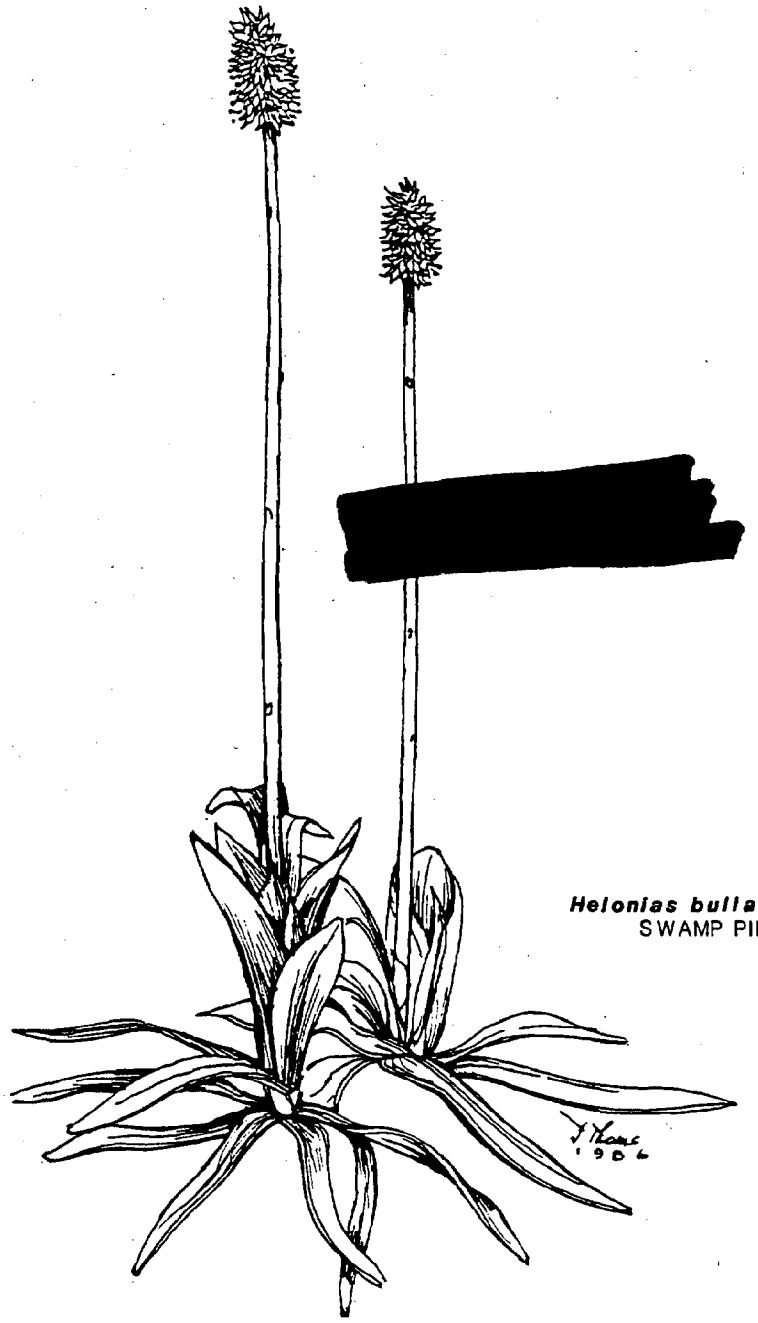
MARYLAND
NATURAL
HERITAGE
PROGRAM

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



Helonias bullata
SWAMP PINK

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

FINAL REPORT

SUBMITTED TO:

Coastal Resources Division
Tidewater Administration

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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 Federal Coastal Zone Management Act's requirement to designate Geographic Areas of Particular Concern (GAPC) and Areas for Preservation and Restoration (APR). 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." This project covers the Coastal Plain Counties of Maryland excluding land within the Chesapeake Bay Critical Area.

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 and Western Shores.

By January 1987, the Coastal Resources Division and the Maryland Natural Heritage Program established specific objectives to accomplish the first phase of this project. These objectives were:

1. identify criteria for the selection of significant plant and wildlife habitat areas;

2. undertake field inventory of areas identified in <u>existing</u> studies and data files of the Maryland Natural Heritage Program that are likely to be of ecological significance, in order to identify species and habitats

associated with each site;

3. undertake field inventory of potentially significant habitats not previously identified in the database of the Maryland Natural Heritage Program in order to determine if rare species or habitats are associated with these sites;

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

5. determine protection boundaries for each site including needed buffer areas; and

6. collect other locational information needed in order to implement management mechanisms for each 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.

In December 1987, the Natural Heritage Program reported on protection areas identified on Maryland's Eastern Shore from Kent County south. With financial assistance from the Coastal Resources Division, Baltimore and Harford Counties hired personnel in 1987 and 1988 to identify protection areas in their counties. In 1988, Prince Georges County funded a staff member (with financial assistance from the Coastal Resources Division) to identify protection areas on private property. Therefore, the Natural Heritage Program did not include Baltimore and Harford Counties in its survey and report of protection areas on the Western Shore, and focused only on public land in Prince Georges County.

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 survey, 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:

Sites identified for inventory were located throughout the Coastal Plain Counties excluding the Chesapeake Bay Critical Area. 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 rare species potentially inhabiting the sites could be identified accurately.

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 rare species could be accurately identified if found.

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 two wetland communities;

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

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

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

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 or Atlantic White Cedar.

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 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 the following criteria which were assessed during the field inventory:

1. Site contains species that 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.

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

SITE PROTECTION IMPLEMENTATION METHODS:

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 confer varying degrees of protection security and of landowner control. They range from designations that afford no legal protection to acquisition by a conservation organization. The following list describes the available options and the degree of protection that they provide. Because the significance and consequences of each mechanism vary, some sites may be protected by a combination of methods.

Natural area protection may be accomplished by several 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 that 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 protect 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 or public agency. 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 the property until 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 08.03.08 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 1989. These tasks, described below, involve the further identification and protection of significant habitats within the coastal zone.

In 1989 the focus of this project will be the protection of significant habitats identified in 1987 and 1988. Efforts were initiated in 1988 to protect significant habitats imminently threatened by development or other human-induced habitat alterations. These efforts will be expanded in 1989 to include additional significant habitats of highest priority for protection. Substantial effort will be required to protect each site, and this task should continue into the 1990s.

Next year the methodology developed in this project will be used to continue to identify significant plant and wildlife habitats in the Coastal Plain of Maryland. Protection Area Summaries identical in format to those prepared in 1987 and 1988 will be completed for significant habitats. These sites will be candidates for protection 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 is 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 - States the major reasons for protecting the site. The features of greatest ecological significance are described, such as the presence of rare species or unique habitat.

OTHER SIGNIFICANCE AND VALUES - This section describes other important aspects of the protection area.

The value of the protection area to wildlife and for ecosystem maintenance may 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 the natural processes that sustain the ecosystem.

Many of the proposed protection areas are adjacent to or part of designated management areas. They may overlap with or abut State Forests or Parks, State Scenic Rivers, Natural Heritage Areas or Nature Conservancy preserves. 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. Land within the Chesapeake Bay Critical Area is not included within the boundaries of the protection areas.

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 are included as buffer. Surrounding forest may be designated for many reasons. These include maintaining canopy cover to prevent the invasion of weedy or non-native species, stabilizing soils to prevent sedimentation of waterways, filtering out chemicals or excess nutrients, and maintaining hydrology.

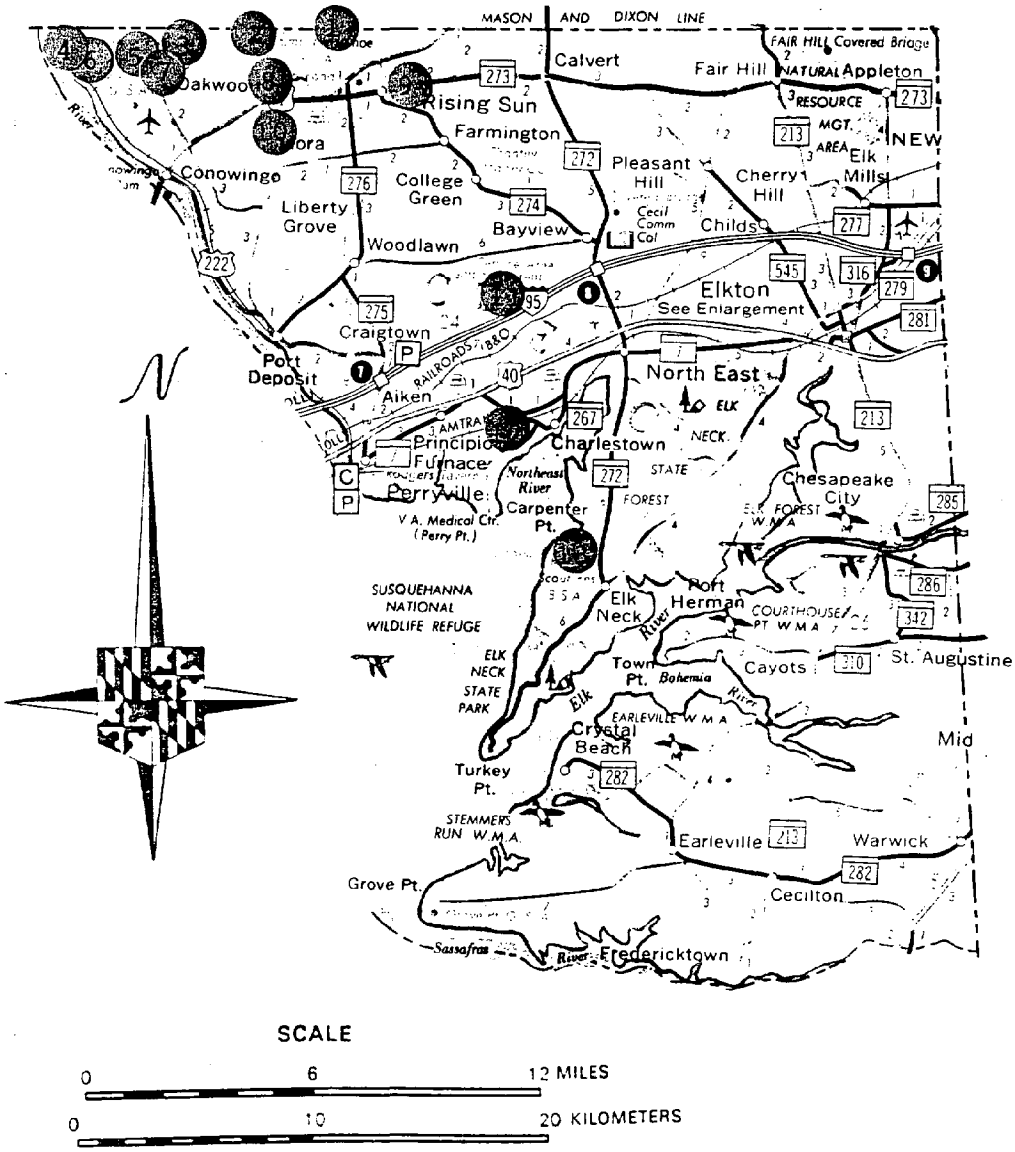
The delineation of buffers varies depending on the type of habitat, surrounding land use, habitat requirements of the rare species, local hydrology, and possible future threats. Reasonable and effective buffers were determined after careful consideration of these factors.

Maps (with a scale of 1:24000) 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 natural community is discussed and its relationship to surrounding communities is described. Often 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 Summary except when no common name is available. When a specific species is named, the common name is capitalized.

CECIL COUNTY



● = Locations of Protection Areas of significant habitat. Sites are numbered in order from north to south. (See page 13 for Protection Area names corresponding to numbers given above.)

CECIL COUNTY: Protection Area Locations

Protection Area	Site # on County Map
Bald Friar Ravine	6
Camp Rodney Swamp	13
Cecil Bog	7
Charlestown West Seeps	12
Goat Hill Serpentine Glade	1
Horseshoe Woods	8
Log Cabin Sedge Meadow	5
Octoraro Slopes	2
Richardsmere Powerline	10
Rock Springs Powerline	3
Stone Run Millpond	9
Whitaker Swamp	11
Wildcat Ravine	4

Site # on County Map	Protection Area
1	Goat Hill Serpentine Glade
2	Octoraro Slopes
3	Rock Springs Powerline
4	Wildcat Ravine
5	Log Cabin Sedge Meadow
6	Bald Friar Ravine
7	Cecil Bog
8	Horseshoe Woods
9	Stone Run Millpond
10	Richardsmere Powerline
11	Whitaker Swamp
12	Charlestown West Seeps
13	Camp Rodney Swamp

PROTECTION AREA SUMMARY

Protection Area Name: Bald Friar Ravine

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

The lower slopes and stream banks of this ravine support a lush deciduous forest with an exceptionally diverse herbaceous layer. The soil is rich in nutrients and much less acidic than most soils of this county. An outstanding display of spring wildflowers thrives in this rich, loamy soil. Because the slopes are extremely steep and stony, the ravine is unsuitable for cultivation and there is little evidence of recent disturbance.

A rare species and a rare form of a fairly common species grow in the luxuriant herbaceous layer of the forest. The rare species usually inhabits rich, cool forests in the mountains. This may be the eastern-most occurrence of this species in Maryland, and it is the only reported site in Cecil County.

OTHER VALUES AND SIGNIFICANCE:

The rich, cool slopes of the ravine in conjunction with the adjacent forest provide excellent feeding and breeding habitat for migratory songbirds. Several species of warblers were observed during the spring field survey.

The marsh and pond at the mouth of the ravine provide habitat for amphibians.

Local residents fish in the pond.

THREATS AND MANAGEMENT NEEDS:

Threats

Logging is the greatest threat to this forested ravine. The increase in available sunlight created by cutting trees would dry the soil and favor the growth of non-native, weedy species to the exclusion of the shade-loving native plants. Soil erosion caused by logging on the steep slopes would prohibit the regrowth of the luxuriant herbaceous layer. Portions of the adjacent uplands that were cleared less than 50 years ago are overgrown with non-native species such as Japanese Honeysuckle and Henbit. The herbaceous layer in these areas includes only a small fraction of

the species that inhabit Bald Friar Ravine. The rare species do not grow in the areas recently cleared.

Management Needs

Logging or clearing of the forest should not occur within the protection area.

The encroachment of weedy species should be monitored. Based upon the results of monitoring, it may be decided that weedy species should be controlled in order to preserve the rare species.

BOUNDARY RECOMMENDATIONS:

The protection area boundary incorporates the ravine, a forested buffer on the adjacent uplands, and a forested buffer upstream along the stream in order to protect water quality and reduce the potential for erosion and encroachment of weedy species.

SITE DESCRIPTION SUMMARY:

Tulip Tree dominates the ravine's moist slopes within this 35 acre protection area. Bladdernut and Pawpaw are abundant in the understory. Blue Cohosh and May-apple dominate the herbaceous layer in a few areas, but generally the herbaceous layer is so diverse that no species is dominant. Among the many herbaceous species are Rue Anemone, Black Snakeroot, and Bloodroot. Near the remains of a small building, Periwinkle and Japanese Honeysuckle are abundant. An old, overgrown road leads from the upland to the site of this old building.

The upland forest adjacent to the ravine is dominated by oaks with patches of Pawpaw in the understory. Wild Sarsaparilla is the most abundant herbaceous species, but the herbaceous cover is not well-developed. Japanese Honeysuckle is abundant throughout the dry uplands and on the upper portion of the south-facing slope of the ravine.

The small stream at the base of the ravine is a tributary of the Susquehanna River. The stream flows through culverts under a railroad bank just before entering the Susquehanna. This restriction in flow created a small pond along the railroad bank.

Prepared by: Katharine A. McCarthy

Date: December 1988

PROTECTION AREA SUMMARY

Protection Area Name: Camp Rodney Swamp

County: Cecil USGS Quad: North East

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This freshwater wetland complex is unusual both in size and species diversity. At the center of the complex is an exceptionally large shrub swamp that is dotted with emergent marsh in the wettest areas. Water level differs between the shrub swamp and the adjacent swamp forests. In addition, variations in topography and upland soil types produce hydrological differences in the swamp forests. Within the wetland complex, the great diversity of plant species may be attributed to this hydrological variation.

Sphagnum hummocks within the swamp produce acidic conditions that favor the growth of unusual plants. Two rare plant species inhabit the swamp. This is the only known site in Maryland for one of the rare plants. This rare species occurs in an emergent marsh, while the other grows in openings among shrubs.

OTHER VALUES AND SIGNIFICANCE:

With further survey, it is likely that other rare species will be found in these extensive wetlands.

The various types of wetlands in this protection area provide resting and feeding grounds for migratory waterfowl and songbirds and nesting habitat for resident waterbirds and songbirds.

The wetlands and adjacent upland provide an outstanding outdoor educational opportunity in conjunction with the natural history courses taught at this camp.

THREATS AND MANAGEMENT NEEDS:

Threats

Alteration of the hydrology of the wetland complex through drainage or filling would drastically alter the vegetation composition of this site. The rare wetland plant species would be eliminated.

The clearing of trees along the uplands would cause erosion of the slopes and sedimentation of the swamp. Changes in wetland hydrology could result. In addition, it is likely that the sediment load would destroy the rare species inhabiting the edge of the swamp.

Management Needs

In order to maintain the populations of rare species and the diversity of wetland vegetation, maintenance of the current wetland hydrological conditions is essential. Activities that would alter the wetland hydrology should not be conducted.

The cutting of trees should not occur on the slopes within 500 ft. of the wetlands. Only selective removal of trees should be permitted in the remainder of the protection area. Maintenance of the roads within the protection area should be conducted so as to minimize runoff into the wetland and its tributaries (including the runoff of sediment or of any substances applied to the surface or shoulder of the road.) It is strongly recommended that these roads remain unpaved. Disturbance of the soil and the addition of fill soil during paving would introduce numerous non-native, weedy species that would eliminate native species, could threaten the rare species, and would detract from the exceptionally natural, undisturbed character of the protection area.

Further survey of the wetland complex should be conducted.

The size and extent of the rare species populations should be determined. The size and reproductive success of these populations should be monitored.

BOUNDARY RECOMMENDATIONS:

The protection area boundary encompasses the wetland complex, adjacent slopes, and a forested buffer required to protect the water quality of the wetlands. After further survey of the vegetation on adjacent uplands, we may recommend that the boundary be extended to include additional rare species or communities if found.

SITE DESCRIPTION SUMMARY:

A large shrub swamp dominated by Red Maple lies in the center of this 432 acre protection area. Hummocks of sphagnum, Tussock Sedge, and Royal Fern surround the Red Maple saplings. Areas of emergent marsh occur within the shrub swamp and are dominated by Swamp Loosestrife. The rare species inhabit these marshes and the marshy edges of the shrub swamp. Sweet

Pepperbush and Winterberry are abundant along the edges of the shrub swamp. Forested wetlands radiate from the shrub swamp. The water regimes of these swamp forests vary with elevation and soil type, ranging from semipermanently to temporarily inundated. In general, the canopy of these forests is dominated by Sweet Gum and Red Maple. Arrowood, Sweet Gum, Sweet Pepperbush, and Winterberry are common in the wettest portions of the forested swamps. Spicebush is abundant in all other sections of these forests. Skunk Cabbage and ferns are common throughout the forested swamps.

On the slopes surrounding the swamp, the upland forest is dominated by Tulip Tree, oaks, Red Maple, and Beech. Narrow, dirt roads along the uplands cross small, perennial streams that feed the shrub swamp.

Prepared by: Katharine A. McCarthy

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Cecil Bog

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Chrome soils and the lack of woody vegetation are the two unusual ecological features of this rare wetland habitat. Although chrome soils are scattered throughout northwestern Cecil County, these soils are most often well-drained and seldom occur in wetlands. Historically, fire suppressed the growth of woody vegetation of dry chrome soils and in wetlands surrounded by these dry soils. However, the modern practice of fire suppression has nearly eliminated these open, sparsely forested habitats. Without fire, woody vegetation slowly encroaches. The rare grasses and forbs that inhabit the openings do not survive under the canopy of the invading trees and shrubs. The most open portion of Cecil Bog occurs in a powerline right-of-way. The artificial exclusion of woody vegetation from this powerline simulates the effect of fire and maintains an unforested area similar to, although not identical to, the naturally open habitats that were more common historically.

The unusual plant communities that occur on this rare habitat include four species that are rare in Maryland. These populations of rare species are vigorous. Numerous flowering and fruiting plants are present, suggesting that the populations are stable.

OTHER VALUES AND SIGNIFICANCE:

Additional rare species are likely to occur in this unusual habitat. Further survey is required to complete a species list for this site.

Deer rest and feed in the wetland and surrounding forest.

THREATS AND MANAGEMENT NEEDS:

Threats

Disturbance of the hydrology, either in the wetland or uphill where groundwater emerges to the surface, would change the vegetation composition of the wetland and destroy the rare species. Ditching, channeling, or damming the small stream that

flows at the base of the bog area could adversely effect the water regime of the wetland.

Unless implemented with consideration of the rare species requirements, powerline maintenance practices, either mowing or herbicide application, could have devastating effects on the bog and its rare species.

Logging the woods in or around the gravelly seepage slope would promote the growth of non-native, weedy species. Of greater concern, however, is the possibility that heavy machinery would rut the surface, rechannel the surface water, and essentially change the drainage pattern of the entire slope. This would alter the hydrological regime of the rare species habitat and could eliminate the rare species' populations.

There is ample evidence of heavy All Terrain Vehicle (ATV) activity in areas immediately adjacent to the bog. If these vehicles cross the wetland, they will crush the rare plants and alter the hydrology by creating new paths for the surface water to follow. Soil compaction caused by the ATVs may inhibit the germination and growth of the rare species and other wetland vegetation.

Management Needs

A management agreement with the utility company should be implemented to assure that maintenance practices are consistent with rare plant protection. Woody vegetation should be controlled by selective cutting or hand-applied, foliar herbicide. Because of potential rutting by maintenance equipment, the wetland should not be mowed.

Logging or clearing of the forest should not occur within the protection area. The use of heavy machinery and vehicles should not occur in the forested uplands and in the wetland.

Ditching, channeling, or damming the small stream at the base of the seepage slope should not occur within the protection area.

This site should be visited regularly to monitor the rare species populations and to monitor the encroachment of woody vegetation and non-native, weedy plants. The removal of woody vegetation and weedy plants may be recommended based upon the collected data.

The effects of ATV traffic should be monitored. Further restrictions of ATV traffic may be needed.

BOUNDARY RECOMMENDATIONS:

The protection area boundary incorporates the sedge meadow and adjacent gravel seepage slope, including the bog and rare species habitat. A wooded buffer is included on the southwest and northeast sides of the powerline to protect the supply of water to the wetland.

SITE DESCRIPTION SUMMARY:

The feature of greatest ecological significance in this 10 acre protection area is an unusual, non-tidal wetland including a boggy meadow and gravel seepage slope. The meadow lies in an actively maintained powerline right-of-way. The upper portion of the meadow is dominated by grasses and sedges, including four rare species. The lower portion of the meadow is a mixture of open areas and shrubby areas with Meadowsweet as the dominant woody plant. A continuous supply of moisture is supplied to both areas by groundwater seeping from the adjacent slopes. Sphagnum, orchids, and carnivorous plants are scattered throughout the meadow.

The gravel seepage slope is adjacent to the meadow but outside the actively maintained area of the powerline. This slope is dominated by Red Maple saplings and shrubs, including Smooth Alder, Common Greenbrier, and Mountain Laurel. Open areas exist along the major seepage courses where small rivulets form and carry the surface water to a small stream below. The herbaceous vegetation of these open areas is very similar to the vegetation in the boggy meadow.

The uplands adjacent to the powerline are wooded with pines, oaks, and Red Maple. Numerous trails cross the uplands surrounding the powerline. Private residences occur near the protection area to the east and west.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area: Charlestown West Seeps

County: Cecil

USGS Quads: Havre de Grace, North East

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Charlestown West Seeps Protection Area contains a small, meandering stream and its tributary which is fed by a rich, sphagnous seepage slope. The seepage slope is dominated by sphagnum moss, Sweet Bay, and Skunk Cabbage, and supports a diverse array of native wetland plants, including a rare herbaceous species. This undisturbed spring-fed, sphagnous wetland habitat which the rare plant requires is increasingly rare throughout its range. Urban development and agriculture have led to direct loss or alteration of this habitat due to draining, ditching, and filling of wetlands, channelization of waters for flood control, and sedimentation from building construction. The rare plant is known from just three other sites in Maryland. One site is voluntarily protected by the landowner. The other two sites are not protected.

OTHER VALUES AND SIGNIFICANCE:

This freshwater wetland supports a diverse array of herbaceous species, including ferns, flowering shrubs, and herbs. It may be found to harbor additional rare plant species not identifiable at the time of the recent survey. The permanent, spring-fed seeps and a large woodland pond on the site provide excellent habitat for amphibians. The wetlands as well as the relatively mature, undisturbed uplands provide suitable habitat for many wildlife species, including songbirds, waterbirds, and deer.

THREATS AND MANAGEMENT NEEDS:

Threats

The greatest threat to the site is the potential for direct habitat loss from mining or development. Surface mining activity has been extensive less than 1/4 mile north of the site.

The rare species at this site is an obligate freshwater wetland plant which is sensitive to changes in hydrology even at a distance from the population. Thus, alteration of the groundwater table from activities such as removal of trees from

the upland or draining of the pond upstream from the seep would also pose a severe threat to the rare species. Increased use or expansion of the dirt road immediately upstream from the rare species population could cause increased pollution, sedimentation, and changes in groundwater table. Additionally, either changes in hydrology or increased sunlight from tree removal upstream would increase the likelihood of invasion by non-native, weedy plant species that may exclude the rare species.

Finally, the rare plant is an attractive wildflower which is long-lived and reproduces slowly. This species is susceptible to collection by casual observers, wildflower gardeners, and scientific collectors.

Management Needs

No removal of vegetation, construction, or mining should be conducted within the protection area. The pond should not be drained or altered. The dirt road should remain unimproved and should be closed to vehicular traffic. Landowners upstream from the site should be contacted to insure that their activities do not result in changes in the quality or quantity of water at this site. For example, no new culverts draining surface mine sites should be created, and no sediment or pollutants should be allowed to drain into the protection area through the existing culverts.

To protect the rare species from collection, the location of the plants should be revealed only to those individuals who need the information in order to protect this site.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species habitat, the adjacent upland which maintains groundwater supply to the seep, and a forested buffer for the wetland. West of the stream the buffer extends to the crest of the hill in order to protect the site from invasion by non-native, weedy species and to preserve potential habitat for the rare species. Downstream from the rare species habitat the forested buffer extends 1000 ft. on each side of the stream in order to protect potential habitat.

SITE DESCRIPTION SUMMARY:

This 222 acre protection area contains a groundwater-influenced seep on the lower slopes of a small stream and its tributary. Low areas of the seep are dominated by sphagnum moss and Skunk Cabbage, and hummocks support the rare species as well

as diverse herbaceous species such as Cinnamon Fern, Marsh Blue Violet, Larger Blue Flag, and Jack-in-the-Pulpit. Sweet Bay dominates the overstory and is accompanied by other wetland trees and shrubs such as Tulip Tree, Smooth Alder, and Swamp Azalea.

Northeast of the seepage swamp is a little-used dirt road which serves as a dam for a 1/2 acre pond upstream. The meandering stream below the seep flows through areas of bottomland hardwood forest, large thickets of Smooth Alder, Sweet Pepperbrush, and greenbrier, and small openings of sphagnum and grasses. The surrounding upland forests of oak and Mountain Laurel contain some weedy, non-native species but are relatively mature and undisturbed. The site is bounded on the north by railroad tracks and on the south by a highway.

Prepared by: Judith L. Robertson

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Goat Hill Serpentine Barren

County: Cecil USGS Quad: Rising Sun

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Goat Hill Serpentine Barren is an important example of a dry serpentine plant community. In Maryland, serpentine soils occur only in a narrow belt traversing the state. These soils are unusual because they contain high quantities of minerals such as chromium, magnesium, and nickel which are toxic to many plants. For this reason, serpentine areas support unique botanical communities that include many plants found nowhere else. Historically, woody vegetation was scarce in dry serpentine communities because of poor, thin soils and frequent fires. Fire suppression and quarrying for decorative and crushed stone have destroyed many examples of herbaceous serpentine communities in Maryland. Fewer than ten of these communities are now known in Maryland. The artificial removal of woody vegetation for powerline maintenance at this site has helped to maintain a suitable habitat for herbaceous serpentine communities. Maintenance of the right-of-way has produced habitat that is similar, although not identical, to the openings created by fire in pre-colonial times.

Six rare plants occur in this protection area. Two of these species are found in only one other location in Maryland. A third rare species is found in only two additional locations in Maryland. This species is found only in serpentine areas and the total number of populations in the world is very small.

OTHER VALUES AND SIGNIFICANCE:

Goat Hill Serpentine Barren Protection Area is adjacent to a Nature Conservancy preserve in Pennsylvania that protects rare serpentine habitat. The proposed protection area in Maryland will serve as an excellent buffer, offering additional protection to that important preserve. In addition, the Pennsylvania preserve provides a permanent seed source that helps to maintain the rare plant populations in Maryland.

THREATS AND MANAGEMENT NEEDS:

Threats

Closure of the forest canopy would be detrimental to the rare species populations. The open areas that support the rare species occur in the powerline rights-of-way and in a nearby opening. The rare herbaceous species would not survive in the shade of trees or dense shrubs. However, certain methods of powerline maintenance would be detrimental to the rare species. Application of non-selective herbicides would harm the rare herbaceous species. Frequent mowing could inhibit reproduction of the rare plants. Soil compaction by the machinery may inhibit root growth and seed germination of the rare species.

Another potential threat is invasion of the rare species habitat by weedy, non-native species. Several weedy species are abundant near the southern edge of the protection area.

A portion of the site may be threatened by clearing for agriculture. Clearing and cultivation of this land would destroy the rare species and promote the growth of weedy species in the remaining habitat.

Management Needs

Selective removal of tree species should be employed to keep the powerline and the rare species habitat open. If herbicides must be used, they should be applied by hand and only applied to woody vegetation. Infrequent mowing with light equipment (one time per year, in early spring) may also be compatible with rare species maintenance, but heavy machinery should not be used. The effect of powerline maintenance on rare species populations should be monitored.

No forest clearing should be conducted within the protection area boundary. A forest buffer should be maintained around the rare species habitat except within the powerline.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species habitat, adjacent potential habitat, and a forested buffer. The forested buffer extends approximately 500 ft. east and west of the rare species populations. To the north the protection area extends to the Pennsylvania line, where it borders a Nature Conservancy preserve. On the south and east the boundary extends to the edge of cultivated fields. To the west it extends to the edge of residential areas.

SITE DESCRIPTION SUMMARY:

The 23 acre protection area contains dry woods dominated by Pitch Pine, Red Maple, and several species of oaks. The woods are broken by a powerline right-of-way and by several herbaceous openings on serpentine soils. Rare plant populations are found on a sparsely forested, north-facing slope and on the edges of a dirt road beneath the powerline. West of the powerline the woods are thin and composed predominately of Pitch Pine. In grassy openings within the pine glades additional rare species grow. A deer blind is located near one of the grassy openings.

Prepared by: Judith L. Robertson

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Horseshoe Woods

County: Cecil USGS Quad: Rising Sun

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This slope above Octoraro Creek supports a mixed deciduous forest. The slope is very steep near the base but gradually becomes more gentle towards the crest. Large Tulip Trees are scattered along the slope. The soil is rich in nutrients and supports a lush understory with a wide variety of shrubs. The herbaceous layer is diverse. Among the many spring wildflowers is a rare plant species known from just four other sites in Maryland. The plants grow on the more gentle, upper slope. Two populations of this species occur on public land, but management plans have not been established in order to protect and maintain these populations. The other two populations are not protected.

OTHER VALUES AND SIGNIFICANCE:

Other rare species may inhabit this forest. Further survey is needed to develop a complete species list for this site.

The area harbors a wealth of wildlife, including reptiles, deer, woodchuck, squirrels, and birds.

THREATS AND MANAGEMENT NEEDS:

Threats

The greatest threats to this rich forest are logging and forest clearing for development. The rare species is particularly vulnerable because it grows on a fairly gentle slope. The increase in available sunlight and disturbance to the soil produced by logging or clearing will promote the growth of non-native, weedy species. Japanese Honeysuckle is already established at this site, and further encroachment by this or other weedy species may eliminate the rare species.

All Terrain Vehicle (ATV) traffic along well-worn trails in the immediate area of the rare species poses a serious threat to the rare species.

Management Needs

Logging or clearing of the forest within the protection area should not be conducted.

The size and vigor of the rare species population should be monitored. The intrusion of non-native plant species also should be monitored.

All Terrain Vehicle (ATV) traffic could be controlled, either by diverting it to nearby fields or roads, or by constructing barriers across existing trails. This would reduce the potential for ATVs to destroy the rare plants.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species population, additional potential habitat for the rare species, and a wooded buffer to protect the rare species from invading non-native weedy plants.

SITE DESCRIPTION SUMMARY:

Tulip Tree and Red Maple dominate the mixed, deciduous forest on the slopes of Octararo Creek in this 24 acre protection area. The understory is well developed with many saplings and shrubs, including Pawpaw, Flowering Dogwood, and Pinxter Flower. The rich, loamy soil supports a diverse and lush herbaceous layer, including Bloodroot, Wild Geranium, Jack-in-the-pulpit, Trout Lily, May-apple, and several violets.

A narrow band of floodplain forest occurs along the creek, and a dirt road parallels the stream course. A private residence with pasture-land abuts the protection area to the south.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Log Cabin Sedge Meadow

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This unusual sedge meadow occurs on chrome soil and lacks woody vegetation. Chrome soils are usually well-drained, and seldom occur in wetlands as in this site. Historically, fire created open, sparsely forested habitats such as this sedge meadow. However, the modern practice of fire suppression has nearly eliminated these habitats. The lack of woody vegetation in this sedge meadow is partially maintained by groundwater seepage. Maintenance of the adjacent powerline right-of-way also eliminates woody vegetation along the edge of the sedge meadow. In addition, the shallow, chrome soil in portions of the adjacent forest inhibits the growth of trees and shrubs, and supports only a thin cover of woody vegetation.

Three rare species grow among the sedges and forbes of this unusual habitat. The most rare of these species is abundant at this site and grows both in the sedge meadow and along a stream in the adjacent right-of-way.

OTHER VALUES AND SIGNIFICANCE:

The meadow is used as a bedding and feeding area by deer, and several hawks were observed in flight during the site visit.

THREATS AND MANAGEMENT NEEDS:

Threats

The recent, non-selective application of herbicides to eliminate woody growth along the stream also killed much of the herbaceous vegetation. This practice has probably reduced the population size of the most rare species. If continued, this application method may eventually destroy the populations of rare species.

Logging the pine-oak woods adjacent to the sedge meadow, especially on the upper slope where the seepage emerges, could adversely alter the hydrology. If hydrological changes cause the meadow to dry, woody species will encroach and eventually exclude the rare species.

Non-native, weedy species, already dominant along the stream and beneath the powerline, threaten to invade the sedge meadow and seeps. So far these wetter areas are relatively free of non-native plants.

Management Needs

The broadcast application of herbicides to eliminate woody growth along the stream and seeps should be discontinued. Selective application of herbicides by hand or selective cutting should be considered as alternatives.

Logging and forest clearing should not occur within the protection area. Plans for logging or development on adjacent land should be thoroughly reviewed to ascertain their impact on hydrology and the rare species habitat.

Rare plant populations should be monitored regularly to ascertain if maintenance practices along the powerline adversely affect the rare species.

Incursion of woody plants or non-native plants into the rare species habitat should be observed carefully. Active maintenance may be required to control the growth of woody and non-native species.

BOUNDARY RECOMMENDATIONS:

The protection area boundary encompasses the stream and seeps beneath the powerline, the sedge meadow adjacent to the powerline, and a wooded buffer 200 ft. wide around the meadow. This buffer is required to protect the meadow's essential hydrology.

SITE DESCRIPTION SUMMARY:

The focal point of this 53 acre protection area is a sedge meadow containing three rare species. Nearby, in seeps and along a small stream beneath the powerline, several smaller populations occur. The sedge meadow is situated outside of, though adjacent to, the powerline right-of-way. Except for the stream and seeps, which are situated in depressions, and a shallow ravine, areas beneath the powerline are maintained by regular mowing. Woody vegetation in the stream course is controlled by the broadcast application of herbicides. Only the lower portion of the sedge meadow, where it enters the powerline right-of-way, is actively maintained. Areas beneath the powerline are therefore dominated by herbaceous vegetation, including many non-native, weedy species such as Japanese Honeysuckle, Chickory, and Wild Carrot. The sedge meadow is dominated by grasses and sedges with some

flowering herbs scattered throughout. Woods dominated by a mixture of deciduous and pine trees occur adjacent to the powerlines.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Octoraro Slopes

County: Cecil USGS Quad: Rising Sun

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Steep, wooded slopes and rich ravines characterize this picturesque site overlooking Octoraro Creek. Dry serpentine soils at the northern end of the protection area give way to rich, loamy soils near the southern end, and the corresponding change in vegetation is dramatic. The dry serpentine soil supports pine-oak woods with a sparse herbaceous layer. The moist, more fertile soil supports a diverse deciduous woods with a lush herbaceous layer. The spring wildflower display is unusually colorful and diverse. A rare plant species occurs infrequently in the northern portion of the area on semi-open outcrops of serpentine soil. Rock slides and talus slopes are frequent, interspersed with moist ravines and seeps. The upland hardwood forest blends into mesic deciduous woods on the lower slope near the creek.

OTHER VALUES AND SIGNIFICANCE:

The moist and dry forests of the protection area provide excellent habitats for a variety of wildlife. Numerous birds, reptiles, deer, and small mammals were observed during the field survey.

The scenic beauty of this slope is unmatched elsewhere along Octoraro Creek, where similar areas have been logged or developed.

Because the protection area includes a variety of habitats, it is likely that further survey will reveal other rare species at this site.

THREATS AND MANAGEMENT NEEDS:

Threats

The primary threats to this area are logging and clearing for development. Already some logging has occurred on the more gentle slopes and uplands. The increase in available sunlight and the soil disturbance caused by logging and clearing promote the growth of non-native, weedy species to the exclusion of native species. The shade-loving, rare species would not survive

in the openings created by logging. Logging on the steeper slopes would cause severe erosion and nutrient leaching.

Several hiking trails traverse the slope, both laterally and vertically. Although evidence indicates they are little used, erosion is already pronounced. Increased foot traffic on these trails would result in further erosion and excessive damage to the vegetation.

Management Needs

Logging and clearing of the forest should be prohibited within the protection area.

Foot traffic on the slopes should be minimized to prevent soil erosion.

A regular program for monitoring the site is recommended in order to check the size and vigor of the rare species population; to evaluate the condition of the habitat, particularly by the amount of erosion; and to ascertain the level of threat represented by non-native, weedy species.

BOUNDARY RECOMMENDATIONS:

Included within the protection area boundary are the rare species' habitat, the adjacent steep slopes, the diverse deciduous woods, and a wooded upland buffer. The upland buffer is required to prevent erosion of the slopes and to prevent encroachment by non-native, weedy plants.

SITE DESCRIPTION AND SUMMARY:

The 105 acre site offers scenic views of Octoraro Creek and includes diverse habitats and plant communities. The slopes are very steep and rocky with many seeps, small ravines and lightly shaded rock outcrops. On the lower, mesic slopes Red Maple and Tulip Tree dominate a mixed deciduous woods. The herbaceous layer is lush with numerous native plant species, including Skunk Cabbage, Wild Ginger, Bloodroot, May-apple, Jack-in-the-pulpit, Rue Anemone, and many ferns. The understory is also rich in shrubs including Spicebush, Pawpaw, Bladdernut, Northern Arrowwood, Maple-leaved Viburnum, Wild Hydrangea, and Mountain Laurel. The xeric upper slopes and areas of serpentine soil are dominated by pine-oak woods and a thin herbaceous cover of Field Chickweed, Large Summer Bluets, Hairy Skullcap, Lyre-leaved Rock-cress, and Slender Knotweed.

At the base of the slope, along the creek, is a floodplain forest dominated by Sycamore, Silver Maple, and Box Elder. Tawny

Day-lily, Stinging Nettle, and Beefsteak Plant are among the non-native, herbaceous species common in the floodplain. A dirt road parallels the creek, passing the old foundation of a paper mill, mill race, and dam near the southern boundary of the area.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Richardsmere Powerline

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

The slopes and swales of this powerline right-of-way are kept free of woody vegetation by active management. Historically, wet, open areas were created naturally by fires, floods, and beaver activity. As a result of human intervention, these natural processes are suppressed, and open non-tidal marshes are rare. The rights-of-way simulate these open, unforested areas and provide habitat for species that require those conditions.

Among the many herbaceous species in the right-of-way is a rare plant known from just three other sites in Maryland. Only one of these populations is protected. The rare plants in this right-of-way appear vigorous; more than one hundred flowering plants were observed.

OTHER VALUES AND SIGNIFICANCE:

Due to the loss of natural habitat, actively managed powerlines have become significant habitat for rare species. Further searching of this area may reveal additional rare plant populations.

THREATS AND MANAGEMENT NEEDS:

Threats

Powerline maintenance practices may be detrimental to the rare species. Mowing of the plants while flowering would prevent the plants from reproducing and could destroy the population. Broadcast application of herbicide on woody plants also kills much of the herbaceous vegetation and would kill the rare plants.

The invasion and proliferation of non-native, weedy species, already abundant in some areas, could exclude the rare species from this site.

Management Needs

Current powerline management practices should be reviewed to determine the degree of threat they represent to the rare

species. A management agreement with the utility company should be instituted to assure maintenance practices are consistent with rare plant protection. If herbicides are used, a foliar herbicide should be selectively applied to the right-of-way within the protection area. This will greatly reduce the impact on rare plants.

A monitoring plan should be implemented to ascertain the population size and vigor of the rare plant species. The encroachment of non-native, weedy vegetation should also be monitored to determine its impact on the rare species.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the managed right-of-way harboring the rare species. Creeks border the protection area to the southwest and northeast. Additionally, wooded slopes adjacent to the powerline on the northwest and southeast are included to protect rare plant populations occurring there.

SITE DESCRIPTION SUMMARY:

This 55 acre site is centered around an actively maintained powerline right-of-way. Oriented on a northeast/southwest axis, the powerline traverses steep slopes, swales, and seeps. Slopes dominated by rich, deciduous woods abut the powerline to the northwest and southeast. These woods, dominated by maples, oaks and Tulip Tree, are rich, rocky, and moist. they support a luxuriant growth of herbaceous plants, including Wild Ginger, Solomon's Seal, Turk's-cap Lily, and Wild Geranium. Vegetation beneath the powerline is dominated by herbaceous species, both native and non-native. The riverine vegetation along the creek to the southwest is strikingly different from that of the powerline; sunflowers, coneflowers, lobelias, smartweeds, and Water Willow dominate the creek side.

A dirt road parallels the powerline and is deeply rutted and severely eroded, especially on the steeper slopes. A second dirt road parallels the creek to the southwest, intersecting the powerline from the north, and continuing southward along the creek as a foot trail. Fishermen use this road for access to the creek. Trash has been dumped along the road, and abandoned cars lie along the road near the creek.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Rock Springs Powerline

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE

This protection area is an open-canopy, powerline right-of-way located on serpentine soil. Several plant species able to tolerate this chrome-rich soil are rare or uncommon in Maryland. Two such rare species inhabit the maintained area of the powerline and the adjacent forest. One of these is rare throughout its range and is known from only four other sites in Maryland.

Historically, herbaceous openings and semi-open glades on serpentine soil were created by sporadic, naturally occurring fires. The modern practice of fire suppression has nearly eliminated these habitats. Without fire, woody vegetation encroaches. Many of the rare serpentine species are herbaceous and cannot survive in the shade of the trees and shrubs. The actively-maintained herbaceous cover of powerlines simulates naturally occurring glades and provides habitat for some of these rare species.

OTHER VALUES AND SIGNIFICANCE:

Historical records suggest that three rare plant species inhabited this area. Furthur survey may reveal these species within the protection area.

The herbaceous openings provide resting and feeding grounds for deer.

THREATS AND MANAGEMENT NEEDS:

Threats

Powerline maintenance practices may destroy the rare species. Mowing when the rare plants are flowering or fruiting would prevent these species from reproducing. Broadcast application of herbicides may eliminate the rare plants.

All Terrain Vehicle (ATV) traffic, heavy over part of the area, physically damages the rare plants. In addition, ATV traffic disturbs the shallow soil and may inhibit the germination of seeds. Non-native, weedy plant species are numerous in

disturbed areas. If these species spread more uniformly across the area, they may exclude the rare species.

Management Needs

A management agreement with the utility company is recommended. Mowing should be timed so as not to interfere with rare species reproduction. Broadcast application of herbicides to control woody growth should be avoided. A more selective application method, such as hand-application of foliar herbicide, is recommended.

This protection area should be monitored regularly to assure that powerline maintenance practices are consistent with rare plant protection.

Woody vegetation and non-native plants should be controlled in order to maintain the open glades essential for the rare species.

The ATV traffic should be eliminated or, this failing, at least confined to existing trails. Landowners in the surrounding area should be informed of the uniqueness and importance of this habitat.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species populations and additional potential habitat. This includes the regularly maintained powerline right-of-way from the road downhill for approximately one half mile to the crossing of a private driveway. Also included is a gasline right-of-way running perpendicular to and intersecting the powerline just below the road. A fallow field adjacent to and north of the powerline is included to protect a large population of a rare plant species.

SITE DESCRIPTION SUMMARY:

Rock Springs Powerline Protection Area encompasses 103 acres in a 1/2 mile long, 50 yard wide, narrow band of powerline and gasline right-of-way. Several small seeps, rivulets, and streams cross the area and a dirt road parallels the powerline. Management of these utility lines maintains herbaceous cover with few woody plants. Grasses dominate the right-of-way. The adjacent dry uplands are dominated by pine-oak woods and thickets of greenbrier. Adjacent to and north of the powerline is a fallow field dominated by grasses and non-native, weedy plants. Several ATV trails traverse the open area beneath the powerline, and an old quarry is located adjacent to the powerline near the

northwest corner of the protection area. Many private residences are located near the protection area.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Stone Run Millpond

County: Cecil USGS Quad: Rising Sun

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Stone Run Millpond is a wetland complex of open water, emergent marsh, shrub swamp, and wooded swamp created by the impoundment of Stone Run. A rare plant species occurs on the northeastern side of the area. It is known from only ten other sites in Maryland, and only two of these sites are protected.

Historically, natural freshwater ponds in this area were created almost exclusively by beaver activity. However, as a result of trapping and habitat destruction, beaver are much less common. This artificial pond is similar to a naturally occurring habitat that is now uncommon on the Upper Coastal Plain.

OTHER VALUES AND SIGNIFICANCE:

The variety of wetland habitats within the protection area supports remarkably diverse native vegetation. The wetland complex also provides ideal feeding and resting grounds for resident waterbirds and songbirds and migratory waterfowl. Many reptiles and amphibians were observed during the field survey, especially along the shoreline of the pond and in the emergent marsh.

THREATS AND MANAGEMENT NEEDS:

Threats

A large development on the slopes north of the pond threatens the water quality of the wetlands with runoff of sediments, chemicals, petroleum residues, and trash. Fields and pastures surround the pond on the other three sides. Although fallow and of no immediate threat, the fields are likely to be developed in the near future.

Water quality is also threatened by the logging in progress on the slopes above Stone Run. Erosion of the cleared slopes will cause siltation of Stone Run and the wetland complex.

Fallow fields and pastures adjacent to the wetland on the west, south, and east support many non-native, weedy plant species. Already this weedy vegetation predominates on the

drier, disturbed soil at the west end of the pond. If the water table is lowered, or the soil of the wetlands is disturbed, these non-native, weedy species will soon invade and may exclude the rare species.

Any failure of the dam to impound the water of Stone Run would eliminate the wetlands and drastically change the vegetation of the protection area.

Management Needs

Development on the slopes above and along the streams feeding into the pond should be designed to reduce adverse impacts to the wetlands and streams. Logging on the slopes above Stone Run should be halted. Runoff of pollution into the three feeder streams should be reduced. Only through a stringent program of sediment and pollution control can water quality be maintained.

Landowner cooperation is imperative if the runoff of pollutants into the pond is to be controlled. A program to inform the local residents concerning the value of wetlands is recommended.

The size and reproductive success of the rare species should be monitored. Water quality and the encroachment of non-native, weedy plants also should be monitored. The removal of weedy plants may be recommended after further observation.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the rare species habitat and a wooded buffer along the two streams that flow into this habitat. The buffer incorporates an area 1000 ft. upstream from the rare species population and 50 ft. on either side of the two streams. This buffer is required to protect water quality and to maintain the essential hydrology of the area.

SITE DESCRIPTION SUMMARY:

The Stone Run Millpond Protection Area encompasses 17 acres of wetlands and adjacent buffer. A large stone dam impounds the stream. Open water with scattered aquatics, such as Southern Pond Lily and pondweeds, occurs in the central portion of the complex. Areas of emergent marsh with Broad-leaved Cat-tail and Slender Bur-reed, and shrub swamp with Buttonbush and Smooth Alder, are scattered along the fringe of the open water. Where eroded sediment has already accumulated, the emergent marsh and shrub swamp are rather extensive. Areas of swamp forest, dominated by Red Maple and Sweet Gum, occur along Stone Run and

an unnamed stream which enters the complex from the east. The wooded slopes above Stone Run are dominated by a mixture of oaks, maples, and Tulip Tree. Another unnamed stream enters from the south after passing through pastures and fallow fields. This stream lacks a forested buffer and may act as an artery for pollutants and sediments into the pond. These fields are dominated by non-native, weedy plants.

Overlooking the wetlands from adjacent slopes to the north is a housing development.

Prepared by: Richard H. Wiegand

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Whitaker Swamp

County: Cecil

USGS Quads: Bay View, Havre de Grace, North East

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Whitaker Swamp Protection Area contains a prime example of a mature, deciduous, swamp forest. Swamp forests of this size and age are rare due to clearing and drainage for development or logging. The high water quality of groundwater seeps feeding this swamp is maintained by the undisturbed, forested slopes that border the swamp. The soil of the forest is much less acidic than is usual in this county and supports a particularly high diversity of herbaceous species. Wildflowers carpet the swamp in spring and early summer.

Three rare plants grow among the numerous herbaceous species in the swamp. Two of these species are known from fewer than four other sites in Maryland. None of these other sites is protected. The population of one of these species is unusually large and appears to be reproducing well at this site. The third rare species is known from only five locations in Maryland. This population is among the largest in the State.

OTHER VALUES AND SIGNIFICANCE:

The large freshwater wetland at this site provides excellent feeding and nesting habitat for migratory songbirds and amphibians. In addition, such non-tidal wetlands are increasingly valued for their role in protecting the water quality of the rivers they feed and, ultimately, the Chesapeake Bay.

THREATS AND MANAGEMENT NEEDS:

Threats

The rare plant populations occur close to a surface mining operation. Although existing informal agreements with the landowner offer some protection from direct loss of plants and their immediate habitat, mining, logging, or similar activities in the surrounding upland may cause sedimentation and changes in hydrology that would be detrimental to the rare species. One of the rare wetland species is particularly vulnerable to

hydrological changes. The population may already have been adversely affected by the influence of nearby surface mining on the groundwater table. The existing berm appears to be adequately controlling sediment from upstream activities. Unless sediment from the pond behind the berm is regularly removed, continued sedimentation could fill the pond. Subsequently, heavy rainfall would release a devastating pulse of sediment on the rare species population.

Removal of forest cover would promote the invasion of non-native, weedy species. At the southwestern corner of the site, the clearing of land for mining has already resulted in the growth of weedy species on the lower slopes near the wetland.

A large volume of trash along the banks of the road that bisects the site poses the threat of pollution to the wetlands below.

In the past, beaver dams along the stream threatened to flood the rare plant species. The beaver were trapped by the landowner and moved elsewhere to protect the rare species. If beaver return to the area the rare plants in the wetland could be threatened once again.

Management Needs

No mining, logging or other disturbance of the vegetative cover should be permitted within the protection area boundary. The grassy, reclaimed mining area just southwest of the rare plant population should be allowed to revert to forest in order to limit the encroachment of weedy, non-native species.

The water level and vegetation composition of the wetland should be monitored in order to provide warning of hydrologic changes that may be detrimental to the rare species. The size and reproductive success of the rare species population should be monitored. The sediment pond behind the berm should be emptied periodically in order to prevent sedimentation of the wetland.

In cooperation with the landowner, cleanup efforts should be undertaken on both sides of the road to remove trash. If dumping persists, signs or alternative means of discouraging this activity should be considered.

The site should be monitored for the return of beaver. Further removal may be needed if these animals threaten the rare species habitat.

BOUNDARY RECOMMENDATIONS

The recommended boundary includes the rare species populations, adjacent potential habitat, and a forested buffer. To the north the boundary extends to the crest of the slopes. To the southwest, a portion of the grassy, reclaimed mining area is included to allow forest regrowth. The forested buffer extends uphill to nearby roads to the south and east.

SITE DESCRIPTION SUMMARY

This 297 acre site contains a wetland complex consisting of a meandering stream, a hardwood swamp forest, rich seepage slopes, old beaver ponds, and emergent marshes. The stream flows roughly from southwest to northeast and is flanked by numerous seepage slopes dominated by Skunk Cabbage, sphagnum moss, and a rare herbaceous species. The same species dominate portions of the bottomland where the ground is so wet that a single stream course cannot be distinguished. Three beaver dams create small ponds, and five breached dams have produced areas of emergent marsh dominated by sedges and rushes. Several thickets of Smooth Alder and Sweet Pepperbush border the stream. Dominant trees in the hardwood swamp are Red Maple and Sweet Bay. The circumneutral soils have produced a rich herbaceous cover in the wetland and mesic forest, including Hellebore, Golden Club, large Cinnamon Ferns, and two additional rare species. Oaks, Beech, and Tulip Tree are common higher on the slopes.

Prepared by: Judith L. Robertson

Date: November 1988

PROTECTION AREA SUMMARY

Protection Area Name: Wildcat Ravine

County: Cecil USGS Quad: Conowingo Dam

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Large Hemlock and Tulip trees overhang the stream in this steep, narrow ravine. Trees of similar size are rare in Cecil County, and seldom is Hemlock a dominant species as it is here. The presence of large, decaying logs and fallen trees suggests that the forested slopes have not been logged for many years. The steep slopes and rocky soil are unsuitable for cultivation. Except for a small plot of young Hemlock that appears to have regenerated after a recent clearing or fire, there is no sign of recent disturbance to the ravine slopes.

OTHER VALUES AND SIGNIFICANCE:

A rare species of fern was reported historically from this area. Further survey is required to determine if the species survives in the ravine. Because there has been little disturbance in the area, it is possible that the fern still grows here.

The scenic stream and Hemlock forest provide opportunity for hiking and birding.

The ravine provides habitat for resident and migratory songbirds. The pond and marsh at the mouth of the ravine provide habitat for waterbirds.

THREATS AND MANAGEMENT NEEDS:

Threats

Logging is the greatest threat to this ravine. Cutting trees increases the available sunlight which promotes the growth of non-native, weedy species, such as Japanese Honeysuckle, to the exclusion of native species. In addition, logging would cause extensive soil erosion on the steep slopes. It is likely that these changes produced by logging would result in the regeneration of a forest of different composition, possibly without the abundant Hemlock.

Management Needs

Logging and clearing of the forest for any purpose should not occur within the protection area.

The encroachment of weedy species should be monitored at the western border of the site near the railroad bank.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the slopes of the ravine and a narrow, forested buffer on the adjacent uplands.

SITE DESCRIPTION SUMMARY:

A clear, rocky stream flows through the narrow ravine of this 26 acre protection area. Beneath the ravine's canopy of Tulip Tree and Hemlock is an understory of Pawpaw and Spicebush. Ferns are abundant on the lower slopes. Canada Mayflower grows along the stream banks. The ravine is particularly scenic. The understory is deeply shaded by the dense canopy. Seeps emerge from the steep slopes and are lush with herbaceous species. The stream flows over thick slabs of rock as it winds down to the Susquehanna.

At the mouth of the stream is a culvert that channels the flow through a railroad bank. A pond has formed behind the railroad bank and emergent vegetation grows in areas of shallow water.

The gently sloped uplands adjacent to the ravine are farmed.

Prepared by: Katharine A. McCarthy

Date: December 1988

REFERENCES

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

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U.S. Soil Conservation Service. Soil Survey. U.S. Govt. Printing Office, Washington, DC. (available for each Maryland county).

For information concerning Final Action on Regulations, see inside front cover.

Symbol Key

Roman type indicates text already existing at the time of the proposed action. *Italic type* indicates new text added at the time of proposed action. A single underline indicates text added at the time of final action. [Single brackets] indicate deleted text. [[Double brackets]] indicate text deleted at the time of final action.

Title 07
DEPARTMENT OF HUMAN RESOURCES

Subtitle 03 INCOME MAINTENANCE ADMINISTRATION

07.03.05 General Public Assistance to Employables

Authority: Article 88A, §§17, 17A-1 — 17A-3, 65B, Annotated Code of Maryland

Notice of Final Action
[87-110-F]

On May 26, 1987, the Secretary of Human Resources adopted amendments to Regulations .09 and .11 under **COMAR 07.03.05 General Public Assistance to Employables**. These amendments, which were proposed for adoption in 14:8 Md. R. 941 (April 10, 1987), have been adopted as proposed. (DHR Transmittal Number 87-12)

Effective Date: June 29, 1987.

RUTH MASSINGA
Secretary of Human Resources

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, 10-2A-01 — 10-2A-09, Annotated Code of Maryland

Notice of Final Action
[87-061-F]

On June 9, 1987, new Regulations .01 — .11 under a new chapter, **COMAR 08.03.08 Threatened and Endangered Species**, were adopted by the Secretary of Natural Resources. Existing Regulations .01 and .02 under **COMAR 08.03.08 Nongame and Endangered Species** were repealed. These actions, which were proposed for adoption in 14:6 Md. R. 719 — 726 (March 13, 1987), have been adopted as proposed.

Effective Date: June 29, 1987.

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 — 8-814, Annotated Code of Maryland

Notice of Final Action
[87-060-F]

On June 9, 1987, amendments to Regulation .03 under **COMAR 08.05.03 Construction on Non-Tidal Waters and Floodplains**, were adopted by the Secretary of Natural Resources. These amendments, which were proposed for adoption in 14:6 Md. R. 726 — 728 (March 13, 1987), have been adopted with the non-substantial changes shown below.

Effective Date: June 29, 1987.

Attorney General's Certification

In accordance with State Government Article, §10-113, Annotated Code of Maryland, the Attorney General certifies that the following changes do not differ substantively from the proposed text. The nature of each change and the basis for this conclusion are as follow:

Regulation .03D(3)(b): The new language is added to restate the fact that tidal floodplains are not covered by this regulation and precludes any misunderstanding by prospective applicants on this issue. The State's regulatory authority pursuant to Natural Resources Article, Title 8, is specifically limited to the 100-year floodplain of free flowing streams and does not encompass federally designated tidal special flood hazard areas. Regulation .03 restates this limitation on the State's jurisdiction.

.03 Requirements for a Permit.

A. — C. (proposed text unchanged)

D. Exemptions. The following activities are exempted from the requirements for a permit from the Administration under this chapter:

(1) — (2) (proposed text unchanged)

(3) A person who proposes to change in any manner the course, current, or cross-section of any waters of the State other than those referenced in §D(1) and (2) of this regulation does not need a permit from the Administration if the:

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 notograma, 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, climatalogical 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.

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