MARYLAND
NATURAL
HERITAGE
PROGRAM

MANAGEMENT PLANS FOR SIGNIFICANT PLANT AND WILDLIFE HABITAT AREAS OF MARYLAND'S EASTERN SHORE: CAROLINE COUNTY

Sagittaria engelmanniana
Engelmann's Arrowhead

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MANAGEMENT PROGRAMS FOR SIGNIFICANT PLANT AND WILDLIFE HABITAT AREAS IN CAROLINE COUNTY

FINAL REPORT

SUBMITTED TO:

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Tidewater Administration

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MANAGEMENT PROGRAMS FOR SIGNIFICANT PLANT AND WILDLIFE HABITAT AREAS IN CAROLINE COUNTY

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INTRODUCTION

In 1986 this project was initiated by the Coastal Resources Division of the Department of Natural Resources' Tidewater Administration. The task was designed to develop the information base and to determine the management mechanisms needed to implement an alternative approach to the State Critical Area Program for addressing the Geographic Areas of Particular Concern (GAPC) and Areas for Preservation and Restoration (APR) requirements of the Federal Coastal Zone Management Act. Under the GAPC requirements, coastal states are to inventory and develop management measures to protect the integrity of "areas of unique, scarce, fragile or vulnerable natural habitat" and "areas of high natural productivity or essential habitat for living resources, including fish, wildlife, and endangered species and the various trophic levels in the food web critical to their well-being." Under the APR requirement, coastal states are to include in their Coastal Zone Management Programs "provisions for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological or aesthetic values."

To accomplish this task, a contract was awarded to the Maryland Natural Heritage Program, a division of the Forest, Park and Wildlife Service. The mission of the Natural Heritage Program is to identify and help preserve the biological and ecological diversity of Maryland. Since 1979, this program has been devoted to the collection of information about the State's rare, threatened, and endangered species and habitats. The program's extensive data base provided the basis for the identification of outstanding habitat examples on Maryland's Eastern Shore.

By January 1987, the Coastal Resources Division and the Maryland Natural Heritage Program established specific objectives to accomplish the project on Maryland's Eastern Shore, from Kent County south. These objectives were:

1. identify criteria for the selection of significant plant and wildlife habitat areas, and conduct a field inventory of selected areas;

2. undertake field inventory of areas identified in existing studies and data files of the Maryland Natural Heritage Program that are likely to be of habitat significance, in order to identify species and habitats associated with each site;

3. determine threats to each area and determine management mechanisms for protecting the integrity of such areas;

4. determine appropriate boundaries for each site including needed buffer areas; and

5. collect other locational information pertinent to the application of management mechanisms for a particular site.

These objectives combine to produce a protection package in which significant habitats (referred to as areas or sites) are assigned management mechanisms within a designated boundary. In accordance with the Natural Heritage Program's methodology, this area is then labeled a protection area.

Section 1 of this report provides a detailed description of the project methodology, scope of work, and the long-term framework established through the project. Section 2 provides Protection Area Summaries for significant habitat areas which have been identified. The Protection Area Summary contains information needed for site protection. A selection of applicable references follows Section 2. Appendix A contains a copy of the Department of Natural Resource's Regulations [COMAR .08.03.08] concerning the State's Threatened and Endangered Species.

SECTION 1

Procedures of Site Selection, Methods of Protection Implementation, and the Long-term Framework Established by this Project

INTRODUCTION:

This section provides all technical information on the project procedures from the planning stages, when habitat areas were selected for field checking, through the site visit, to the selection of the site for protection. Following this information, the report presents methods of implementing protection for selected sites. Finally, the long-term framework established by this project is discussed.

SITE IDENTIFICATION:

Significant plant and wildlife habitats were identified from the following categories of sites employing the methods described for each type.

1. Sites potentially inhabited by State Endangered or Threatened Species.

   Methods: Data concerning the habitat, phenology and taxonomy of each listed species were gathered from regional floristic surveys and scientific literature. Sites were located by using the habitat data in conjunction with National Wetland Inventory maps, aerial infrared photographs, and county soil surveys. These sites were surveyed when the species could be identified accurately according to the taxonomic and phenological data.

2. Sites with historical occurrences (reported prior to 1980) of species determined to be rare by the Natural Heritage Program and found in their publication, Threatened and Endangered Plants and Animals of Maryland (Norden et al., 1984).

   Methods: For each species, data were gathered concerning habitat, phenology and taxonomy. Many of the historical records provided only general locations for rare species. For these records, more specific locations for survey were selected

based upon habitat data supplemented by National Wetland Inventory maps, aerial infrared photographs, and county soil surveys. The field staff surveyed sites when the species could be accurately identified according to phenological and taxonomic information.

3. Non-tidal wetlands.

Methods: National Wetland Inventory maps and aerial infrared photographs were used to locate non-tidal wetlands. Particular attention was given to wetlands in State Parks, Forests and Wildlife Management Areas. Based upon the findings of "The Functional Assessment of Non-tidal Wetlands," a report completed for the Coastal Resources Division by the Maryland Natural Heritage Program (Bartgis 1986), these wetlands were assigned priorities for survey. High and intermediate priority wetlands listed below were candidates for intensive survey.

a. Non-tidal Wetland Complex, i.e., two or more contiguous wetland communities with one of the following traits:

   i. For complexes under 10 acres, presence of at least 2 wetland communities;

   ii. For 10- to 100-acre complexes, presence of at least 4 wetland communities; or

   iii. For complexes greater than 100 acres, presence of at least 6 communities.

b. Seasonal Ponds: wetlands occurring mainly on Pocomoke soils in centripetally-drained, seasonally flooded basins dominated by Walter's Sedge (Carex walteriana) or Twigrush (Cladium mariscoides).

c. Bogs: highly acidic wetlands characterized by highly organic soils and/or Sphagnum.

d. Palustrine Forested Deciduous Wetlands (PFO1) with at least one of the following characteristics:

   i. Seeps

   ii. Vernal pools

iii. Well-developed stratification

e. Palustrine Forested Evergreen Wetlands (PFO4) dominated by Bald Cypress (Taxodium distichum), or Atlantic White Cedar (Chamaecyparis thyoides).

FIELD INVENTORY:

Observations and data were collected in the field concerning the general character of each site, the degree of unnatural disturbance and, if present, the condition of the rare species populations. Prior to surveying sites on private land, permission was obtained from landowners.

First, the natural features of each site were described, noting the dominant vegetation, aquatic features, physical relief and natural disturbances (such as insect defoliation or trees felled by high winds). A list of the common plant species was developed and unique communities were identified and mapped.

When the rare species were found, the size and extent of their populations were estimated. Staff members also estimated the proportion of the population that was flowering and fruiting, and marked the population on the general map of the site. The microhabitats of the rare species were described. If a population was large, voucher specimens of the rare species were collected and deposited with the Natural Heritage Program. Small populations of rare species were photographed for verification. If rare species were absent from historical locations, the habitat was assessed to determine if it could still support the species or if the habitat had been altered such that the species could no longer survive.

Finally, the habitat integrity of each site was assessed. Staff members recorded unnatural disturbances and their current and potential future effects on the habitat. For example, the presence of ditches in non-tidal wetlands was reported, and the effects of the ditches on wetland hydrology and vegetation were reviewed. Threats to the integrity of the habitat were discussed. Current and potential future uses of surrounding land were considered. In light of these threats, staff members recommended management activities intended to maintain the habitat and sustain the populations of rare species.

STRATEGY FOR SELECTING SIGNIFICANT SITES:

The selection of ecologically significant sites for protection was based on a number of criteria which were assessed during the field inventory. These criteria are as follows:

1. Site contains species which are considered by the Maryland Natural Heritage Program as Rare, Threatened or Endangered in Maryland (see Norden, et al, 1984). Many of these species are listed in the revised Department of Natural Resource's Regulations under COMAR .08.03.08.

2. Site contains one or more rare or ecologically unique natural communities.

3. Overall ecologic integrity of the site is high. Unnatural disturbances must be minimal or must be such that their effects simulate natural forces of disturbance. The presence of recent disturbances which will change the current character of the site by diminishing its natural ecologic balance may be reason to exclude a site from selection.

4. Human-induced threats which could lead to the loss of the rare species or habitat(s) must be minimal.

5. Regulation and monitoring must be feasible so that actions (both on-site and nearby) can be limited to those that do not negatively impact the rare species and natural habitat(s). Required buffer zones must be available to ensure site protection.

6. Anticipated future land-use must not conflict with protection of the habitat.

7. Ecologic, scenic, or historic values other than those related to rare species and habitat protection may be present.

SITE PROTECTION IMPLEMENTATION METHODS:

This section will be used in 1988 for the implementation of site protection. Protection may be implemented in a variety of ways depending upon ecological significance of the site, type of ownership (public vs. private), seriousness of threats, degree of management required, and landowner preference. The various options available confer varying degrees of protection security and of landowner control. They range from designations which afford no legal protection to acquisition by a conservation organization. The following list describes the available options and the degree of protection which they provide. Because the significance and consequences of each mechanism varies, some sites may receive simultaneous protection from more than one type.

Natural area protection may be accomplished by a number of types of organizations. Federal, State, and local governments (at the County as well as the municipal levels) have specific tools and mechanisms by which they may set aside or regulate land for conservation purposes. In addition, there are private organizations which can either protect lands on their own or facilitate the efforts of the public sector. Many of the protection mechanisms listed below may be implemented by any of the aforementioned conservation organizations, while others may only be available to certain agencies or organizations.

The following methods afford protection to rare species habitat by outlining and assigning management responsibilities to a particular party:

1. Voluntary management agreement - landowner informally agrees to protect the rare species and habitat by not disturbing the site.

2. Registration - landowner signs a written, nonbinding agreement with the State's Department of Natural Resources, a county government, The Nature Conservancy, or another private conservation organization, officially recognizing the ecological significance of the site. Management needs are outlined, and the landowner agrees to perform specified tasks to promote rare species and habitat.

3. Legally binding protection agreement - landowner enters a legally binding management agreement or leases the land to a conservation organization for management purposes. Conservation easements granted by the Maryland Environmental Trust, local government, and other private trusts (including The Nature Conservancy) impose certain land-use restrictions while conferring tax benefits to the landowner.

4. Zoning - the site may be zoned or rezoned as a conservation area in which land-use is restricted. Development may be highly regulated or prohibited. Such protection is usually accomplished on a county level through local ordinances.

5. Bequest or Right of First Refusal - landowner agrees to will land or give right of first refusal for acquisition to a State, county, or private conservation organization at some undetermined time in the future.

6. Acquisition - landowner conveys property to a conservation organization. The transfer may be a donation, a bargain sale (i.e, below market value) or a fee simple (i.e, full market value) transaction. The first two types of transaction confer tax benefits to the landowner. All rights to the land belong to the buyer, and management is directed toward the protection of rare species and habitat(s). In some cases, acquisition may occur with the retention of a life estate for the owner. This allows the landowner to continue to live on and have restricted use of his property until his death, at which time the buyer obtains full control.

The following methods are designations which afford no current protection but which serve to acknowledge the ecological significance of a site and which may be used to stimulate further protection efforts:

1. National Registry of Natural Landmarks - land which is determined to be a nationally significant example of the Nation's natural heritage may be designated a National Natural Landmark by the Secretary of the Interior.

2. Sensitive Management Areas - land within the State Park System which is considered in need of special protection because of its unique and fragile physiography, flora and fauna may be designated a "Sensitive Management Area" and is reserved for only those activities compatible with preservation.

3. Maryland Wildlands Preservation System - land which has retained its wilderness character or which has rare species or similar features of interest worthy of preservation for use of present and future residents of the State may be termed "wildland."

4. Natural Heritage Area - land which meets all three of the criteria listed in the revised Regulations under COMAR .08.03.03 Threatened and Endangered Species may be designated a Natural Heritage Area subject to the approval of the Secretary of Natural Resources.

Information provided in the Protection Area Summaries of this report is used to assess the degree of protection needed.

LONG-TERM FRAMEWORK:

This project provides a foundation for tasks to begin in 1988. These tasks, described below, involve the further identification and protection of significant habitats within the coastal zone.

Next year, the methodology developed in this project will be utilized to continue the identification of significant plant and wildlife habitats in coastal counties west of the Chesapeake Bay. Protection Area Summaries identical in format to those used in 1987 will be completed for significant sites. Three counties, Baltimore, Harford, and Prince Georges have hired personnel (with the assistance of the Coastal Resources Division) to help complete this task in their counties.

Additionally, 1988 will mark the beginning of site protection implementation. Those areas identified in 1987 are now candidates for protection, and efforts will begin to insure that each site is protected. The effort required to afford protection to each site is great, and this task should continue into the 1990's. Significant areas identified in 1988 will also become candidates. It is important to note that many additional sites will be identified on Maryland's Eastern Shore, and these areas can and will be protected within the framework of this project.

SECTION 2

Protection Area Summaries

INTRODUCTION:

The remainder of this report contains site-specific protection information for all selected areas. Each of these areas is reviewed in a Protection Area Summary (PAS) that describes the protection area, its values, and its protection needs. The PAS is composed of several parts, each of which will be discussed below. Format and content are best understood with the insight provided in this section.

Protection Area Name - An identifying name has been assigned to each protection area. This is usually based on the site's location and/or habitat type.

County - The county in which the protection area is located is given.

USGS Quad(s) - Identifies the United States Geological Survey topographic map(s) on which the protection area occurs.

SUMMARY OF ECOLOGICAL SIGNIFICANCE - the major reasons for protecting the site are summarized. This section, along with the following element summary table, describes the key ecologic significance of the protection area.

Both the rare species and habitat are considered significant. For some of the protection areas the habitat is described in this section. In others, rare plants or animals may be listed and their status with the State is given. In some cases, only the most endangered species are mentioned here, leaving the others to be mentioned in the element summary table.

ELEMENT SUMMARY TABLE - Each of the rare species currently known to occur at the site is listed. The scientific name is given along with the common name. In some cases, no common name was assigned to the species; therefore, only the scientific name is used.

The Maryland Natural Heritage Program has assigned all the rare species a rank based on their status nationally, within the region, or within the State. In addition, many of these species have been listed in the revised Department of Natural Resource's Regulations .01 - .11 under COMAR .08.03.08 Threatened and

Endangered Species. The Status column of the Element Summary Table gives the listing category for these species as designated in the Regulations. Three possible categories were designated:

Endangered - any species whose continued existence as a viable component of the State's flora or fauna is determined to be in jeopardy including any species determined to be an "Endangered Species" pursuant to the U.S. Endangered Species Act of 1973, 16 U.S.C. 1531-1543.

Threatened - any species of flora or fauna that appears likely, within the foreseeable future, to become endangered including any species determined to be a "Threatened Species" pursuant to the U.S. Endangered Species Act of 1973, 16 U.S.C. 1531-1543.

In Need of Conservation - any wildlife species determined by the Secretary of Natural Resources to be in need of conservation measures for its continued ability to sustain itself successfully.

For those species that were not listed in COMAR .08.03.08, the Natural Heritage Program rank is given. The following terms are used:

Regionally Rare - in danger of extinction in Maryland and rare throughout all or most areas of surrounding states.

Highly State Rare - in immediate danger of extinction in Maryland.

State Rare - in danger of extinction in Maryland.

Watchlist - believed secure in Maryland but populations are uncommon, local or seriously declining.

Note that species listed in the Regulations are not necessarily rarer than those species that are not listed but are ranked by the Natural Heritage Program. These unlisted species, many of which are quite rare, are currently under consideration for listing in the Department's Threatened and Endangered Species Regulations.

OTHER SIGNIFICANCE AND VALUES - This section describes other important aspects of the protection area. Often the habitat is the focus because the habitat in which most rare species are found is also rare.

The value of the protection area to wildlife and for ecosystem maintenance may also be discussed. In setting aside

rare species habitat (which includes additional buffer land), a safe haven is provided for wildlife and for the perpetuation of naturally functioning ecosystem processes.

Many of the proposed protection areas are adjacent to or part of designated management areas. They may overlap with or abut upon State Forests or Parks, State Scenic Rivers, Natural Heritage Areas or Nature Conservancy protection areas. By increasing the size and/or protection of these areas, their ecologic and scenic values may be enhanced.

THREATS AND MANAGEMENT NEEDS - Both potential and current threats to the rare species or to the natural habitat are described. These are generally related to human-induced habitat alterations, such as forest cutting, hydrologic alteration, vehicular traffic, or powerline maintenance practices. In some cases, however, there are natural threats such as insect infestation or natural succession.

Specific management recommendations are then given. Voluntary management agreements are often suggested. In some cases, monitoring of rare species populations is recommended. Such studies are needed in order to learn more about the demographics and ecological requirements of the rare plants and to provide warnings of serious population declines.

BOUNDARY RECOMMENDATIONS - The proposed protection area is delineated by a line termed the protection area boundary. The habitats to be included within this boundary are described and the reasons for their inclusion are given. Within this boundary the threats listed in the previous section should be avoided to protect the significant habitat and rare species.

Within the protection area boundary, a buffer has been placed around the core rare species habitat. This zone consists of adjacent land needed to protect the critical habitat from the impacts of land use in surrounding areas. When the critical habitat is a wetland, lands which drain into it may be included as buffer. Surrounding forest may be designated for many reasons. These include maintaining canopy cover to prevent the invasion of weedy or exotic species, stabilizing soils to prevent sedimentation of waterways, filtering out chemicals or excess nutrients, and maintaining hydrology.

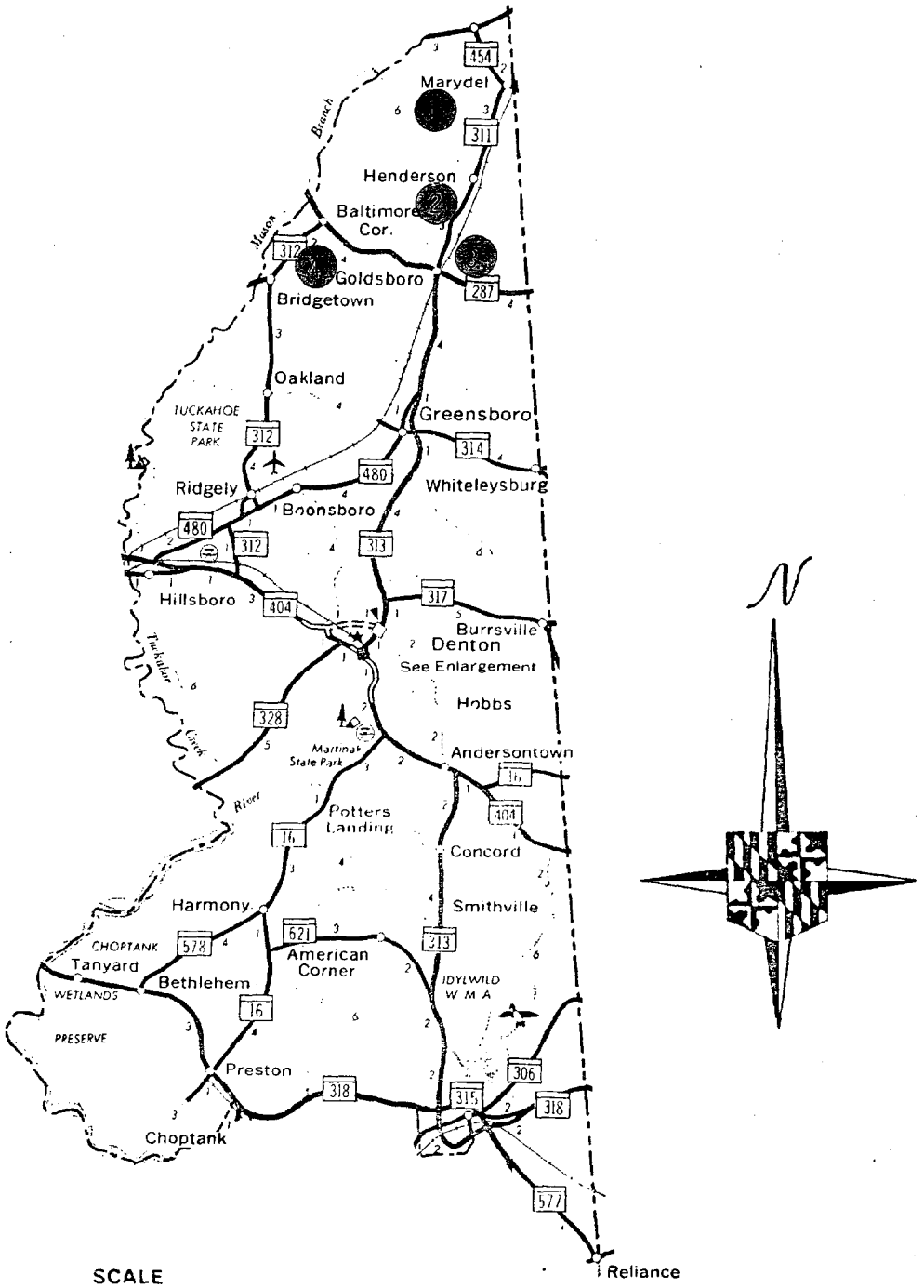
The delineation of buffers varies depending on the habitat, surrounding land use, protection of the species and its habitat, local hydrology, and possible future threats. Reasonable and effective buffers were determined after careful consideration of these factors.

Maps and additional information concerning boundary locations are available from the Natural Heritage Program.

SITE DESCRIPTION SUMMARY - Finally, a general description of the protection area is given. Each of the natural communities is discussed and its relationship to surrounding communities is described. In addition, the hydrologic regime of the community and the range of seasonal variability of water table depth are provided. Dominant trees, shrubs, and herbaceous plants are listed.

Note: Common names for species are used throughout the Protection Area Design Summary except when no common name is available. When a specific species is named, the common name is capitalized.

CAROLINE COUNTY



● = Locations of Protection Areas of significant habitat (See page 15 for Protection Area names corresponding to numbers given above.)

CAROLINE COUNTY: Protection Area Locations

Protection Area	Site # on County Map
Greer's Pond	1
Robinson's Pond	3
Schuyler Pond	4
South Melville Crossroads Pond	2

PROTECTION AREA SUMMARY

Protection Area Name: Greer's Pond

County: Caroline USGS Quad: Goldsboro

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

A complex of shrub swamps and seasonal ponds occurs within this swamp forest. Seasonal ponds dominated by herbaceous species are uncommon on Maryland's Eastern Shore; many similar ponds have been destroyed by agricultural ditching and drainage. The water level of seasonal ponds varies with groundwater fluctuations. Normally the water is deepest in early spring, then recedes, and the pond dries during the summer. This water flux maintains the abundance of herbaceous species in the ponds.

Among these herbs is the Highly State Rare Species, Reticulated Nutrush (Scleria reticularis). Although this species is known from 13 extant sites in Maryland, only four of these sites are protected. In addition, two Watch List Species, Twigrush (Cladium mariscoides) and Maidencane (Panicum hemitomon) inhabit this site.

ELEMENT SUMMARY TABLE:

Element Name	Common Name	Status
Scleria reticularis	Reticulated Nutrush	Highly State Rare
Cladium mariscoides	Twigrush	Watch List
Panicum hemitomon	Maidencane	Watch List

OTHER VALUES AND SIGNIFICANCE:

Other rare species may inhabit these ponds; for example, the ponds provide ideal habitat for a State Endangered Species, the Eastern Tiger Salamander (Ambystoma tigrinum), and a species In Need of Conservation, the Carpenter Frog (Rana virgatipes). However, these species are not apparent in the early fall, when this site was surveyed. Because the flora and fauna vary seasonally and annually with water levels, several visits are required to develop a complete species list for this site.

Seasonal ponds offer breeding, nesting and feeding grounds to migratory waterfowl and songbirds. The ponds also provide feeding grounds for resident waterbirds. In addition, deer frequent the ponds to feed and rest.

THREATS AND MANAGEMENT NEEDS:

Threats

Alteration of groundwater hydrology represents the greatest threat to the populations of rare species. These species are maintained by the current frequency and amplitude of flooding. Changes in this groundwater regime would promote the establishment of other species and eliminate the rare species.

The encroachment of woody species threatens the rare species and other herbs inhabiting the center of the ponds. These herbs require an open canopy and would be gradually eliminated by invading shrubs and trees.

Management Needs

The population size and reproductive success of the rare species should be monitored regularly. Selective removal of woody species and dominant sedges may be required to maintain the populations of rare species. Plans for ditching, drainage or any development of land surrounding the protection area should be reviewed for potential effects on the ponds' hydrology.

BOUNDARY RECOMMENDATIONS:

The protection area boundary incorporates the rare species' habitat, surrounding wetlands, and a forested buffer required to maintain the integrity of the rare species habitat.

SITE DESCRIPTION SUMMARY:

In this 25 acre freshwater wetland complex, a swamp forest of Red Maple, Sweet Gum and Willow Oak intertwines with shrub swamps of Sweet Pepperbush and fetterbush and seasonal ponds of grasses and sedges. The rare species occur in the pond that is least shaded by trees and shrubs. Reticulated Nutrush and Twigrush occur in patches amidst the dominant Panic Grass (Panicum verrucosum). Maidencane grows in a dense stand on the pond edge along with Virginia Chain-fern.

Near the forest edge, south of the other ponds, is an excavated pond that appears to be permanently flooded. No vegetation was observed in the water, but the exposed banks were covered with beggar-ticks (Bidens spp.). Cultivated fields lie south of the ponds.

Prepared by: Katharine McCarthy

Date: October 1987

PROTECTION AREA SUMMARY

Protection Area Name: Robinson's Pond

County: Caroline USGS Quad: Goldsboro

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Within a large, hardwood swamp forest is a two acre seasonal pond dominated by herbaceous species. Many similar ponds on the Eastern Shore have been destroyed by agricultural ditching and drainage. The abundance of herbaceous vegetation in the pond's center is maintained by the fluctuating groundwater regime. Normally, the water level is highest in spring and the pond gradually dries through the summer. This pond has an unusual hourglass shape with deep depressions at both ends. Many herbaceous species germinate in these depressions after the pond dries and complete their life cycles in the brief period before the fall frosts.

In the deepest section of the pond is Harper's Fimbristylis (Fimbristylis perpusilla), a State Endangered Species and candidate for listing under the U.S. Endangered Species Act. Fewer than 20 extant populations of this species are known worldwide, and nine of these occur in Maryland. Only one of Maryland's populations is protected currently.

ELEMENT SUMMARY TABLE:

Element Name	Common Name	Status
Fimbristylis perpusilla	Harper's Fimbristylis	Endangered

OTHER VALUES AND SIGNIFICANCE:

It is likely that additional rare species inhabit Robinson's Pond, such as the Carpenter Frog (Rana virgatipes), a species In Need of Conservation. The pond's flora and fauna change seasonally and annually with water level. This amphibian is not apparent in early fall when the pond was surveyed. Several visits are needed to develop a complete species list for the site.

The pond provides breeding, nesting, and feeding habitat for migratory waterfowl. The current landowner leases the land for hunting. Deer frequent the pond and the hunter reported great success at this site.

THREATS AND MANAGEMENT NEEDS:

Threats

Alteration of the groundwater regine is the greatest threat to this population of Harper's Fimbristylis. The frequency and amplitude of water level fluctuations in the pond maintain this rare species. Drainage of the pond or adjacent swamp forest would reduce flooding and allow other species to establish to the exclusion of Harper's Fimbristylis. Ditching or excavation designed to increase pond depth would extend the period of flooding, and potentially shorten the growing season for this rare annual such that is would not reproduce.

Non-native plant species are encroaching upon the native vegetation in the western section of the pond. The nearby powerline is the source of these non-natives.

Management Needs

Plans for ditching, drainage, or land development near the protection area should be reviewed for potential effects on the population of Harper's Fimbristylis.

Removal of the non-native herbaceous flora from the pond should be considered. This would be accomplished best by individually removing the plants by hand. Equally important is removal of the source of non-native flora. A cooperative effort with the utility company would be required to achieve this. The establishment of a dense shrub cover in the powerline right-of-way would reduce substantially the cover of non-native flora and provide a long-term, low maintenance solution. Instead of mowing the right-of-way, as is currently the practice, it is recommended that herbicides be applied selectively to tree seedlings. This would prohibit the establishment of trees and promote the establishment of shrubs, while satisfying the utility company's need to keep the powerline clear. The non-native herbaceous vegetation would not survive under the shrub cover, and would be eliminated gradually.

BOUNDARY RECOMMENDATIONS:

The protection area boundary incorporates the seasonal pond, adjacent wetlands, and a forested buffer required to maintain the integrity of the rare species' habitat.

SITE DESCRIPTION SUMMARY:

In this 135 acre freshwater wetland complex, hardwood swamp forests intertwine with upland hardwood forests. Seasonal ponds dominated by trees and shrubs are scattered through the swamp

forest. Robinson's Pond is large and hourglass-shaped with depressions at both ends. A glade of sedges covers the eastern half and the narrow neck of the hourglass. Buttonbush dominates the center of the western half, and grasses grow under and around these shrubs. A powerline lies about 100 ft. west of the pond; beyond the powerline are cultivated fields. There are cultivated fields to the south approximately 1000 ft. from the pond, and to the north and east approximately 2000 ft. from the pond.

Prepared by: Katharine McCarthy

Date: November 1987

PROTECTION AREA SUMMARY

Protection Area Name: Schuyler Pond

County: Caroline USGS Quad: Goldsboro

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This 1.5 acre seasonal pond contains Maryland's only known population of the State Endangered Species, Rose Coreopsis (Coreopsis rosea). This species was thought to have been extirpated from Maryland until its discovery this year. Rose Coreopsis is also very rare in surrounding states. The population in Schuyler Pond is large and was flowering profusely at the time of the site visit, indicating that the population is well established.

The seasonal pond was deepened by excavation over 15 years ago. A dense mat of sphagnum moss occurs along the outer edge of the pond, suggesting that this region was not severely disturbed during excavation. Many similar ponds have been destroyed by agricultural ditching and drainage. In addition, trees or shrubs dominate most of the remaining seasonal ponds, while this pond is a grassy glade in late summer. Fluctuating groundwater level maintains this abundance of herbaceous vegetation. The pond's water level is highest in the spring, then recedes, and the pond dries in the summer.

ELEMENT SUMMARY TABLE:

Element Name	Common Name	Status
Coreopsis rosea	Rose Coreopsis	Endangered

OTHER VALUES AND SIGNIFICANCE:

Additional rare species may inhabit this site, such as the species In Need of Conservation, Carpenter frog (Rana virgatipes), or the State Endangered Species, Eastern Tiger Salamander (Ambystoma tigrinum). These amphibians are not apparent in late summer, when the site was visited; however, the landowner reported observing numerous amphibians in the spring. Because the flora and fauna of the pond vary seasonally and annually with water level, several visits are required to obtain a complete species list for the site.

THREATS AND MANAGEMENT NEEDS:

Threats

Further excavation to create a functional farm pond threatens the survival of Rose Coreopsis. Currently the pond dries in the summer, and the landowner expressed interest in creating a permanent pond on the property. Drainage of the pond or any alteration of the groundwater regime could eliminate this population.

Run-off of nutrients and pesticides from the adjacent cultivated fields may be detrimental to the population. The pesticides may be toxic to this species, while the nutrients may promote the establishment of other species to the exclusion of Rose Coreopsis.

Management Needs

The size and reproductive success of this population of Rose Coreopsis should be monitored regularly. Steps should be taken to maintain the population if a decline is observed.

Current practice of applying nutrients and pesticides to adjacent fields may not be harmful to Rose Coreopsis. It is recommended that the applications be minimized in the vicinity of the pond. Establishment of a forested buffer around the pond would reduce run-off from the fields into the pond. Therefore, it is recommended that mowing of perimeter vegetation be discontinued in order to allow the establishment of woody species on the perimeter. Rose Coreopsis should be monitored to determine the effects of the new woody vegetation on this rare species.

Plans for ditching, drainage or land development outside the protection area should be reviewed for potential effects on the pond's groundwater regime.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species habitat plus a 200 ft. buffer required to maintain the population of Rose Coreopsis.

SITE DESCRIPTION SUMMARY:

This 45 acre protection area incorporates a 1.5 acre seasonal pond dominated by grasses in the center and composites (sunflower-like plants) along the edge. Rose Coreopsis emerges from sphagnum along the pond perimeter. Its delicate, pink flowers brighten the meadow-like vegetation of the pond in late summer. Unlike many other rare species that inhabit seasonal

ponds, Rose Coreopsis is perennial and is able to reproduce vegetatively. Therefore, this species flowers and fruits in years of drought as well as in years of excessive rain. However, population size has been reported to vary with water depth, thus revealing the importance of maintaining the current groundwater regime. Surrounding the pond are cultivated fields. A large tract of forest lies about 300 ft. east of the pond.

Prepared by: Katharine McCarthy

Date: November 1987

PROTECTION AREA SUMMARY

Protection Area Name: South Melville Crossroads Pond

County: Caroline USGS Quad: Goldsboro

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This pond is a non-tidal wetland referred to as a seasonal pond. The pond normally fills with water in the winter and spring and dries during the summer. Such wetlands are usually forested or dominated by shrubs. Ponds dominated by emergent, herbaceous vegetation, such as the South Melville Crossroads Pond, are rare in Maryland. Many similar ponds have been destroyed by agricultural drainage and ditching.

This unusual habitat often supports rare species of plants and animals. In addition to the populations in this pond, only three populations of Button Sedge (Carex bullata) and six populations of Engelmann's Arrowhead (Sagittaria engelmanniana) are known in occur in Maryland. Just one population of Button Sedge and two populations of Engelmann's Arrowhead are protected currently. Reticulated Nutrush (Scleria reticularis) is also very rare in this State.

ELEMENT SUMMARY TABLE:

Element Name	Common Name	Status
Carex bullata	Button Sedge	Threatened
Sagittaria engelmanniana	Engelmann's Arrowhead	Threatened
Scleria reticularis	Reticulated Nutrush	Highly State Rare
Cladium mariscoides	Twigrush	Watch List
Eleocharis microcarpa	Torrey's Spikerush	Watch List

OTHER VALUES AND SIGNIFICANCE:

Seasonal ponds may be important sites of groundwater recharge and thus may be important in maintaining groundwater quality. The land surrounding the ponds may be the seepage face, where groundwater meets the soil surface. When the soil profile is saturated with water, it is likely that water drains into the ponds from the surrounding land of slightly higher elevation.

Groundwater quality may also be enhanced by the filtering effects of the seasonal pond vegetation.

Seasonal ponds are feeding grounds for a variety of resident waterbirds such as herons and egrets. They also provide important resting, breeding, and feeding grounds for migratory waterfowl, shorebirds, and songbirds.

THREATS AND MANAGEMENT NEEDS:

Threats

It is likely that any alteration of the seasonal pond hydrology would be detrimental to the rare species populations. Pond drainage, or any activity that lowers the local water table, would allow woody species to establish within the pond. The rare, herbaceous species require an open canopy and would be eliminated gradually by the invading trees and shrubs. Ditching to increase drainage from surrounding lands into the pond could eliminate the rare species by reducing the length of pond drawdown. These species require drawdown of sufficient length to germinate and mature.

Because the pond is accessible and usually dries in the summer, there is potential for severe disturbance by all-terrain vehicles.

Management Needs

Plans for ditching, drainage or development of land surrounding the protection area should be reviewed for potential effects on the pond hydrology.

The pond vegetation should be monitored to determine 1) if woody species are encroaching and 2) whether rare species are successfully reproducing.

The use of all-terrain vehicles should be prohibited within the protection area.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes all rare species habitat and a forested buffer required to maintain the rare species populations. Within this boundary the specific management recommendations listed above should be implemented and active disturbance should be prohibited.

SITE DESCRIPTION SUMMARY:

A large seasonal pond is the focus of this 25 acre protection area. The center of this seasonal pond is a sedge glade, primarily of Walter's Sedge and Twigrush. Small stands of Water-willow occur at the northern and southern edges of the pond. Three-way Sedge is dense within an irregular depression at the southern end of the pond. Four of the rare species occur in or near this depression. Seedlings and saplings of Red Maple and Sweet Gum occur near the pond edge and in isolated stands within the pond. These tree species, plus fetterbush and Common Greenbrier, dominate the forest immediately surrounding the pond. Southwest of the pond is a Lobolly Pine plantation.

The pond attains a maximum water depth of approximately two ft. The length of drawdown varies from year to year. Standing water was observed in July 1982, but the site was completely dry in early August 1987.

There is little variation in the topography of the land surrounding much of the pond. Slopes of erodible soils northwest of the pond are the only significant features.

Prepared by: Katharine McCarthy

Date: November 1987

REFERENCES

The following general references are provided as background material and suggested reading to supplement this report.

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Title 08
DEPARTMENT OF NATURAL RESOURCES

Subtitle 03 WILDLIFE

08.03.08 Threatened and Endangered Species

Authority: Natural Resources Article, §§4-2A-01 — 4-2A-09 and §§10-2A-01 — 10-2A-09, Annotated Code of Maryland

Notice of Proposed Action
[87-061-P]

The Secretary of Natural Resources proposes to repeal existing Regulations .01 and .02 under **COMAR 08.03.08 Nongame and Endangered Species** and to adopt new Regulations .01 — .11 under **COMAR 08.03.08 Threatened and Endangered Species.**

The proposed action does not affect any threatened and endangered species regulation or designations under **COMAR 08.02.12 Tidewater Administration.** The proposed action includes an increase in the number of wildlife species on the lists and for the first time includes plants. In addition, some species which meet the statutory definition of fish because they spend part of their life cycle in water, namely, amphibians, reptiles, crustaceans, mollusks and only those finfish of the species Blackbanded Sunfish (Enneacanthus chaetodon), Maryland Darter (Etheostoma sellare), Glassy Darter (Etheostoma vitreum), Stripeback Darter (Percina notograma) and Trout-Perch (Percopsis omiscomaycus) are added. The latter species are not game or sport fish, therefore, are of no commercial significance. The lists also contain, for the first time, the names of all those species which are federally listed and, therefore, are required by Maryland law to be listed in Maryland.

The criteria for listing and delisting species are set out and the process for petitioning the Department to list and delist a species as allowed by law is specified. The proposal also clarifies how to apply for the various permits which are allowed by law and what factors are considered before they are issued.

Maryland law authorizes the Secretary to prohibit certain acts with respect to threatened and endangered plants in addition to those set out in the statute. The added prohibitions are: taking threatened and endangered plants from private property without the permission of the owner and from State property without the permission of the Director; and exporting, possessing, processing, selling, offering for sale, delivering, carrying, transporting or shipping threatened plant species. The latter acts are already prohibited by statute with respect to endangered plants.

Maryland law also authorizes the Secretary to prohibit by regulation certain acts with respect to all other threatened species besides plants. Since there were no threatened species listed in the previous regulation, there were no additional prohibitions specified; thus, these regulations implement that section of the law for the first time. Included in the added prohibitions is an "incidental taking." This is a taking of a species which is caused by another otherwise lawful act, for example, the killing of a pond dwelling species by filling in a pond for other reasons. The landowner is required to give the Department 30 days notice before starting any action which would result in an "incidental taking." Within that 30 day time period the Department must either salvage the species or issue a permit for the "incidental take." The other added prohibitions are simply the same acts prohibited by statute with respect to endangered species.

This proposal defines for the first time what criteria are considered for designating Natural Heritage Areas. These Areas are an integral feature of the Critical Areas Criteria (set forth under **COMAR 14.15.01 — .11**) and by adding this regulation the Department hopes to aid the counties and the Critical Areas Commission in the protection of these Areas. Before Areas are designated the Department will notify all landowners of the proposed designation. There will be maps made available along with other pertinent and useful information. The Department hopes to work out management agreements with the landowners or buy conservation easements for property included in an Area if necessary.

The Critical Areas Criteria rely heavily on the Department's Threatened and Endangered Species Program to aid the counties in determining which species within the Critical Area need protection. The Department has available maps which locate listed species by planning zones and will make all this information as readily available as possible. The Department has always considered cooperative management agreements with private property owners to be the best way to preserve and protect habitat critical to threatened and endangered species, and intends to continue to use these agreements and other mutually agreeable management arrangements as much as possible.

Estimate of Economic Impact

I. Summary of Economic Impact. Administrative costs for units of the Department of Natural Resources will increase in terms of more staff time to address protection of these species, and some land acquisition costs will be incurred. Local governments will bear some costs in addressing protection of the listed species as part of their Critical Areas programs.

II. Types of Economic Impacts:	Revenue (+) Expense (−)	Amount
A. On issuing agency:		
1. Increased staff and support for threatened and endangered species Program	(−)	$193,497
2. Increased land acquisition staff and support	(−)	$74,106
3. Additional acquisition of interests in land	(−)	Indeterminable
B. On other State or local agencies affected:		
Local jurisdictions protect threatened and endangered species as part of Critical Areas programs	(−)	$40,000 — $100,000
C. On regulated industries or trade groups:	NONE	
	Benefit (+) Cost (−)	**Amount**
D. On other industries or trade groups affected:	NONE	

E. Direct and indirect effects on public:		
1. Prohibition on taking endangered wildlife may affect some real estate development	(−)	Indeterminable
2. Protect species' diversity	(+)	Indeterminable

III. Assumptions. (Identified by Impact Letter and Number from Section II):

A1. The amount indicated is a budget enhancement request for six new positions plus support for the Threatened and Endangered Species program. While not all attributable to the listing of species represented by this regulation, a significant portion of the additional staff time for which the new resources will be needed is to meet the needs of an expanded list of threatened and endangered species.

A2. The amount indicated is a budget enhancement request for two new positions plus support for acquisition of interests in land that may prove necessary to protect threatened and endangered species.

A3. At this time, it is impossible to calculate how much could be spent for acquisition of interests in land. The figure indicated is the amount budgeted in FY 1987 for acquisition of interests in property for protection of lands that support diverse ecological communities of plants or animals, including forestlands, habitats of rare, threatened or endangered species, and areas necessary for watershed protection. A similar amount has been requested for FY 1988.

B. The costs of local governments to develop Critical Area programs will be approximately $2,150,000 for FY 1987. A similar amount has been requested for FY 1988. The Director of the Critical Areas program estimates that between 2 percent and 5 percent of these costs may be attributable to that portion of the work involving threatened and endangered species.

E1. and E2. There is presently no trade in Maryland in any of the listed species, and therefore no impact is anticipated as a result of prohibiting such commerce. The prohibition on taking endangered species of wildlife in any manner will have some localized impacts on land use, but the impacts are indeterminable at this time. As to endangered or threatened species of plants, threatened species of wildlife, and wildlife species in neeed of conservation, the regulation prohibits only directed efforts to take the species; incidental impacts on the species from legitimate uses of land are not prohibited. Therefore, the listing of these species will not have an impact. Finally, there will be a long-term, positive, but incalculable benefit to the people of Maryland by protecting the diversity of species in the State.

Opportunity for Public Comment

Written comments may be sent to James Mallow, Forest, Park and Wildlife Service, Department of Natural Resources, Tawes State Office Building, Annapolis, MD 21401 or call 974-3771 Monday through Friday, 9 a.m. to 4 p.m. Public comment must be received not later than April 20, 1987 at 4 p.m.

If sufficient interest is shown a public hearing will be held. Copies of this proposal are available from James Mallow at the address given above.

.01 Definitions.

A. "Director" means the Director of the Maryland Forest, Park and Wildlife Service.

B. "Endangered extirpated species" means any species that was once a viable component of the flora or fauna of the State but for which no naturally occurring populations are known to exist in the State. Most of these species have not been recorded in Maryland since 1950.

C. "Endangered species" means any species whose continued existence as a viable component of the State's flora or fauna is determined to be in jeopardy including any species determined to be an "endangered species" pursuant to the federal Endangered Species Act of 1973, 16 U.S.C. §§1531 — 1543.

D. "Incidental taking" means takings of listed species that are incidental to, and not the purpose of, the carrying out of an otherwise lawful activity conducted by a person on private property.

E. "Jeopardize the continued existence of" means to engage in an action which reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of either the survival or recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of a listed species or otherwise adversely affecting the species.

F. "Listed species" means a species of flora or fauna deemed endangered, threatened or in need of conservation in this chapter due to any of the following factors:

(1) Present or threatened destruction, modification, or curtailment of the species' habitat or range;

(2) Overutilization for commercial, sporting, scientific, educational, or other purposes;

(3) Disease or predation;

(4) Inadequacy of existing regulatory mechanisms; or

(5) Other natural or manmade factors affecting the species' continued existence within the State.

G. "Natural heritage area" means any natural community of species designated in Regulation .10 in this chapter.

H. "Person" means any county, municipal corporation, or other political subdivision of the State, an individual, corporation, receiver, trustee, guardian, executor, administrator, fiduciary, or representative.

I. "Secretary" means the Secretary of the Department of Natural Resources.

J. "Service" means the Maryland Forest, Park and Wildlife Service.

K. "Species" means any species of wildlife or plant and reptiles, amphibians, crustaceans, mollusks and the following finfish: Enneacanthus chaetodon, Etheostoma sellare, Etheostoma vitreum, Percina notogramma, Percopsis omiscomaycus or any part, egg, offspring, or dead body of any of them.

L. "Species in need of conservation" means any species determined by the Secretary to be in need of conservation measures for its continued ability to sustain itself successfully.

M. "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

N. "Threatened species" means any species of flora or fauna which appears likely, within the foreseeable future, to become endangered including any species determined to be a "threatened species" pursuant to the federal Endangered Species Act of 1973, 16 U.S.C. §§1531 — 1543.

.02 Petitioning.

A. Except for species determined to be threatened or endangered pursuant to the federal Endangered Species Act of 1973, 16 U.S.C. §§1531 — 1543, any interested person may petition the Director to add or remove a species or natural heritage area to or from a list in this chapter. The Director shall review the evidence regarding the requested action and make a recommendation to the Secretary whether or not to list or delist the species or natural heritage area.

B. In a petition to list or delist a natural heritage area, the following information shall be provided:

(1) A map of the proposed natural heritage area.

(2) A description of the physical boundaries of the proposed area, total acreage, landowner name and address.

(3) A description of the biological community represented by the natural heritage area including, as far as practical, a list of the fauna and flora there, and other geologic,

hydrologic, or other features which blend together to make this area unique.

(4) A description of all major threats to the continued existence of the area, or if petitioning to delist an area, a description of how the natural features and species composition of the area have changed so it is no longer suitable to be designated as a natural heritage area.

(5) A statement indicating why the area should or should not be considered as among the best statewide examples of its kind.

(6) Other relevant information which might assist the Director in making a determination.

C. All sites used for evidence of current abundance shall be extant and all sitings shall be documented with appropriate vouchers. In a petition to list or delist a species, the following information shall be provided:

(1) A description of the biological distribution of the species in Maryland.

(2) Its life needs and habitat requirements.

(3) Evidence of its decline or evidence that it is more common than previously believed and documented.

(4) All known threats which jeopardize its continued existence.

(5) Other relevant biological and ecological data or other life history information pertinent to its status.

(6) The species shall be presently recognized as a valid species, or infraspecific taxa of regional or national significance. There shall be adequate documentation that it occurs naturally and is permanently established in Maryland.

.03 Permits.

A. Permits to take, transport, possess, sell, offer for sale, export or import any listed species may be obtained from the Director only after written application on a form provided by the Service, and upon payment of a fee of $25.

B. Each permit shall be subject to an expiration date and other limitations as may be prescribed by the Director.

C. Each permit application requesting permission to take a listed species from private property shall be accompanied by a signed statement from the landowner granting the applicant permission to enter the property to take the species.

D. A permit application shall describe the purpose of the request in such detail that the Director can determine whether it is in the best interest of the species and the State to issue it.

E. The Director shall consider, but not be limited to, the following information:

(1) The number of other known occurrences of the species in the State;

(2) Which of the occurrences of the species in §E(1) exist on:

(a) Private lands;

(b) Public lands; and

(c) What protection there is for the species' continued existence.

(3) The number of individuals in the occurrences of the species in §E(1) and the relative state of ecological stability.

F. Violation of any provision or restriction of the permit shall constitute a violation of this regulation and may result, at the discretion of the Director, in the revocation of the permit and confiscation of the species taken or possessed.

.04 Endangered Species of Wildlife, Reptiles, Amphibians, Mollusks, Crustaceans and Finfish.

A. Listing Criteria. The following factors shall be considered for listing any species other than plants as endangered:

(1) Whether the species is restricted to a minimal geographic area within Maryland;

(2) Whether the species has experienced a rapid, substantial decline in Maryland, and if the decline continues, the species' extirpation from Maryland is imminent;

(3) Whether the species' essential habitat has been rapidly lost and that loss is likely to continue;

(4) Whether the species' biology makes it highly susceptible to changes in its environment; or

(5) Whether the species' essential habitat is easily altered by even relatively minor activities.

B. Permits. The permit procedures to be followed are set forth in Regulation .03. The following apply:

(1) Permits shall be issued only for scientific research designed to enhance the recovery of the species or population.

(2) A person may not take, export, possess, process, sell or offer for sale, deliver, carry, transport, or ship by any means any endangered wildlife, reptile, amphibian, mollusk, crustacean or finfish species except by special permit from the Director.

C. The following wildlife, reptile, amphibian, mollusk, crustacean and finfish species are considered endangered throughout Maryland unless a smaller range is indicated:

(1) Platyhelminthes. A Planarian (Procotyla typhlops).

(2) Mollusks. Ancient Floater (Alasmidonta heterodon).

(3) Crustaceans.

(a) Dearolf's Cave Amphipod (Crangonyx dearolfi);

(b) Greenbriar Cave Amphipod (Stygobromus emarginatus);

(c) Shenandoah Cave Amphipod (Stygobromus gracilipes).

(4) Insects.

(a) Northeastern Beach Tiger-Beetle (Cicindela dorsalis);

(b) Puritan Tiger-Beetle (Cicindela puritana);

(c) Six-Banded Longhorn-Beetle (Dryobius sexnotatus);

(d) Regal Fritillary (Speyeria idalia).

(5) Fish. Maryland Darter (Etheostoma sellare).

(6) Amphibians.

(a) Eastern Tiger Salamander (Ambystoma tigrinum);

(b) Green Salamander (Aneides aeneus);

(c) Hellbender (Cryptobranchus alleganiensis);

(d) Eastern Narrow-Mouthed Toad (Gastrophryne carolinensis).

(7) Reptiles.

(a) Atlantic Leatherback Turtle (Dermochelys coriacea);

(b) Atlantic Hawksbill Turtle (Eretmochelys imbricata);

(c) Northern Coal Skink (Eumeces anthracinus);

(d) Atlantic Ridley Turtle (Lepidochelys kempi);

(e) Mountain Earth Snake (Virginia valeriae pulchra).

(8) Birds.

(a) Piping Plover (Charadrius melodus);

(b) Peregrine Falcon (Falco peregrinus);

(c) Bald Eagle (Haliaeetus leucocephalus);

(d) Loggerhead Shrike (Lanius ludovicianus);

(e) Bewick's Wren (Thryomanes bewickii).

(9) Mammals.

(a) Black Right Whale (Balaena glacialis);

(b) Sei Whale (Balaenoptera borealis);

(c) Blue Whale (Balaenoptera musculus);

(d) Finback Whale (Balaenoptera physalus);

(e) Humpback Whale (Megaptera novaeangliae);
(f) Indiana Bat (Myotis sodalis);
(g) Sperm Whale (Physeter catodon);
(h) Delmarva Fox Squirrel (Sciurus niger cinereus);
(i) Water Shrew (Sorex palustris).

.05 Endangered Species of Plants.

A. Listing Criteria. The following factors shall be considered for listing a plant species as endangered:

(1) Whether only a few populations are known in Maryland and they cover only a small portion of land;

(2) Whether the species is restricted to a minimal geographic area;

(3) Whether the species has experienced a substantial decline in Maryland, and if the decline continues, the species' extirpation from Maryland is imminent;

(4) Whether the species' essential habitat has been rapidly lost and that loss is likely to continue;

(5) Whether the species' biology makes it highly susceptible to changes in its environment; or

(6) Whether the species' essential habitat is easily altered by even relatively minor activities.

B. Permits. The permit procedures to be followed are set forth in Regulation .03. The following apply:

(1) Permits shall be issued only for scientific research designed to enhance the recovery of the species or population;

(2) A person may not:

(a) Export, possess, process, sell, offer for sale, deliver, carry, transport, or ship by any means any endangered plant species without a special permit from the Director, the federal government, or another state government;

(b) Take any endangered plant species from State property except by special permit from the Director; and

(c) Take any endangered plant species from private property without the written permission of the landowner.

C. The following plant species are considered endangered throughout Maryland unless a smaller range is indicated:

(1) Sensitive Joint-Vetch (Aeschynomene virginica);
(2) Sandplain Gerardia (Agalinis acuta);
(3) (Agalinis fasciculata);
(4) Thread-Leaved Gerardia (Agalinis setacea);
(5) Woolly Three-Awn (Aristida lanosa);
(6) Virginia Heartleaf (Asarum virginicum);
(7) Red Milkweed (Asclepias rubra);
(8) Serpentine Aster (Aster depauperatus);
(9) Tickseed Sunflower (Bidens coronata);
(10) Small Beggar-Ticks (Bidens discoidea);
(11) (Bidens mitis);
(12) Aster-Like Boltonia (Boltonia asteroides);
(13) Grass-Pink (Calopogon tuberosus);
(14) Long's Bittercress (Cardamine longii);
(15) Barratt's Sedge (Carex barrattii);
(16) Buxbaum's Sedge (Carex buxbaumi);
(17) Coast Sedge (Carex exilis);
(18) Giant Sedge (Carex gigantea);
(19) (Carex joorii);
(20) Dark Green Sedge (Carex venusta);
(21) Marsh Wild Senna (Cassia fasciculata var. macrosperma);
(22) Spreading Pogonia (Cleistes divaricata);
(23) Wrinkled Jointgrass (Coelorachis rugosa);
(24) Wister's Coralroot (Corallorhiza wisteriana);
(25) Fraser's Sedge (Cymophyllus fraseri);
(26) Smooth Tick-Trefoil (Desmodium laevigatum);
(27) Linear-Leaved Tick-Trefoil (Desmodium lineatum);
(28) Cream-Flowered Tick-Trefoil (Desmodium ochroleucum);
(29) Rigid Tick-Trefoil (Desmodium rigidum);
(30) Pineland Tick-Trefoil (Desmodium strictum);
(31) Pink Sundew (Drosera capillaris);
(32) Log Fern (Dryopteris celsa);
(33) Knotted Spikerush (Eleocharis equisetoides);
(34) Black-Fruited Spikerush (Eleocharis melanocarpa);
(35) Robbins' Spikerush (Eleocharis robbinsii);
(36) Water Horsetail (Equisetum fluviatile);
(37) Bent-Awn Plumegrass (Erianthus contortus);
(38) Parker's Pipewort (Eriocaulon parkeri);
(39) White-Bracted Boneset (Eupatorium leucolepis);
(40) Darlington's Spurge (Euphorbia purpurea);
(41) Harper's Fimbristylis (Fimbristylis perpusilla);
(42) Box Huckleberry (Gaylussacia brachycera);
(43) Swamp-Pink (Helonias bullata);
(44) Featherfoil (Hottonia inflata);
(45) Creeping St. John's-Wort (Hypericum adpressum);
(46) Coppery St. John's-Wort (Hypericum denticulatum);
(47) Dwarf Iris (Iris verna);
(48) Red-Root (Lachnanthes caroliana);
(49) (Leersia hexandra);
(50) Star Duckweed (Lemna trisulca);
(51) Downy Bushclover (Lespedeza stuevei);
(52) Mudwort (Limosella subulata);
(53) Sandplain Flax (Linum intercursum);
(54) Pondspice (Litsea aestivalis);
(55) Canby's Lobelia (Lobelia canbyi);
(56) (Ludwigia glandulosa);
(57) Hairy Ludwigia (Ludwigia hirtella);
(58) Sessile-Leaved Water-Horehound (Lycopus amplectens);
(59) Erect Water-Hyssop (Mecardonia acuminata);
(60) Torrey's Dropseed (Muhlenbergia torreyana);
(61) Low Water-Milfoil (Myriophyllum humile);
(62) Floating-Heart (Nymphoides cordata);
(63) Virginia False-Gromwell (Onosmodium virginianum);
(64) Canby's Dropwort (Oxypolis canbyi);
(65) Tall Swamp Panicgrass (Panicum scabriusculum);
(66) Wright's Panicgrass (Panicum wrightianum);
(67) Kidneyleaf Grass-of-Parnassus (Parnassia asarifolia);
(68) Yellow Nailwort (Paronychia virginica);
(69) Walter's Paspalum (Paspalum dissectum);
(70) Canby's Mountain Lover (Paxistima canbyi);
(71) Blue Scorpion-Weed (Phacelia ranunculacea);
(72) Jacob's-Ladder (Polemonium van-bruntiae);
(73) Cross-Leaved Milkwort (Polygala cruciata);
(74) Dense-Flowered Knotweed (Polygonum densiflorum);
(75) Slender Rattlesnake-Root (Prenanthes autumnalis);
(76) Alleghany Plum (Prunus alleghaniensis);
(77) Short-Beaked Baldrush (Psilocarya nitens);
(78) Long-Beaked Baldrush (Psilocarya scirpoides);
(79) Harperella (Ptilimnium nodosum);
(80) One-Sided Pyrola (Pyrola secunda);
(81) Yellow Water-Crowfoot (Ranunculus flabellaris);
(82) (Rhynchosia tomentosa);
(83) Short-Bristled Hornedrush (Rhynchospora corniculata);
(84) Thread-Leaved Beakrush (Rhynchospora filifolia);
(85) Grass-Like Beakrush (Rhynchospora globularis);

(86) Clustered Beakrush (Rhynchospora glomerata);
(87) Drowned Hornedrush (Rhynchospora inundata);
(88) Torrey's Beakrush (Rhynchospora torreyana);
(89) Sacciolepis (Sacciolepis striata);
(90) Sessile-Fruited Arrowhead (Sagittaria rigida);
(91) Sandbar Willow (Salix exigua);
(92) Canby's Bulrush (Scirpus etuberculatus);
(93) Water Clubrush (Scirpus subterminalis);
(94) Slender Nutrush (Scleria minor);
(95) Pink Bog-Button (Sclerolepis uniflora);
(96) Halberd-Leaved Greenbrier (Smilax pseudo-china);
(97) Red-Berried Greenbrier (Smilax walteri);
(98) Showy Goldenrod (Solidago speciosa);
(99) Two-Flowered Bladderwort (Utricularia biflora);
(100) Fringed Yelloweyed-Grass (Xyris fimbriata);
(101) Small's Yelloweyed-Grass (Xyris smalliana).

.06 Endangered Extirpated Species.

A. Listing Criteria. The following factors shall be considered for listing a species as endangered extirpated:

(1) The species was once a viable component of the State's flora and fauna and there are no records of it naturally occurring in Maryland after 1950; or

(2) The species was once a viable component of the State's flora or fauna and recent scientific investigations have documented the loss of its habitat or disappearance of its population in Maryland.

B. Permits. Upon the discovery of a viable, naturally occurring population of any species in §§C — H, that species will be considered an endangered species and shall require the permits and conditions afforded to that status.

C. The following plant species are considered endangered extirpated throughout Maryland:

(1) Pine-Barren Gerardia (Agalinis virgata);
(2) Rough-Stemmed Wheatgrass (Agropyron trachycaulum);
(3) Golden Colicroot (Aletris aurea);
(4) Beach Pigweed (Amaranthus pumilus);
(5) Canada Anemone (Anemone canadensis);
(6) Great Angelica (Angelica atropurpurea);
(7) Filmy Angelica (Angelica triquinata);
(8) Arethusa (Arethusa bulbosa);
(9) Lake Cress (Armoracia aquatica);
(10) Bradley's Spleenwort (Asplenium bradleyi);
(11) Steele's Aster (Aster concinnus);
(12) Silvery Aster (Aster concolor);
(13) Showy Aster (Aster spectabilis);
(14) (Axonopus furcatus);
(15) Mat-Forming Water-Hyssop (Bacopa stragula);
(16) Sea Ox-Eye (Borrichia frutescens);
(17) Triangle Grape-Fern (Botrychium lanceolatum);
(18) Leathery Grape-Fern (Botrychium multifidum);
(19) Small Grape-Fern (Botrychium simplex);
(20) Blue-Hearts (Buchnera americana);
(21) Great Indian-Plantain (Cacalia muhlenbergii);
(22) (Carex careyana);
(23) Cypress-Knee Sedge (Carex decomposita);
(24) (Carex foenea);
(25) (Carex glaucescens);
(26) Lake-Bank Sedge (Carex lacustris);
(27) New England Sedge (Carex novae-angliae);
(28) Variable Sedge (Carex polymorpha);
(29) (Carex striatula);
(30) (Carex tenera);
(31) (Carex tetanica);
(32) Wood's Sedge (Carex woodii);
(33) Chaffweed (Centunculus minimus);
(34) Purple Clematis (Clematis occidentalis);
(35) Curly-Heads (Clematis ocroleuca);
(36) Rose Coreopsis (Coreopsis rosea);
(37) Pygmyweed (Crassula aquatica);
(38) Hazel Dodder (Cuscuta coryli);
(39) (Cyperus plukenetii);
(40) Showy Ladies'-Slipper (Cypripedium reginae);
(41) Few-Flowered Tick-Trefoil (Desmodium pauciflorum);
(42) (Digitaria villosa);
(43) (Eleocharis halophila);
(44) Three-Ribbed Spikerush (Eleocharis tricostata);
(45) Downy Willowherb (Epilobium strictum);
(46) Seven-Angled Pipewort (Eriocaulon septangulare);
(47) Tall Rattlesnake Master (Eryngium yuccifolium);
(48) (Festuca paradoxa);
(49) Pumpkin Ash (Fraxinus profunda);
(50) Small Bedstraw (Galium trifidum);
(51) (Gentiana puberula);
(52) Sea Milkwort (Glaux maritima);
(53) Sharp-Scaled Mannagrass (Glyceria acutiflora);
(54) Dwarf Rattlesnake-Plantain (Goodyera repens);
(55) Tesselated Rattlesnake-Plantain (Goodyera tesselata);
(56) (Gratiola ramosa);
(57) Rough Heuchera (Heuchera villosa);
(58) Sea-Beach Sandwort (Honkenya peploides);
(59) Nits-and-Lice (Hypericum drummondii);
(60) Clasping-Leaved St. John's-Wort (Hypericum gymnanthum);
(61) Great St. John's-Wort (Hypericum pyramidatum);
(62) Bloodleaf (Iresine rhizomatosa);
(63) Small Whorled Pogonia (Isotria medeoloides);
(64) Small-Headed Rush (Juncus brachycephalus);
(65) New Jersey Rush (Juncus caesariensis);
(66) (Juncus megacephalus);
(67) Bayonet Rush (Juncus militaris);
(68) Torrey's Rush (Juncus torreyi);
(69) Common Juniper (Juniperus communis);
(70) Narrow-Leaved Pinweed (Lechea tenuifolia);
(71) Catchfly-Grass (Leersia lenticularis);
(72) Long-Awned Diplanche (Leptochloa fascicularis);
(73) Fall Witchgrass (Leptoloma cognatum);
(74) Scaly Blazing-Star (Liatris squarrosa);
(75) American Lovage (Ligusticum canadense);
(76) American Frog's-Bit (Limnobium spongia);
(77) Twinflower (Linnaea borealis);
(78) Florida Yellow Flax (Linum floridanum);
(79) Heartleaf Twayblade (Listera cordata);
(80) (Lobelia glandulosa);
(81) Carolina Clubmoss (Lycopodium carolinianum);
(82) Large-Flowered Barbara's Buttons (Marshallia grandiflora);
(83) (Matelea decipiens);
(84) (Matelea obliqua);
(85) Broad-Leaved Bunchflower (Melanthium latifolium);
(86) Nuttall's Micranthemum (Micranthemum micranthemoides);
(87) Evergreen Bayberry (Myrica heterophylla);
(88) Thread-Like Naiad (Najas gracillima);
(89) Northern Panicgrass (Panicum boreale);
(90) May Grass (Pharlaris caroliniana);
(91) (Phlox carolina);

(92) (Phlox glaberrima);
(93) Mountain Phlox (Phlox latifola);
(94) Downy Phlox (Phlox pilosa);
(95) Heart-Leaved Plantain (Plantago cordata);
(96) Slender Plantain (Plantago pusilla);
(97) (Poa saltuensis);
(98) Clammyweed (Polansia dodecandra);
(99) America Ipecac (Porteranthus stipulatus);
(100) Redheadgrass (Potamogeton richardsonii);
(101) Robbins' Pondweed (Potamogeton robbinsii);
(102) Flatstem Pondweed (Potamogeton zosteriformis);
(103) Pale Mannagrass (Puccinellia pallida);
(104) Awned Mountain-Mint (Pycnanthemum setosum);
(105) Greenish-Flowered Pyrola (Pyrola virens);
(106) (Ranunculus hederaceus);
(107) Bristly Crowfoot (Ranunculus pensylvanicus);
(108) Awned Meadow-Beauty (Rhexia aristosa);
(109) Tiny-Headed Beakrush (Rhynchospora microcephala);
(110) Few-Flowered Beakrush (Rhynchospora rariflora);
(111) Wild Black Currant (Ribes americanum);
(112) Hairy Wild Petunia (Ruellia humilus);
(113) Pursh's Ruellia (Ruellia purshiana);
(114) Slender Marsh Pink (Sabatia campanulata);
(115) Lance-Leaved Sabatia (Sabatia difformis);
(116) Slender Arrowhead (Sagittaria teres);
(117) Shining Willow (Salix lucida);
(118) (Salvia urticifolia);
(119) Hard-Stem Bulrush (Scirpus acutus);
(120) Torrey's Clubrush (Scirpus torreyi);
(121) Shining Nutrush (Scleria nitida);
(122) Veined Skullcap (Scutellaria nervosa);
(123) Small Skullcap (Scutellaria parvula);
(124) Sand Blueeyed-Grass (Sisyrinchium arenicola);
(125) Mountain Goldenrod (Solidago roanensis);
(126) Rock Goldenrod (Solidago rupestris);
(127) (Sorghastrum elliottii);
(128) Indian-Pink (Spigelia marilandica);
(129) (Stachys aspera);
(130) Trailing Stitchwort (Stellaria alsine);
(131) (Tephrosia spicata);
(132) Coastal False Asphodel (Tofieldila racemosa);
(133) Auricled Gerardia (Tomanthera auriculata);
(134) Buffalo Clover (Trifolium reflexum);
(135) (Triglochin striatum);
(136) Tall Cornsalad (Valerianella umbilicata);
(137) Purple Vetch (Vicia americana);
(138) Wolffiella (Wolffiella floridana).

D. The following fish species are considered endangered extirpated throughout Maryland:
(1) Glassy Darter (Etheostoma vitreum);
(2) Stripeback Darter (Percina notograma);
(3) Trout-Perch (Percopsis omiscomaycus).

E. The following amphibian species is considered endangered extirpated throughout Maryland: Greater Siren (Siren lacertina).

F. The following reptile species is considered endangered extirpated throughout Maryland: Rainbow Snake (Farancia erytrogramma).

G. The following bird species are considered endangered extirpated throughout Maryland:
(1) Bachman's Sparrow (Aimophila aestivalis);
(2) Ivory-Billed Woodpecker (Campephilus principalis);
(3) Lark Sparrow (Chondestes grammacus);
(4) Eskimo Curlew (Numenius borealis);
(5) Red-Cockaded Woodpecker (Picoides borealis);
(6) Roseate Tern (Sterna dougallii);
(7) Greater Prairie Chicken (Tympanuchus cupido).

H. The following mammal species are considered endangered extirpated throughout Maryland:
(1) Gray Wolf (Canis lupus);
(2) American Elk (Cervus canadensis);
(3) Eastern Mountain Lion (Felis concolor);
(4) Snowshoe Hare (Lepus americanus);
(5) Marten (Martes americana).

.07 Threatened Species of Wildlife, Reptiles, Amphibians, Mollusks, Crustaceans, and Finfish.

A. Listing Criteria. The following factors shall be considered for listing species other than plant species as threatened:

(1) Whether the species has experienced a steady, substantial decline in Maryland, and if the decline continues, the species is likely to become endangered;

(2) Whether there has been steady, widespread loss of the species' essential habitat; or

(3) Whether protection measures already taken have significantly reduced the chances of the species becoming extirpated from Maryland.

B. Permits. The permit procedures to be followed are set forth in Regulation .03. The following apply:

(1) Except by special permit from the Director a person may not take, export, possess, process, sell, offer for sale, deliver, carry, transport or ship by any means any threatened wildlife, reptile, amphibian, mollusk, crustacean or finfish species.

(2) Permits to take threatened species shall be issued only for:

(a) Scientific research designed to enhance the recovery of the species or population;

(b) Other valid scientific research; or

(c) Educational purposes designed to further public awareness regarding the species.

(3) Incidental taking of a threatened wildlife, reptile, amphibian, mollusk, crustacean or finfish species shall be allowed only after the Director has been notified 30 days in advance of the change in land use or other action by a private landowner which shall result in the incidental taking. The Maryland Forest, Park and Wildlife Service, upon receipt of the application for an incidental taking permit from the landowner, shall within 30 days either:

(a) Take action to salvage the threatened species; or

(b) Issue to the landowner an incidental taking permit authorizing the landowner to proceed with the action which will result in the incidental taking of the species.

C. The following species are considered to be threatened throughout Maryland unless a smaller range is indicated:

(1) Crustaceans. Allegheny Cave Amphipod (Stygobromus allegheniensis).

(2) Insects. Rare Skipper (Problema bulenta).

(3) Reptiles.
(a) Atlantic Loggerhead Turtle (Caretta caretta);
(b) Atlantic Green Turtle (Chelonia mydas).

(4) Birds. Black Skimmer (Rynchops niger).

.08 Threatened Species of Plants.

A. Listing Criteria. The following factors shall be considered for listing a plant species as threatened:

(1) Whether the species has experienced a substantial decline in Maryland, and if the decline continues, the species is likely to become endangered;

(2) Whether there has been a steady widespread loss of the species' essential habitat; or

(3) Whether the species has been listed as endangered but it has been shown that protection measures taken have significantly reduced the chances of the species becoming extirpated from Maryland.

B. Permits. The permit procedures to be followed are set forth in Regulation .03. The following apply:

(1) Permits shall be issued only for scientific research designed to enhance the recovery of the species or population.

(2) A person may not:

(a) Export, possess, process, sell, offer for sale, deliver, carry, transport, or ship by any means any threatened plant species except by a special permit from the Director;

(b) Take any threatened plant species from State property except by special permit from the Director; and

(c) Take any threatened plant species from private property without the written permission of the landowner.

C. The following plant species are considered threatened throughout Maryland unless a smaller range is indicated:

(1) Single-Headed Pussytoes (Antennaria solitaria);
(2) Giant Cane (Arundinaria gigantea);
(3) Glade Fern (Athyrium pycnocarpon);
(4) Maryland Bur-Marigold (Bidens bidentoides);
(5) Button Sedge (Carex bullata);
(6) Shoreline Sedge (Carex hyalinolepis);
(7) Inflated Sedge (Carex vesicaria);
(8) Leatherleaf (Chamaedaphne calyculata);
(9) Red Turtlehead (Chelone obliqua);
(10) Goldenseal (Hydrastis canadenis);
(11) Deciduous Holly (Ilex decidua);
(12) Narrow-Leaved Bushclover (Lespedeza angustifolia);
(13) Wild Lupine (Lupinus perennis);
(14) Climbing Fern (Lygodium palmatum);
(15) American Lotus (Nelumbo lutea);
(16) Red Bay (Persea borbonia);
(17) Pale Green Orchis (Platanthera flava);
(18) Purple Fringeless Orchis (Platanthera peramoena);
(19) Spongy Lophotocarpus (Sagittaria calycina);
(20) Engelmann's Arrowhead (Sagitttaria engelmanniana);
(21) Northern Pitcher-Plant (Sarracenia purpurea);
(22) Virginia Mallow (Sida hermaphrodita);
(23) Featherbells (Stenanthium gramineum);
(24) Mountain Pimpernel (Taenidia montana);
(25) Steele's Meadowrue (Thalictrum steeleanum);
(26) Kate's-Mountain Clover (Trifolium virginicum);
(27) Dwarf Trillium (Trillium pusillum);
(28) Purple Bladderwort (Utricularia purpurea).

.09 Species in Need of Conservation.

A. Listing Criteria. The following factors shall be considered for listing a species as in need of conservation:

(1) Whether the population is limited or declining within Maryland; and

(2) Whether the species may become threatened in the foreseeable future, if current trends or conditions persist.

B. Permits. The permit procedures to be followed are set forth in Regulation .03. The following apply:

(1) Except by special permit, a person may not take, export, possess, process, sell, offer for sale, deliver, carry, transport, or ship by any means any species in need of conservation.

(2) Permits to take species in need of conservation shall be issued only for:

(a) Scientific research designed to enhance the recovery of the species or population;

(b) Other valid scientific research; or

(c) Educational purposes designed to further public awareness regarding the species.

(3) Incidental taking permits are not required for species in need of conservation.

C. The following species are considered to be in need of conservation throughout Maryland unless a smaller range is indicated:

(1) Insects. King's Hairstreak (Satyrium kingi).
(2) Fish. Blackbanded Sunfish (Enneacanthus chaetodon).
(3) Amphibians. Carpenter Frog (Rana virgatipes).
(4) Reptiles. Map Turtle (Graptemys geographica).
(5) Birds.
(a) Henslow's Sparrow (Ammodramus henslowii);
(b) Short-Eared Owl (Asio flammeus);
(c) American Bittern (Botaurus lentiginosus);
(d) Sedge Wren (Cistothorus platensis);
(e) Little Blue Heron (Egretta caerulea);
(f) Common Moorhen (Gallinula chloropus);
(g) American Oystercatcher (Haematopus palliatus);
(h) Least Bittern (Ixobrychus exilis);
(i) Black Rail (Laterallus jamaicensis);
(j) Swainson's Warbler (Limnothlypis swainsonii);
(k) Least Tern (Sterna antillarum).
(6) Mammals.
(a) Porcupine (Erethizon dorsatum);
(b) Bobcat (Lynx rufus);
(c) Least Weasel (Mustela nivalis);
(d) Small-Footed Bat (Myotis leibii);
(e) Southeastern Shrew (Sorex longirostris).

.10 Natural Heritage Areas.

A. Listing Criteria. In order to qualify as a natural heritage area a natural community shall:

(1) Contain one or more threatened or endangered species or wildlife species in need of conservation;

(2) Be a unique blend of geological, hydrological, climatological or biological features; and

(3) Be considered to be among the best Statewide examples of its kind.

B. The Forest, Park and Wildlife Service shall prepare maps describing the location of all natural heritage areas. The maps shall be filed in the office of the Director of the Forest, Park and Wildlife Service, Department of Natural Resources, Tawes State Office Building, Annapolis, MD 21401.

C. The following areas are designated natural heritage areas:

(1) Kasecamp Shale Barrens ..... Allegany County;
(2) Maple Run ..... Allegany County;
(3) Outdoor Club Shale Barrens ..... Allegany County;
(4) Sideling Hill Creek .. Allegany, Washington County;
(5) Cypress Creek Swamp ..... Anne Arundel County;
(6) Eagle Hill Bog ..... Anne Arundel County;
(7) Upper Patuxent Marshes .. Anne Arundel, Prince George's County;
(8) Black Marsh ..... Baltimore County;
(9) Robert E. Lee Park ..... Baltimore County;
(10) Camp Roosevelt Cliffs ..... Calvert County;
(11) Cove Point Marsh ..... Calvert County;
(12) Flag Ponds ..... Calvert County;
(13) Randle Cliff Beach ..... Calvert County;

(14) Grove Neck ..... Cecil County;
(15) Plum Creek ..... Cecil County;
(16) Allen's Fresh ..... Charles County;
(17) Chicamuxen Creek ..... Charles County;
(18) Popes Creek ..... Charles County;
(19) Upper Nanjemoy Creek ..... Charles County;
(20) Chicone Creek ..... Dorchester County;
(21) Mill Creek ..... Dorchester County;
(22) Savanna Lake ..... Dorchester County;
(23) Upper Blackwater River ..... Dorchester County;
(24) Upper Nanticoke River, Marshes and Swamps ..... Dorchester, Wicomico County;
(25) High Rock ..... Garrett County;
(26) Toliver Run ..... Garrett County;
(27) Great Falls ..... Montgomery County;
(28) Irish Grove ..... Somerset County;
(29) Hickory Point Cypress Swamp ... Worcester County;
(30) Lower Nassawango Creek ..... Worcester County;
(31) Mattaponi ..... Worcester County;
(32) North Sinepuxent Bay Dunes .... Worcester County.

.11 Violation of Regulations.

Violation of these regulations is a misdemeanor punishable under Natural Resources Articles, §§10-2A-07, 10-1101 et seq., 4-2A-07, and 4-1201 et seq., Annotated Code of Maryland.

TORREY C. BROWN, M.D.
Secretary of Natural Resources

Subtitle 05 WATER RESOURCES ADMINISTRATION

08.05.03 Construction on Non-Tidal Waters and Floodplains

Authority: Natural Resources Article §§8-801 thru 8-814, Annotated Code of Maryland

Notice of Proposed Action
[87-060-P]

The Secretary of Natural Resources proposes to amend Regulation **.03** under **COMAR 08.05.03 Construction on Non-Tidal Waters and Floodplains.** The purpose of this amendment is to delete certain exemptions for projects in environmentally sensitive areas of the State's waterways.

Estimate of Economic Impact

I. Summary of Economic Impact. Natural Resources Article, §8-803, Annotated Code of Maryland, requires that any person wishing to change in any manner the course, current, or cross-section of any stream or body of water, first obtain a permit from the Department. Permits are obtained following the submittal of an application and accompanying documentation prescribed in **COMAR**. Regulations governing these activities have existed since the 1930's and have been amended from time-to-time in order to keep pace with goals and objectives of the Department of Natural Resources. The regulatory changes proposed at this time are necessary in order to incorporate those items the General Assembly recognized as necessary in order to preserve and enhance the quality of the State's water resources as they relate to the Chesapeake Bay.

II. Types of Economic Impacts.	Revenue (+) Expense (−)	Magnitude
A. On issuing agency: The Department expects an increase in workload as a result of the deletion of certain exemptions.	(−)	$141,000
B. On other State or local agencies affected: Additional cost to prepare submittals to the Department for review and approval.	(−)	Indeterminable. Depends on amount of applications received from other agencies.
C. On regulated industries or trade groups: 1. Additional cost to prepare engineered submittals to the Department for review and approval.	(−)	$500,000
2. Cost to persons obtaining a permit due to processing time.	(−)	$87,250
3. Time delay for those projects that require an administrative opportunity for a public hearing.	(−)	$105,000
D. On other industries or trade groups affected: Certain delays in starting the intended works may be incurred to the permit applicant as a result of the regulatory process. These delays could be borne by trade groups or subcontractors as a result of scheduling problems.	(−)	Determined on a case-by-case basis but could result in lost earnings to trade groups.
E. Direct and indirect effects on public:	(+)	Could be very large.

III. Assumptions. (Identified by Impact Letter and Number from Section II):

A. A 20 percent increase in applications received is anticipated which would bring the total number of files reviewed by WRA to 1,200 yearly. Each engineer reviews an average of 174 files per year and an inspector inspects an average of 72 waterway permit projects yearly. Based upon the current staff available, it is projected that 1 engineering and 2 inspector positions will be required.

B. An estimated expense to other State and local agencies would be based upon the time and material required to prepare permit applications.

C.1. Given an estimated increase in permit applications of 200 per year, an estimated project cost of $25,000, and an average application preparation fee of 10 percent of the project cost.

C.2. This cost is based on a minimum time to obtain a permit of one month and interest of 12 percent per annum on an average project cost of $25,000.

C.3. This cost is based on a minimum time delay of 2 additional months in permit processing time due to an expected 50 percent increase in the number of applications received. Also included is an average hearing notice publication cost of $100 per permit.

D. Depending on the amount of detailed submittals required for a particular project, time delays will result to the construction industry. In addition, improper implementation of the construction drawings, which cannot be anticipated, can result in time delays to the contractor.