mass wasting and surface erosion).

2. Destruction/alteration of steelhead habitat in the proposed ESU, such as removal of large woody debris and "sinker logs" or riparian shade canopy, dredging, discharge of fill material, draining, ditching, diverting, blocking, or altering stream channels or surface or ground water flow.

3. Discharges or dumping of toxic chemicals or other pollutants (e.g., sewage, oil, gasoline) into waters or riparian areas supporting steelhead in the proposed ESU.

4. Violation of discharge permits.

5. Pesticide applications.

6. Interstate and foreign commerce of steelhead from the proposed ESU and import/export of steelhead from any ESU without a threatened or endangered species permit.

7. Collecting or handling of steelhead from the proposed ESU. Permits to conduct these activities are available for purposes of scientific research or to enhance the propagation or survival of the species.

8. Introduction of non-native species likely to prey on steelhead in the proposed ESU or displace them from their habitat.

These lists are not exhaustive. They are intended to provide some examples of the types of activities that might or might not be considered by NMFS as constituting a take of steelhead in the Northern California ESU under the ESA and its regulations. Questions regarding whether specific activities will constitute a violation of the ESA section 9 take prohibitions, and general inquiries regarding prohibitions and permits, should be directed to NMFS (see **ADDRESSES**).

Critical Habitat

Section 4(a)(3)(A) of the ESA requires that, to the maximum extent prudent and determinable, NMFS designate critical habitat concurrently with a determination that a species is endangered or threatened. While NMFS has completed its initial analysis of the biological status of steelhead in the Northern California ESU, it has not performed the full analysis necessary for designating critical habitat at this time. It is NMFS' intent to develop a critical habitat proposal for this ESU within the next year as soon as the analysis can be completed.

Public Comments Solicited

NMFS has exercised its best professional judgement in developing this proposal to list the Northern California steelhead ESU. To ensure that the final action resulting from this proposal will be as accurate and effective as possible, NMFS is soliciting comments and suggestions from the public, other governmental agencies, the scientific community, industry, and any other interested parties. NMFS is interested in any additional information concerning: (1) biological or other relevant data concerning any threats to steelhead in this ESU; (2) the range, distribution, and population size of steelhead in this ESU; (3) current or planned activities in the proposed ESU and their possible impact on steelhead; (4) steelhead escapement, particularly escapement data partitioned into natural

and hatchery components; (5) the proportion of naturally reproducing fish that were reared as juveniles in a hatchery; (6) homing and straying of natural and hatchery fish; (7) the reproductive success of naturally reproducing hatchery fish (i.e., hatchery-produced fish that spawn in natural habitat) and their relationship to proposed ESU; (8) efforts being made to protect native, naturally reproducing populations of steelhead in this ESU; and (9) suggestions for specific regulations under section 4(d) of the ESA that should apply to steelhead in this ESU. Suggested regulations may address activities, plans, or guidelines that, despite their potential to result in the take of listed fish, will ultimately promote the conservation and recovery of threatened steelhead.

NMFS will review all public comments and any additional information regarding the status of the Northern California steelhead ESU and will complete a final rule within 1 year of this proposed rule, as required under the ESA. The availability of new information may cause NMFS to reassess the status of this ESU.

Joint Commerce-Interior ESA implementing regulations state that the Secretary "shall promptly hold at least one public hearing if any person so requests within 45 days of publication of a proposed regulation to list * * * or to designate or revise critical habitat." (see 50 CFR 424.16(c)(3)). A public hearing schedule on this proposal is contained in this notice. A public hearing will provide the opportunity for the public to give comments and to permit an exchange of information and opinion among interested parties. NMFS encourages the public's involvement in such ESA matters. Written comments on the proposed rule should be submitted to NMFS (see ADDRESSES).

References

A complete list of all cited references is available upon request (see ADDRESSES).

Classification

National Environmental Policy Act

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation v. Andrus*, 675 F. 2d 825 (6th Cir. 1981), NMFS has concluded that ESA listing actions are not subject to the environmental assessment requirements of the National

Environmental Policy Act (NEPA). See NOAA Administrative Order 216-6.

Executive Order 12866 and Regulatory Flexibility Act

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act (RFA) are not applicable to the listing process. In addition, this final rule is exempt from review under Executive Order 12866.

Executive Order 13132—Federalism

In keeping with the intent of the Administration and Congress to provide continuing and meaningful dialogue on issues of mutual State and Federal interest, NMFS has conferred with State and local government agencies in the course of assessing the status of the Northern California steelhead ESU, and considered, among other things, state and local conservation measures. State and local governments have expressed support both for the conservation of the Northern California steelhead ESU and for activities that affect this ESU. The history and content of this dialogue, as well as the basis for this proposed action, is described in the SUPPLEMENTARY INFORMATION section of this document, and in other Federal Register documents preceding this proposed action. (See 61 FR 41541, August 9, 1996; 62 FR 43974, August 18, 1997; and 63 FR 13347, March 19, 1998). NMFS staff have had numerous discussions with various governmental agency representatives regarding the status of this ESU, and have sought working relationships with agencies and others in order to promote salmonid restoration efforts. In addition, NMFS' staff have given presentations to interagency forums and other interested groups considering conservation measures. As the process continues, NMFS intends to continue engaging in informal and formal contacts with affected state, local or regional entities, giving careful consideration to all written or oral comments received. As one part of that continued process, NMFS has scheduled public hearings on this proposed action. NMFS also intends to consult with appropriate elected officials in the establishment of a final rule.

At this time NMFS is not promulgating protective regulations pursuant to ESA section 4(d) or proposing to designate critical habitat. Prior to finalizing 4(d) regulations for this ESU, or proposing to designate critical habitat, NMFS will comply with

all relevant NEPA and RFA requirements.

List of Subjects in 50 CFR Part 223

Endangered and threatened species, Exports, Imports, Marine mammals, Transportation.

Dated: February 4, 2000.

Penelope D. Dalton,

Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 223 is proposed to be amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.*; 16 U.S.C. 742a *et seq.*; 31 U.S.C. 9701.

2. In § 223.102, paragraph (a)(22) is added to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(a) * * *

(22) Northern California steelhead (*Oncorhynchus mykiss*). Includes all naturally spawned populations of steelhead (and their progeny) in coastal river basins ranging from Redwood Creek in Humboldt County, California to the Gualala River, inclusive, in Mendocino County, California.

* * * * *

[FR Doc. 00-3283 Filed 2-10-00; 8:45 am]

BILLING CODE 3510-22-F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 648

[I.D. 012400B, 012900C]

Fisheries of the Northeastern United States; Atlantic Sea Scallop Fishery; Deep-sea Red Crab Fishery; Scoping Process

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of intent to prepare a Supplemental Environmental Impact Statement (SEIS), an Environmental Impact Statement (EIS), and notices of scoping processes; requests for comments; extensions of the comment periods.