



## MID-ATLANTIC REGION

# RESEARCH/RESOURCES MANAGEMENT REPORT

MAR-17

Rare and Endangered Plant Species  
Within the New Jersey Portion of  
the Delaware Water Gap  
National Recreation Area

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE



MID-ATLANTIC REGIONAL OFFICE  
143 SOUTH THIRD STREET  
PHILADELPHIA, PENNSYLVANIA 19106

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Final Report to the Mid-Atlantic Region  
National Park Service

July 1986

Prepared by  
Richard Radis  
for

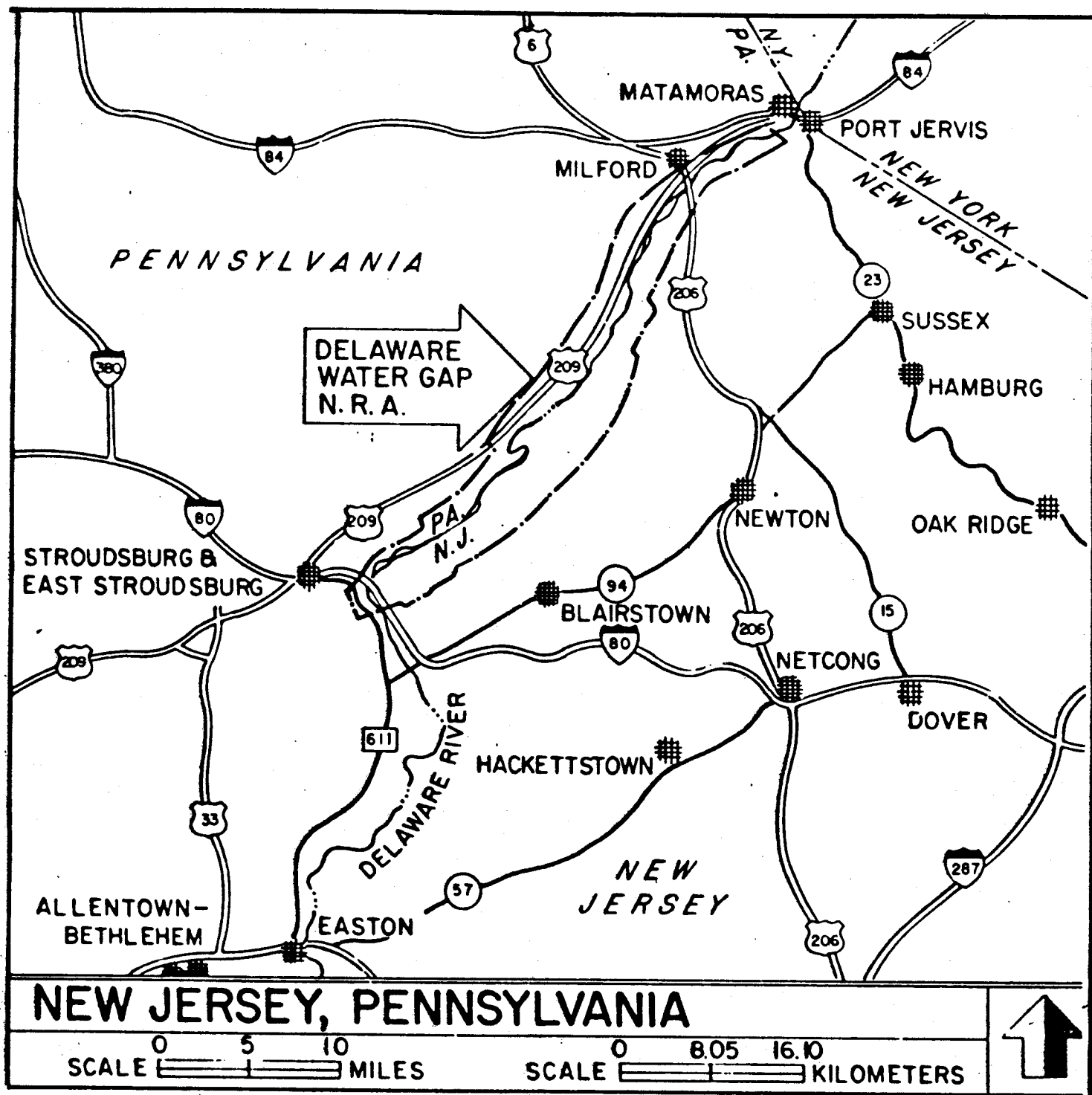
The New Jersey Natural Heritage Program\*  
Thomas Breden, Coordinator/Ecologist  
David Snyder, Botanist

\*A joint program between New Jersey DEP and The Nature Conservancy

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Figure 1



#### ACKNOWLEDGEMENTS

The authors wish to express their appreciation to the following individuals for their assistance in the preparation of this report: Irving Black, Leo Bruederle, Frank Buser, David Fairbrothers, Frank Frazier, Tom Halliwell, and Greg Hanisek, Peter Hippiro, Patricia Holmgren, Elizabeth Johnson, Carol Radis, Theo Robinson, Jane Saks, Alfred Schuyler, James Stasz, Tim Vogel, Elena Williams.

ABSTRACT

The portions of New Jersey's Warren and Sussex counties within the Delaware Water Gap National Recreation Area were surveyed to ascertain the presence of rare or endangered plant species. Using rankings developed by the Nature Conservancy, a list was generated which consisted of known occurrences of rare plant species, and of species which could potentially occur within the boundaries of the DWGNRA. This list was the basis of herbarium searches at the Chrysler Herbarium of Rutgers University, the Philadelphia Academy of Natural Sciences, the New York Botanical Gardens, and Cornell University. A partial search was also conducted at Harvard University's Gray Herbarium. A final list identified 111 rare or endangered species known, by herbarium records or reliable records, to occur within or near the boundaries of the DWGNRA. Fieldwork in 1985 confirmed the presence of 65 of these species. In addition, 9 species previously unknown from this area were found. A number of new stations for the other listed species were seen, and several species were discovered to be more common than previously believed.

## INTRODUCTION

### Purpose

This survey was undertaken to determine the current status of rare or endangered plant species within the New Jersey segment of the Delaware Water Gap National Recreation Area (DWGNRA). These are species which are rare or endangered in New Jersey, as well as species listed, or under review for listing, as endangered or threatened by the U.S. Fish and Wildlife Service. The study was also designed to identify critical areas which contained rare habitat or clusters of a number of rare or endangered plant species. In addition, it is intended to be an aid to the National Park Service in decisions concerning land use, maintenance activities, public access, and the siting of recreational facilities. As many rare or endangered species in New Jersey are located on private lands and are subject to intense development pressures and extensive habitat destruction, it is hoped that preservation of rare species be considered as a primary criteria in the development of future management plans.

### Description of the Study Area

The study area consists of the New Jersey portion of the Delaware Water Gap National Recreation Area, referred to in this report in abbreviated form as the DWGNRA. The area is composed of the Delaware River from Mashipicong Island south for approximately thirty-five miles to the Delaware Water Gap, and includes portions of the Minisink Valley, the Wallpack Ridge, the Wallpack Valley, and the Kittatinny Mountain (Figure 1).

Geology The DWGNRA is part of the Appalachian Valley and Ridge Province, which extends for over 1200 miles from Alabama to the St. Lawrence River. The Appalachian Valley and Ridge is characterized by northeast-to-southwest trending ridges and valleys, of which the Kittatinny Mountain, the Wallpack Valley, the Wallpack Ridge, and the Minisink Valley are examples.

The geological features of the area are Paleozoic in origin, formed in the Silurian and Devonian periods. The most obvious landform is the long regular ridge of the Kittatinny Mountain, which is composed of the Silurian Shawangunk Conglomerate and High Falls red shale. These

formations can best be seen in the spectacular folding of the Delaware Water Gap. The Wallpack Ridge and Wallpack Valley are made up of Devonian sandstones, shales, and limestones, many of them fossil-bearing. The area along the Delaware River above the Wallpack Bend, known as the Minisink Valley, is also Devonian in origin, consisting of shales and limestones. The entire area was covered by ice during the most recent glacial period, and glacial striations can occasionally be found on the exposed rock of the Kittatinnies.

Vegetation The dominant forest type within the DWGNRA is the Mixed Oak forest (Robichaud and Buell, 1973). It is composed of a variety of oak species, such as red (Quercus rubra), white (Q. alba), black (Q. velutina), chestnut (Q. prinus), and scarlet (Q. coccinea). Also usually present are several species of hickories (Carya spp.), red and sugar maple (Acer rubrum, A. saccharum), tulip tree (Liriodendron tulipifera), birches (Betula spp.) and elm (Ulmus americana). Within this zone, several more specialized forest types can be found. The east-facing slope and the summit of the Kittatinny Mountain tend to be dry, and often consist of exposed rock, bare cliffs, and thinly wooded talus slopes. Trees here are tolerant of xeric conditions and include pitch pine (Pinus rigida), scrub oak (Q. ilicifolia) and chestnut oak (Q. prinus). The understory on the summit of the Kittatinnies often consists of dense stands of blueberry (Vaccinium spp.), huckleberry (Gaylussacia spp.) and laurel (Kalmia spp.). On the west-facing slope, conditions tend to be moister, and the forest consists of hemlock (Tsuga canadensis) and a mixture of hardwoods. This slope is punctuated by a number of hemlock-rhododendron ravines and waterfalls; other trees in this area include yellow birch (Betula lutea), basswood (Tilia americana), and sugar maple (Acer saccharum). Striped maple (Acer pennsylvanicum) and spicebush (Lindera benzoin) are common understory species.

Also on the Kittatinnies are several bogs with an entirely different association of trees and shrubs: black spruce (Picea mariana), tamarack (Larix laricina), several heaths (Vaccinium spp., Kalmia spp., Chamaedaphne calyculata), red maple (A. rubrum), and black gum (Nyssa sylvatica). A number of plant species reach the southern limit of their range in the cold bogs of the Kittatinnies.

Where alluvium has accumulated along the Delaware River, trees typical of floodplain forests, including sycamore (Platanus americanus), silver maple (Acer saccharinum), red maple (A. rubrum), and willows (Salix spp.), are present. This is also true of the larger Delaware River islands such as Tocks, Poxono, Depew and Minisink. The shores of the Delaware north of Sambo Island

are often rocky or consist of stretches of bare limestone ledges interspersed with seepage areas. The dominant woody species here are shrubs, particularly willows (Salix. spp.) and river birch (Betula nigra). Many herbaceous species considered rare or absent elsewhere in New Jersey are found in abundance on these open rocky shores.

### METHODS

Since the early part of the nineteenth century, botanists have explored the Delaware and Wallpack valleys, the Delaware River shore, and the more accessible parts of the Kittatinnies, particularly around Mount Tammany. When N. L. Britton published his Catalog of Plants (the first systematic discussion of New Jersey's flora) in 1889, he was relying on data which had been accumulating for many years. In the 1880's, Britton collected plants at a number of locales within the current boundaries of the DWGNRA; notably at the Water Gap, near Flatbrookville, and in Montague. A number of his herbarium specimens date from 1884. Other botanists of note who have contributed to the botanical knowledge of the area include E. B. Bartram, Kenneth Kent Mackenzie, Bayard Long, James Leland Edwards, and Vincent Abratis. More recent fieldwork has resulted in the discovery of additional species new to the state or to the DWGNRA.

Several publications have relied in part upon this accumulated data. Rare or Endangered Vascular Plants of New Jersey (Fairbrothers & Hough, 1973), was the first publication to discuss the problem of threatened plants in the state. Forty-two of the species listed by the authors are known to have occurred in the area encompassed by the DWGNRA. Continued analysis, fieldwork, and herbarium research resulted in the publication of Rare and Endangered Vascular Plant Species in New Jersey (Snyder & Vivian, 1981). Sixty-one of the species listed in that publication--as well as two additional species identified in Snyder (1982)--have reported occurrences within the boundaries of the DWGNRA.

How the Species List Was Produced The earlier publications were used as a base of information by the New Jersey Natural Heritage Program in the preparation of a preliminary list of rare or endangered plants in the DWGNRA. Recent fieldwork had also provided additional information

about a number of species. A list of 159 species was generated which included species known from the literature, from herbarium records, and from reliable unvouchered reports. Also included were species which, though not previously known from the DWGNRA, could occur there given the availability of suitable habitat.

Only those species with TNC ranks of G1, G2, G3, S1, S2, SH, SU, SX or species which are listed or under review for listing as endangered or threatened by the U.S. Fish and Wildlife Service were included in this preliminary list. See below, "An Explanation of Nature Conservancy Element Ranks" and "U.S. Fish and Wildlife Categories of Endangered and Threatened Plant Taxa."

Herbarium Investigations Herbarium searches were conducted for all species included in the preliminary list in an effort to find additional occurrences of known species and vouchered records of potential species. Herbaria at Rutgers University, Cornell University, the Philadelphia Academy of Natural Sciences, and the New York Botanical Garden were consulted. A partial search was conducted at Harvard University's Gray Herbarium. These searches resulted in the discovery of a number of new records for species not known to be documented from the DWGNRA, as well as locational information for additional occurrences of other species.

Field Survey The preliminary list and the information provided by the herbarium searches were used as a basis of the fieldwork in 1985. Fieldwork was conducted on an average of two times a week, beginning in early April and concluding in late October. One final search was conducted in March of 1986. An effort was made to verify all previously documented occurrences of rare or endangered species reported from the DWGNRA. In many cases this was quite simple, as the species had been seen recently in well-known sites. Often, herbarium specimens recorded precise locations and accurate directions. In cases where sites had been destroyed or altered, or where a species could not be located in a seemingly untouched site, an effort was made to search similar habitat elsewhere in the park.

A number of occurrences could not be checked. Occasionally, locations on herbarium specimens were so vague or general (i.e., "Wall Pack Center", "Kittatinny Mountain") as to preclude accurate searching; though, when possible, likely nearby habitat was surveyed. Information on several other occurrences was received too late in the year to verify their presence. In October, flooding along the Delaware caused by Hurricane Gloria made searches impossible

for a number of species, and effectively ended the blooming period of several others.

In addition to recording information on targeted species from the preliminary list, the presence of species with TNC ranks of "S3" was recorded when encountered in the field. Although these species are not currently imperilled in the state, they may become threatened in the future if critical habitat loss occurs.

As well as verifying the presence of known species at familiar locations, an effort was made to visit areas which may not have been surveyed in the past. All of the larger ponds and lakes on the Kittatinnies--including Sunfish Pond, Catfish Pond, Long Pine Pond, Blue Mountain Lakes, Crater Lake, and Hemlock Pond northwest of Crater Lake--were checked at least briefly. Particular attention was given to areas along the Delaware River, and several canoe trips were taken in order to survey portions of the shore difficult to reach by car or foot.

## AN EXPLANATION OF NATURE CONSERVANCY ELEMENT RANKS

Each species is given two ranks, a global ranking reflecting the rarity throughout the world, and a state rank, reflecting the rarity within New Jersey. In addition, subspecific taxa are given a T-rank, reflecting the rarity of that Taxon throughout the world.

### GLOBAL ELEMENT RANKS

- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres), or because of some factor of its biology making it especially vulnerable to extinction. [Critically endangered throughout its range.]
- G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extinction throughout its range. [Endangered throughout its range.]
- G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the east) or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the realm of 21 to 100. [Threatened throughout range.]
- G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- GA = Accidental in North America, i.e. not part of the established biota.
- GE = An exotic species established in North America.

GH = Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered.

GU = Possibly in peril range-wide but status uncertain; need more information. This rank is used sparingly. Whenever possible, the most likely rank is assigned and a question mark added (e.g., G2?) to express uncertainty or to indicate a range two ranks are combined (e.g., G1G2, G1G3).

GX = Believed to be extinct throughout its range.

#### STATE ELEMENT RANKS:

S1 = Critically imperiled in state because of extreme rarity (usually 5 or fewer occurrences or 1000 or fewer individuals). In New Jersey, this rank primarily includes species which are restricted to fragile specialized habitats or microhabitats which are few in number and/or restricted to an extremely small geographical area of the state. Included also are species which were formerly more abundant, but now through habitat destruction or through some other critical factor of their biology, have been demonstrably reduced in abundance. Simply put, these are species that even with intensive searching of suitable habitat, sizeable additional occurrences are unlikely to be discovered.

S2 = Imperiled in state because of rarity (on the order of 6 to 20 occurrences and/or fewer than 3000 total individuals). In general, these are species restricted to less specialized habitats (i.e., limestone wetlands as opposed to limestone river bank seeps). Historically many of these species may have been more frequent but are now known from very few extant occurrences; habitat destruction being the primary cause. Searching of suitable habitat may yield additional occurrences.

S3 = Rare in state, with 21 to 50 occurrences. Includes species which are widely distributed in the state but with small populations, or species with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching of suitable habitat routinely yields additional occurrences.

- S4 = Apparently secure in state, generally with 100 or more occurrences and over 10,000 individuals.
- S5 = Demonstrably secure in state, with larger numbers of occurrences and individuals, and at least passive protection through presence on preserves or other managed areas.
- SA = Accidental in state, including species which only sporadically breed in state.
- SE = A species clearly exotic in New Jersey which includes those species not native to North America as well as any other species deliberately or accidentally introduced into the state from other parts of North America and are therefore not a conservation priority. When combined with another rank (e.g. S2SE) it indicates those species whose occurrence in New Jersey is in part native and in part introduced. Only the native occurrences are considered in ranking and conservation efforts.
- SH = Despite some searching of both historic occurrences and suitable habitat, no extant occurrences currently are known. Not all historic occurrences have been checked, and unsearched potential habitat remains. Until all leads are reasonably exhausted, species ranked as SH are considered possibly extant. While last observed dates for most species ranked SH are 50 or more years old, species seen much more recently are also included when the only known occurrences have been destroyed and additional suitable habitat is lacking or has been searched.
- SU = Believed to be in peril but status uncertain. More information is needed to rank accurately. This rank is used sparingly. Whenever possible the most likely rank is combined with a question mark (e.g., S2?) to express uncertainty or a range is indicated by combining two ranks (e.g. S1S2).
- SX = Apparently extirpated from the state. All historic occurrences checked and a thorough search of potential habitat completed. In New Jersey, occurrences of nearly all these species are based on single collections, most of which were made prior to 1900. The localities for many of these species have been destroyed or greatly altered.

Note:

A "T" appearing in either the G Rank or S Rank indicates that the infraspecific taxa is being ranked differently than the species. A "Q" in the rank indicates that there is a taxonomic uncertainty about the taxa being ranked (i.e., taxa is being accepted as a full species in this list but may be treated as a variety or form by others). A "?" combined with a rank (e.g. G4?) indicates there is uncertainty about the rank. A "?" alone (e.g. G?) indicates that no attempt has been made to rank the species.

U.S. FISH AND WILDLIFE CATEGORIES OF ENDANGERED AND THREATENED PLANTS.

The following definitions are extracted from the September 27, 1985, U.S. Fish and Wildlife Service notice in the Federal Register:

LE--Taxa formally listed as endangered.

LT--Taxa formally listed as threatened.

PE--Taxa proposed to be formally listed as endangered.

PT--Taxa proposed to be formally listed as threatened.

S --Synonyms.

1 --Taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species.

2 --Taxa for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules.

3 --Taxa that are no longer being considered for listing as threatened or endangered species. Such taxa are further coded to indicate three subcategories, depending on the reason(s) for removal from consideration.

3A--Taxa for which the Service has persuasive evidence of extinction.

3B--Names that, on the basis of current taxonomic understanding, usually as represented in published revisions and monographs, do not represent taxa meeting the Act's definition of "species".

3C--Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

## RESULTS

At the end of the 1985 field season a revised list was prepared, containing 111 species known to occur, or to have occurred historically, within or adjacent to the DWGNRA. A number of species from the preliminary list were deleted because they were not vouchered by herbarium specimens and lacked reliable proof of their occurrence. In addition to those species kept from the preliminary list, 23 species with TNC ranks of S3 are included in the revised list. Although these species are not imperilled in the state, they may become imperilled in the future if significant habitat loss occurs. Of the 111 species, 63 were seen during the 1985 survey. Nine of these species were new records for the DWGNRA.

The Annotated Species List which follows discusses the results of the 1985 field survey. The "STATUS" category contains information from a number of sources: the "Federal" subheading concerns species under consideration as endangered or threatened throughout their U.S. range, as published in the September 27, 1985 issue of the Federal Register; "TNC" contains the Nature Conservancy rankings of global status ("G") and NJ status ("S")--see "An Explanation of Nature Conservancy Element Ranks", above; the "Other" subheading contains status as listed in publications dealing specifically with rare or endangered species in New Jersey.

The TNC ranks for some species have changed since the beginning of field work. Some species are now considered to be rarer than they originally were and, as a result of fieldwork, others are now considered to be more common. The TNC ranks that follow are current as of July, 1986. The list is presented in phylogenetic order according to Gleason (1952).

ANNOTATED SPECIES LIST

Equisetum variegatum Schleich.      Variegated Horsetail

FAMILY: Equisetaceae      Horsetail Family

STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Priority 2 (DEP, 1984).

HABITAT: Damp, sandy, often calcareous shores of ponds  
and watersides.

DISTRIBUTION: Arctic regions south to NJ, PA, IN, and  
MI, west to CA.

DISTRIBUTION IN DWGNRA: A new station for this species  
was located in 1985 along the Delaware River in  
Warren County.

COMMENTS: At the southern limit of its range, the  
species was unknown from NJ prior to 1977. The  
Delaware River site is the fourth verified NJ  
occurrence. It is located in a heavily used area,  
and is vulnerable to trampling.

Lycopodium inundatum L.

Northern Bog Clubmoss

FAMILY: Lycopodiaceae      Clubmoss Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Wet sands and gravels, bogs and shores of ponds and lakes; the substrate highly acid.

DISTRIBUTION: Newfoundland to AK, south to NJ, PA, and WV, west to IL, MN and OR.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one site each in Sussex and Warren counties.

COMMENTS: Although the taxonomy of the group is complex and often confusing, this small northern species is distinctive and easily recognized in the field.

Selaginella rupestris (L.) Spreng

Ledge Spike-Moss

FAMILY: Selaginellaceae      Spike-Moss Family

STATUS:

Federal: none

TNC: G5, S2

Other: State endangered (Snyder & Vivian, 1981).

HABITAT: Dry, exposed rock ledges and ridgetops. Most often on shale but occasionally on other formations.

DISTRIBUTION: Newfoundland to Alberta, south to GA, AL and OK.

DISTRIBUTION IN DWGNRA: Seen on the 1985 survey at three sites in Sussex County.

COMMENTS: A declining species in NJ; many of its former locations have been destroyed by urbanization and pollution. Only a few additional sites are known for the state outside the DWGNRA. All stations within the DWGNRA are roadside and vulnerable to roadwork, spraying and other maintenance activities.

Botrychium multifidum (Gmel.) Rupr. Leathery Grape-Fern

FAMILY: Ophioglossaceae Adder's-tongue Family

STATUS:

Federal: none

TNC: G5, S1

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Old fields, thickets and open woodlands.

DISTRIBUTION: Labrador to AK, south to VA, IL, NE,  
and NM, and west to CA.

DISTRIBUTION IN DWGNRA: Last seen in the 1930's in  
Warren County. Not found on the 1985 survey.

COMMENTS: Currently known from only two sites in  
Sussex and Warren Counties, and near the southern  
limit of its range in NJ. There is abundant  
available habitat for this species in the DWGNRA.

Botrychium oneidense (Gilbert) House

Blunt-lobed Grape Fern

FAMILY: Ophioglossaceae Adder's-tongue Family

STATUS:

Federal: none

TNC: G3G5Q, S1

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Fields, thickets and open woodlands.

DISTRIBUTION: New Brunswick west to Ontario, and south  
to NC, IN, and WI.

DISTRIBUTION IN DWGNRA: There is one Sussex County  
report. Not seen in 1985.

COMMENTS: This species has often been confused with  
Botrychium multifidum and B. dissectum  
var. obliquum, and reports for the DWGNRA may  
have been in error.

Botrychium simplex var. simplex E. Hitch.

Little Grape-fern

FAMILY: Ophioglossaceae Adder's-tongue Family

STATUS:

Federal: none

TNC: G5TU, S1

Other: Endangered (Snyder, 1982), Priority  
2 (DEP, 1984).

HABITAT: Grassy seepage slope.

DISTRIBUTION: Newfoundland to British Colombia,  
south to NJ, PA, VA, IN, WI, and west to CA.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one Warren  
County location.

COMMENTS: This recently discovered population  
represents the single NJ station for the species,  
which is near the southern limit of its range  
here. Although good numbers of fruiting plants  
were observed in 1985, the site is roadside, small  
and extremely vulnerable to roadwork, salting,  
trampling, or the disruption of the flow of water  
from above. The fragile plants appear in May  
and disappear by early summer.

Ophioglossum vulgatum L.

Adder's-tongue Fern

FAMILY: Ophioglossaceae

Adder's-tongue Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Fairbrothers & Hough, 1973).

HABITAT: Old pastures, damp thickets, grassy swales,  
open woods. Occasionally in disturbed areas.

DISTRIBUTION: Quebec to WA, south to DE, VA, IN, NE,  
and west to AZ.

DISTRIBUTION IN DWGNRA: One Warren County site is  
known. Seen in 1985.

COMMENTS: Although traditionally thought to be rare,  
it is more common than generally believed,  
and records exist for virtually every county in  
the state. An inconspicuous and often transient  
species which arises in late spring and disappears  
by midsummer. Frequently occurs with other  
species of Ophioglossaceae.

Trichomanes sp.

Filmy Fern species

FAMILY: Hymenophyllaceae

Filmy Fern Family

STATUS:

Federal: none

TNC: G?, S1

Other: Priority 2 (DEP, 1984).

HABITAT: Wet, shaded crevices of cliffs and ledges.

DISTRIBUTION: Unclear, as the definite species is unknown. The genus is chiefly tropical, but ranges north to WV, OH and IL.

DISTRIBUTION IN DWGNRA: Reported from one site in Warren County. Not seen on the 1985 survey.

COMMENTS: The gametophyte stage of this fern has recently been discovered in Warren County. It is said to resemble certain species of blue-green algae, with which it often grows. Although the most likely species is T. boschianum, definite identification is not possible without the sporophyte generation. Recent fieldwork in a number of states has greatly expanded the northern known range limit of this genus.

Cheilanthes lanosa (Michx.) D.C. Eaton

Hairy Lipfern

FAMILY: Adiantaceae

Maidenhair Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Dry cliffs, rock ledges and shaly slopes.

DISTRIBUTION: CT, NY, IL, KS, south to FL and  
west to LA and TX.

DISTRIBUTION IN DWGNRA: Seen at 1985 at two locations,  
in Sussex and Warren counties.

COMMENTS: A declining species, currently known from a  
few sites in Hunterdon, Sussex and Warren  
counties. Vulnerable to trampling and to  
overcollecting by fern enthusiasts.

Asplenium bradleyi D.C. Eat. Bradley's Spleenwort

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G3?, S1

Other: State Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Crevices of non-calcareous cliffs.

DISTRIBUTION: NY, NJ, PA, OH, south to GA, and west to  
OK.

DISTRIBUTION IN DWGNRA: Known from one site in Warren  
County. Seen in 1980 but not checked in the 1985  
survey.

COMMENTS: One of two known NJ stations, and nearing  
its northern limit of range here. The rigors of  
reaching the site preclude the likelihood of  
disturbance.

Asplenium montanum Willd.

Mountain Spleenwort

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G4G5, S2

Other: none

HABITAT: Crevices of non-calcareous ledges and cliffs,  
often in shade.

DISTRIBUTION: MA, NY, PA and OH, south to GA and west  
to ALA.

DISTRIBUTION IN DWGNRA: The only known station is in  
Warren County. Seen in 1985.

COMMENTS: This is by far the largest NJ colony of this  
species, which has been recorded from Morris,  
Sussex, Union, and Warren counties. It usually  
occurs only in small numbers. Given the isolated  
nature of the habitat and the station's long  
standing--it has been known for over 100  
years--the species seems secure here.

Asplenium pinnatifidum Nutt.

Lobed Spleenwort

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G5, S1

Other: State Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Crevices of non-calcareous rocks on cliffs  
and ledges.

DISTRIBUTION: NJ, PA, WV to IL and MO, south to GA and  
west to OK.

DISTRIBUTION IN DWGNRA: The species has been seen at  
one site in Sussex County, in the 1950's. Not  
found on the 1985 survey.

COMMENTS: At the extreme northeastern limit of its  
range. Known from only one other site in the  
state, in Hunterdon County. As there is consider-  
able available habitat in the area for this  
species--the cliffs stretch for miles in either  
direction--there is a possibility that it  
may again be found in the DWGNRA.

Cystopteris protrusa (Weath.) Blasdell

Lowland Brittle Fern

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G5, S2

Other: Undetermined (Snyder & Vivian, 1981).

HABITAT: Alluvial banks and moist, alluvial woods.

DISTRIBUTION: Ontario, NY to MN, south to GA and west to AR, KA and IA.

DISTRIBUTION IN DWGNRA: Unrecorded from the DWGNRA prior to 1985; seen along the Delaware River at one Sussex County location.

COMMENTS: Currently known from a few sites along the Delaware River in Sussex and Warren counties. A number of new stations for this species have been discovered in recent years.

Gymnocarpium dryopteris (L.) Newm.

Oak Fern

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Fairbrothers & Hough, 1973).

HABITAT: Cool acid woods, ravines and along the edges of streams and swamps. Often under hemlocks.

DISTRIBUTION: Labrador to AK, south in the mountains to NJ, WV, NC and west to OH, IA, MN and AZ.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one Sussex County site.

COMMENTS: Recently reported from only four counties, all in the northern part of the state, and approaching the southern limit of its range in the East.

Thelypteris phegopteris

Long Beech Fern

FAMILY: Aspleniaceae

Spleenwort Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Cool acid woods, shaded rock crevices.  
Usually under hemlocks.

DISTRIBUTION: Labrador to Ontario, south to NJ, PA,  
south in the mountains to WV, VA, NC, and TN and  
west to OH, IL and MN.

DISTRIBUTION IN DWGNRA: Seen on the 1985 survey at  
three Sussex County locations. The species has  
also been reported from one Warren County site.

COMMENTS: Currently known from sites in Hunterdon,  
Morris, Sussex, and Warren counties.  
Approaching the southern limit of its range  
in the East.

Picea rubens Sarg.

Red Spruce

FAMILY: Pinaceae

Pine Family

STATUS:

Federal: none

TNC: G5, S2

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973).

HABITAT: Woods, rocky slopes and the margins of  
swamps and bogs.

DISTRIBUTION: Eastern Canada south to New England and,  
in the mountains, to NC and TN.

DISTRIBUTION IN DWGNRA: Seen in 1985 at two sites  
in Sussex County and one site in Warren County.  
Two additional Sussex County locations are known  
from herbarium records, but were not found in  
1985.

COMMENTS: Currently known from a few sites in  
Passaic, Sussex, and Warren counties, and usually  
only as scattered individuals. Can be confused  
with Black Spruce (Picea mariana), which will  
sometimes occur with Red Spruce in dry areas.  
At a large Sussex county site, many of the trees  
are dying or damaged, and there are numerous dead  
red spruce in the area. Although the exact cause  
is not known, the condition of these trees greatly  
resembles that of dying red spruce in the  
Catskill Mountains in New York and in the White  
Mountains of New Hampshire, where acid rain is  
suspected as the cause of large-scale tree  
mortality.

Sparganium chlorocarpum Rydb.      Green-fruited Burr-Reed

FAMILY: Sparganiaceae      Burr-Reed Family

STATUS:

Federal: none

TNC: G5, S2

Other: none

HABITAT: Muddy soil, and in shallow water of ponds and lakes.

DISTRIBUTION: Newfoundland to Ontario and south to NJ, PA, and west to IA.

DISTRIBUTION IN DWGNRA: Reported from the edge of a beaver pond in Sussex County. Not seen in 1985.

COMMENTS: At the southern limit of its range in northern NJ.

Glyceria grandis S. Wats.      American Mannagrass

FAMILY: Poaceae      Grass Family

STATUS:

Federal: none

TNC: G5, S2

Other: none

HABITAT: Banks of streams, wet meadows, ditches.

DISTRIBUTION: Newfoundland to AK, south to VA, TN, IA, and west to NM.

DISTRIBUTION IN DWGNRA: There are two old herbarium specimens, both from Sussex County. Not found on the 1985 survey.

COMMENTS: Nearing its southern limit of range in the East.

Poa lanquida Hitchc.                      Drooping Bluegrass

FAMILY: Poaceae                      Grass Family

STATUS:

Federal: none

TNC: G2G3, S2

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973).

HABITAT: Moist, sandy or rocky woods, often along streams.

DISTRIBUTION: VT to MN, south to RI, NJ, PA and west to IL and IA.

DISTRIBUTION IN DWGNRA: A few plants were found at a wooded site in Sussex County; a new station located during the 1985 survey. There is also a 1914 herbarium record from Warren County.

COMMENTS: Known only from Passaic, Sussex, and Warren counties, and approaching the southern limit of its range in NJ.

Trisetum pennsylvanicum                      Swamp Oats

FAMILY: Poaceae                      Grass Family

STATUS:

Federal: none

TNC: G3G5, S2

Other: Endangered (Fairbrothers & Hough, 1973).

HABITAT: wooded swamps and moist swales.

DISTRIBUTION: MA west to OH, and south to FL, AL and LA.

DISTRIBUTION IN DWGNRA: One herbarium record, a 1914 specimen from "wooded bogs", in Warren County. Not found during 1985 survey.

COMMENTS: Occurs at a few sites in Cape May, Hunterdon, Sussex, and Warren counties. Once more widespread in the state.

Carex bicknellii Britt.                      Bicknell's Sedge

FAMILY: Cyperaceae                      Sedge Family

STATUS:

Federal: none

TNC: G5, S2

Other: none

HABITAT: Dry fields, open slopes and thickets.

DISTRIBUTION: ME to Saskatchewan, south to DE, PA, OH,  
and west to OK and NM.

DISTRIBUTION IN DWGNRA: A 1918 herbarium record exists  
for a sandy roadside in Sussex County; and also  
reported from an old field in Sussex. Not  
located during the 1985 survey.

COMMENTS: Recent records from Hunterdon, Morris, and  
Sussex counties. A prairie species near the  
southern limit of its range. Listed as "proposed  
rare" in PA, and searched for but not found on the  
1983 DWGNRA-PA survey.

Carex bushii Mackenz.                      Bush's Sedge

FAMILY: Cyperaceae                      Sedge Family

STATUS:

Federal: none

TNC: G3G5, S1

Other: Priority 2 (DEP, 1984).

HABITAT: Meadows, fields and open woods,  
usually in limestone regions.

DISTRIBUTION: MA to MI and IA, south to MD, MS,  
and west to AR and TX.

DISTRIBUTION IN DWGNRA: One herbarium record, a 1918  
specimen from along the Delaware River in Sussex  
County. Searched for but not found on the 1985  
survey.

COMMENTS: The species has been recorded from three  
localities in New Jersey, from Hunterdon and  
Sussex counties. Primarily a prairie species.

Carex crawei Dew.

Crawe's Sedge

FAMILY: Cyperaceae      Sedge Family

STATUS:

Federal: none

TNC: G5, S1

Other: State Endangered (Snyder & Vivian, 1981),  
Priority 2 (DEP, 1984).

HABITAT: Calcareous shores, gravels, meadows, and  
glades.

DISTRIBUTION: Quebec to Alberta, south to CT, NY, AL,  
and west to KA, WY, and WA.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one Delaware  
River site, which has been known since 1920, in  
Sussex County.

COMMENTS: This site represents the single extant  
occurrence of this species in NJ. The relatively  
small population is restricted to a limited area,  
and the species could easily be eliminated if the  
site were disturbed. Vulnerable to trampling.

Carex crawfordii Fern.

Crawford's Sedge

FAMILY: Cyperaceae      Sedge Family

STATUS:

Federal: none

TNC: G4G5, S2

Other: none

HABITAT: Open, damp, often grassy areas.

DISTRIBUTION: Newfoundland to British Columbia,  
south to NJ, and west to TN, MS, MN, ID and  
WA.

DISTRIBUTION IN DWGNRA: Seen at four Sussex County  
sites. Another location, in Warren County  
appears to have been destroyed.

COMMENTS: Traditionally known from three counties in  
NJ, the species may be more common than generally  
believed. C. crawfordii is in the difficult  
ovales group, the members of which often closely  
resemble each other.

Carex cryptolepis Mackenz.      Small Yellow Sedge

FAMILY: Cyperaceae      Sedge Family

STATUS

Federal: none  
TNC: G3G5, S2  
Other: none

HABITAT: Wet soil of watersides, meadows and swales in limestone regions.

DISTRIBUTION: Newfoundland to MN, south to NJ, PA, OH, and west to WI.

DISTRIBUTION IN DWGNRA: Seen in 1985 at a seepage area along the Delaware River in Sussex County

COMMENTS: At the southern limit of its range, C. cryptolepis is known from a few locales in Sussex and Warren counties. Listed as Carex flava var. fertilis in Gray's Manual.

Carex foena Willd.      Dry-spiked Sedge

FAMILY: Cyperaceae      Sedge Family

STATUS:

Federal: none  
TNC: G5?, S1  
Other: Priority 2 (DEP, 1984).

HABITAT: Dry soil in open areas.

DISTRIBUTION: ME and Quebec to Mackenzie, south to NJ, NY, OH, IL, NE, and west to NM and AZ.

DISTRIBUTION IN DWGNRA: Known from three old herbarium records, two from Sussex County and one from Warren County.

COMMENTS: There is only one recent sighting of this sedge in NJ. Listed as C. siccata Dew. in Britton and Brown.

Carex hitchcockiana Dew.

Hitchcock's Sedge

FAMILY: Cyperaceae

Sedge Family

STATUS:

Federal: none

TNC: G5, S1

Other: none

HABITAT: Moist, often calcareous woods.

DISTRIBUTION: Quebec and VT, west to Ont., and WI,  
and south to VA, TN and MO.

DISTRIBUTION IN DWGNRA: Known from one Warren County  
site, and seen in 1985.

COMMENTS: The few recent sightings in NJ have been  
restricted to Sussex and Warren counties.

Carex leptoneuria Fern.

Finely-Nerved Sedge

FAMILY: Cyperaceae

Sedge Family

STATUS:

Federal: none

TNC: G3G5, S2

Other: none

HABITAT: Woods, clearings, thickets.

DISTRIBUTION: Newfoundland to MN, south to NJ, PA, NC, and TN, west to OH, MI, and WI.

DISTRIBUTION IN DWGNRA: Seen during the 1985 survey at one location in Sussex County. The species has also been collected at another site nearby, but was not found in 1985.

COMMENTS: Known from a few sites in Passaic and Sussex counties. Approaching the southern limit of its range in NJ.

Carex viridula Michx.

Green Sedge

FAMILY: Cyperaceae

Sedge Family

STATUS:

Federal: none

TNC: G5?, S1

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Damp shores, seepage areas, usually in limestone regions.

DISTRIBUTION: Newfoundland to AK, south to NJ, PA, OH, and west to NM and CA.

DISTRIBUTION IN DWGNRA: Seen during 1985 at two Sussex County locales, and reported recently from an additional site, also in Sussex.

COMMENTS: At the southern limit of its range in NJ, this attractive little sedge is restricted to sites along the Delaware R. in Sussex and Warren counties. The populations in the DWGNRA are quite small, and could easily be eliminated by trampling or disruption of the seepage flow from the wooded riverbank above.

Eleocharis compressa Sulliv. Flat-Stemmed Spikerush

FAMILY: Cyperaceae                      Sedge Family

STATUS:

Federal: none

TNC: G?, S1

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Damp calcareous shores.

DISTRIBUTION: Quebec and NY to Sask., south to VA, GA, AL, and west to TX and CO.

DISTRIBUTION IN DWGNRA: Three Sussex and one Warren County station were seen during 1985.

Comments: All NJ records for E. compressa are from within the boundaries of the DWGNRA. Vulnerable to trampling.

Eriophorum viridicarinatum (Engelm.) Fern.

Thin-leaved Cottongrass

FAMILY: Cyperaceae                      Sedge Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Bogs, swampy woods, wet meadows.

DISTRIBUTION: Labrador to AK, south to NY, NJ, OH, west to IA and British Columbia.

DISTRIBUTION IN DWGNRA: Reported from a limy seepage area in Sussex County, and seen on the 1985 survey. It occurs with a variety of other calciphiles.

Comments: At the southern limit of its range in NJ, and currently known from a few bogs in Morris, Sussex, and Warren counties.

Scirpus microcarpus Presl.      Barber Pole Bulrush

FAMILY:    Cyperaceae              Sedge Family

STATUS:

    Federal:   none  
    TNC:    G?, S1  
    Other:   none

HABITAT:   Damp open soil, marshes, thickets, meadows.

DISTRIBUTION:   Labrador to Sask., south to NY, WV, and  
                    west to MN and NE.

DISTRIBUTION IN DWGNRA:   A new species for the state,  
                                recently discovered on the Delaware in Sussex  
                                County.    Seen in 1985.

COMMENTS:   Known from a single NJ station, the species  
                    is restricted to a small area and could easily be  
                    destroyed by trampling or other disturbances.

Scirpus pedicellatus Fern.      Stalked Bulrush

FAMILY:    Cyperaceae              Sedge Family

STATUS:

    Federal:   none  
    TNC:    G?, SH  
    Other:   Extirpated (Snyder & Vivian, 1981),  
                    Priority 3 (DEP, 1984).

HABITAT:   Alluvial thickets, shores and swales.

DISTRIBUTION:   Quebec to MN, south to NJ, PA, OH,  
                    and west to IN and IA.

DISTRIBUTION IN DWGNRA:   There is a 1918 herbarium  
                                specimen from Sussex County.    Searched for but  
                                not found during the 1985 survey.

COMMENTS:   At the southern limit of its range in  
                    NJ, this species has been collected only once in  
                    the state.

Scleria pauciflora Muhl. ex. Willd.

Few-Flowered Nut Rush

FAMILY: Cyperaceae

Sedge Family

STATUS:

Federal: none

TNC: G5, S1

Other: none

HABITAT: Dry open areas, pinelands and barrens.

DISTRIBUTION: FL to TX, north to MA, NH, NY, OH,  
and west to MN and IL.

DISTRIBUTION IN DWGNRA: Collected in 1884 in Warren  
County. Searched for but not found during the  
1985 survey.

COMMENTS: Mostly known from the Pine Barrens in  
southern NJ, Scleria pauciflora has re-  
cently been rediscovered at one site in  
the northern part of the state.

Lemna trisulca L.

Star Duckweed

FAMILY: Lemnaceae

Duckweed Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Ponds and slow streams, often in limestone  
regions.

DISTRIBUTION: Quebec to British Columbia, south to  
AL, and west to TX.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one Sussex  
County pond.

COMMENTS: Currently known from stations in Morris and  
Warren counties. Inconspicuous and easily over-  
looked.

Lilium philadelphicum L.      Wood Lily

FAMILY: Liliaceae      Lily Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Moist to dry thickets, fields and open woods.

DISTRIBUTION: ME to Ontario, south to DE, MD, WV,  
NC and KY.

DISTRIBUTION IN DWGNRA: Small numbers were found during 1985 at three locations; two in Warren and one in Sussex County. There are two additional herbarium records for sites in Warren County, which could not be located.

COMMENTS: A very showy successional species which has suffered considerably from over-collecting by wildflower enthusiasts. All DWGNRA sites for this species are roadside and vulnerable. Though known from most northern NJ counties, it is scattered and declining.

Smilacina trifolia (L.) Desf.

Three-Leaved Solomon's Seal

FAMILY: Liliaceae      Lily Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Bogs, swamps and cool woods,

DISTRIBUTION: Labrador to Mackenzie, south to NJ,  
PA, OH, and west to MN, Saskatchewan and  
Alberta.

DISTRIBUTION IN DWGNRA: Reported from a Sussex County  
spruce bog. Searched for but not found in 1985.

COMMENTS: Last seen in 1980. The one reported site in  
the DWGNRA has been flooded by beavers, and the  
species may no longer occur there. Similar sites  
elsewhere in the Area have been damaged or de-  
stroyed by beavers.

Streptopus amplexifolius (L.) DC.      White Twisted-Stalk

FAMILY:    Liliaceae                      Lily Family

STATUS:

    Federal:   none

    TNC:    G5, S1

    Other:   Endangered (Snyder & Vivian, 1981),  
             Endangered (Fairbrothers & Hough, 1973),  
             Priority 2 (DEP, 1984).

HABITAT:   Hemlock ravines, cool moist woods.

DISTRIBUTION:   Labrador to AK, south to NJ, and west to  
                 NM and CA.

DISTRIBUTION IN DWGNRA:   Seen during 1985 in Sussex  
                                 County, and reported to have been recently seen  
                                 in Warren.

COMMENTS:   This northern species is at the southern  
                 limit of its range in NJ, where it had not been  
                 known to occur prior to 1963. It is found in the  
                 state at two sites only, both in the DWGNRA.

Sisyrinchium montanum var. crebrum Fern.

                                 Strict Blue-Eyed Grass

FAMILY:    Iridaceae                      Iris Family

STATUS:

    Federal:   none

    TNC:    G5TU, S1

    Other:   none

HABITAT:   Damp open soil, fields and meadows.

DISTRIBUTION:   Newfoundland to Ontario, south to NJ,  
                 PA and WV.

DISTRIBUTION IN DWGNRA:   The species has been seen  
                                 recently at two locations, in Sussex and Warren  
                                 counties. Not searched for on the 1985 survey.

COMMENTS:   The only known NJ records for this species  
                 are the two reports from the DWGNRA.

Coeloglossum viride Hartman      Long-Bracted Green Orchid

FAMILY:    Orchidaceae            Orchid Family

STATUS:

    Federal:   none

    TNC:    G5, S2

    Other:   Rare (Snyder & Vivian, 1981).

HABITAT:   Rich woods, thickets and meadows.

DISTRIBUTION:   Newfoundland to Alberta, south to NJ,  
                 PA, SC, and, TN, west to IN and IA.

DISTRIBUTION IN DWGNRA:   Not recently seen.   There  
                                 are two old herbarium records, from Sussex and  
                                 Warren counties.

COMMENTS:    A northern species approaching the south-  
                 ern limits of its range, and apparently declining  
                 in the state, as it is currently known from only  
                 a few sites in the northern counties.   Formerly  
                 more widespread.

Corallorhiza trifida Chatelain Early Coral-Root

FAMILY: Orchidaceae                      Orchid Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Wet thickets, bogs and damp woods, often  
under hemlocks.

DISTRIBUTION: Labrador to AK, south to NJ, PA, and  
in the mountains to GA, and west to TN, OH, MO  
and OR.

DISTRIBUTION IN DWGNRA: The single record is from a  
spruce bog in Sussex County. Not seen in 1985.

COMMENTS: Local south of New England. In New Jersey,  
the species' distribution is restricted mostly  
to the sphagnum bogs and wet woods of the north-  
western counties. Like most coral-roots, C.  
trifida is inconspicuous and its occurrence is  
unpredictable.

Listera cordata (L.) R. Br. Heart-leaved Twayblade

FAMILY: Orchidaceae Orchid Family

STATUS:

Federal: none

TNC: G5, S1

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Bogs, sphagnum woods and wooded swamp  
margins.

DISTRIBUTION: Labrador to AK, south to NJ, in the  
mountains to MD, WV, and NC, and west to MN,  
NM and OR.

DISTRIBUTION IN DWGNRA: Reported from two Sussex  
County bogs. Searched for but not found in  
1985.

COMMENTS: Currently known from a few bogs in Sussex  
County, and only in very small numbers. Most  
available habitat in the DWGNRA has been  
destroyed by beaver related flooding and clear-  
ing.

Malaxis unifolia Michx.

Green Adder's Mouth

FAMILY: Orchidaceae

Orchid Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Bogs, swamp margins and moist woods.

DISTRIBUTION: Newfoundland to Sask. south to FL,  
and west to LA and TX.

DISTRIBUTION IN DWGNRA: Reported from a spruce bog  
on the Kittatinnies, in Sussex County. Not  
found in 1985.

COMMENTS: Once known from most of the counties in the  
state, M. unifolia has seriously declined and  
is currently known from only two sites in NJ. It  
is not necessarily a bog species, having fairly  
wide habitat preferences, and may still occur in  
the DWGNRA.

Platanthera ciliaris (L.) Lindl.      Yellow-Fringed Orchid

FAMILY:    Orchidaceae                      Orchid Family

STATUS:

    Federal:    none

    TNC:    G5, S2

    Other:    Listed as Endangered by the New Jersey  
                Pinelands Commission, and protected by  
                state statute within the Pinelands National  
                Reserve. Endangered (Snyder & Vivian, 1981),  
                Endangered (Fairbrothers & Hough, 1973),  
                Priority 2 (DEP, 1984).

HABITAT:    Bogs, sphagnous woods, wet thickets and  
                swales.

DISTRIBUTION:    FL to TX north to New England and NY,  
                        west to MI, WI and MD.

DISTRIBUTION IN DWGNRA:    Collected once, in 1939, at a  
                                wet thicket in Warren County, and apparently not  
                                recorded since. Searched for but not found in  
                                1985.

COMMENTS:    The only currently known stations are in  
                        southern NJ. Although becoming rare in most of  
                        its range north of VA, P. ciliaris is not  
                        infrequent in similar habitat in the mountains to  
                        the west.

Platanthera flava var. herbiola Lindl.

Tubercled Rein Orchid

FAMILY: Orchidaceae

Orchid Family

STATUS:

Federal: none

TNC: G4TU, S2

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Swales, meadows, damp thickets and open woods.

DISTRIBUTION: New Brunswick to Ontario, south to DE, MD, WV, NC, and TN, and west to WI and MO.

DISTRIBUTION IN DWGNRA: There are two herbarium records, from Sussex and Warren counties. The Warren County site appears to have been destroyed. The Sussex County location was searched in 1985 without success.

COMMENTS: Known at present from one station each in Passaic and Sussex counties, and reported in the 1970's from Warren County. Once much more widespread in northern NJ, and apparently declining throughout much of its range in the eastern U.S.

Platanthera psycodes (L.) Lindl.      Purple-Fringed Orchid

FAMILY:    Orchidaceae                      Orchid Family

STATUS:

    Federal:   none

    TNC:    G5, S3

    Other:   none

HABITAT:   Meadows, swamps, damp thickets, wet shores  
                 and damp, open woods.

DISTRIBUTION:   Newfoundland to Ont., south to NY, NJ,  
                 PA, south in the mountains to GA and TN, west  
                 to OH, IN and IL.

DISTRIBUTION IN DWGNRA:   The species has been recorded  
                 from three locations; two in Sussex and one in  
                 Warren County. Not checked in 1985.

COMMENTS:    This showy species has suffered at the hands  
                 of collectors, and from habitat destruction.  
                 Local in a number of northern NJ counties.

Spiranthes lucida (H.H. Eat.) Ames

Shining Ladies'-Tresses

FAMILY: Orchidaceae

Orchid Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Alluvial or rocky shores, thickets, meadows  
and seepage areas, usually on limestone.

DISTRIBUTION: New Brunswick to Ontario and MN, south  
to NJ, and PA, in the mountains to NC and TN,  
west to IN, IL and MI.

DISTRIBUTION IN DWGNRA: Seen in 1985 at five sites  
in Sussex County and one new site in Warren.  
There is also an herbarium record from an  
additional Warren County location.

COMMENTS: Known from several counties in northern NJ.  
Most of the NJ population is within the bound-  
aries of the DWGNRA. All sites but one are in  
heavily-used areas where the species is vulner-  
able to trampling.

Spiranthes ochroleuca (Rydb.) Rydb.

Yellowish Ladies'-Tresses

FAMILY: Orchidaceae

Orchid Family

## STATUS

Federal: none

TNC: G?, S3

Other: none

HABITAT: Dry banks, dry open woods and thickets.

DISTRIBUTION: FL to TX, north to Quebec, and west to MN and SD.

DISTRIBUTION IN DWGNRA: Seen in 1985 at three sites in Warren County and one in Sussex.

COMMENTS: Resembles S. cernua, but occurs in much drier habitat. Flowers of the two species are distinguished by a number of technical differences, those of S. ochroleuca seemingly persisting longer.

Salix lucida Muhl.

Shining Willow

FAMILY: Salicaceae

Willow Family

## STATUS:

Federal: none

TNC: G5, S1

Other: none

HABITAT: Low wet ground of shores and swamps.

DISTRIBUTION: Labrador to Manitoba, south to DE, MD and OH, west to IA and SD.

DISTRIBUTION IN DWGNRA: There is a 1917 herbarium record for the shore of the Delaware, in Sussex County. The site has been thoroughly searched, but the species has not been found.

COMMENTS: This distinctive willow is currently confined to a few stations in Morris and Sussex counties. Nearing the southern limit of its range.

Betula papyrifera Marsh.

Paper Birch

FAMILY: Betulaceae

Birch Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Woods, often on slopes.

DISTRIBUTION: Labrador to AK, south to NJ, PA, WV,  
and NC, west to OH, IN, IL, IA and SD.

DISTRIBUTION IN DWGNRA: Known from three sites on the  
Kittatinnies, two in Sussex and one in Warren  
County. Two of these stations were seen in 1985.

COMMENTS: In NJ the species is known from a few  
sites on the Kittatinnies in Sussex and Warren  
counties and from two sites in Bergen and Passaic  
counties.

Arceuthobium pusillum Peck

## Dwarf Mistletoe

FAMILY: Loranthaceae

Mistletoe Family

## STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: In New Jersey the species is only known to  
parasitize black spruce, though it occurs on  
tamarack elsewhere.

DISTRIBUTION: Newfoundland to Ontario, south to NJ,  
PA, MI, WI, and MN.

DISTRIBUTION IN DWGNRA: There is a 1937 herbarium  
record from a Warren County bog. Searched for in  
1985, and a number of years previously, without  
success. The species may still be present, given  
the difficulty of adequately surveying spruce  
bogs.

COMMENTS: Reported from four cold bogs in Sussex and  
Warren counties. The plant itself is minute  
and easy to overlook, though its presence on  
conifers is often indicated by the distorted  
shape ("witch's broom") of the host tree.

Aristolochia serpentaria L.      Virginia Snakeroot

FAMILY: Aristolochiaceae      Birthwort Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Fairbrothers & Hough, 1973).

HABITAT: Rich, often calcareous woods.

DISTRIBUTION: FL to TX, north to CT, NJ and NY,  
west to MO and KS.

DISTRIBUTION IN DWGNRA: There is one record known, in  
Warren County. Not seen in 1985, but probably  
still present.

COMMENTS: Often overlooked, and more common than  
previously believed. At the northern limit of  
its range.

Claytonia virginica forma hammondiae  
Hammond's Yellow Spring Beauty

FAMILY: Portulacaceae      Purslane Family

STATUS:

Federal: none

TNC: G5, S1

Other: none

HABITAT: Cold, spring-fed seeps and sphagnous bogs.

DISTRIBUTION: C. virginica ranges from Quebec to  
MN, south to GA, and west to TX. The only known  
occurrence of forma hammondiae is the site in  
the DWGNRA and on adjacent private land.

DISTRIBUTION IN DWGNRA: Occurs on several acres of  
public and private property at one Sussex County  
site.

COMMENTS: Differs from the typical species by later  
blooming time and bright yellow petals.

Cerastium beeringianum C. & S.      Bering Sea Chickweed

FAMILY: Caryophyllaceae      Pink Family

STATUS:

Federal: none

TNC: G?, S1

Other: none

HABITAT: Damp slopes and seepage areas.

DISTRIBUTION: Labrador to AK, south in the east to the Gaspé Peninsula and Quebec. In the west, it occurs south in the Rockies to AZ.

DISTRIBUTION IN THE DWGNRA: Recently discovered in wet spots over a small area in Sussex County. Seen in 1985.

COMMENTS: As the name Bering Sea Chickweed implies, this is a northern species, and it has not been recorded in the east south of Canada. The DWGNRA occurrence represents a southern range extension of over 500 miles.

Sagina procumbens L.

Procumbent Pearlwort

FAMILY: Caryophyllaceae      Pink Family

STATUS:

Federal: none

TNC: G5, S2SE

Other: none

HABITAT: Damp open soil, muddy shores.

DISTRIBUTION: Newfoundland to MN, south to DE, MD, WV and OH.

DISTRIBUTION IN DWGNRA: There are two herbarium records, a 1913 specimen from Warren County, and a 1982 collection from Sussex. The species is probably still present at the latter site.

COMMENTS: Inconspicuous and vulnerable to trampling at the Sussex County site, which is one of the few recent NJ records for the species.

Silene nivea (Nutt.) Oth

Snowy Campion

FAMILY: Caryophyllaceae

Pink Family

STATUS:

Federal: none

TNC: G?, S1

HABITAT: Rich woods, alluvium.

DISTRIBUTION: NJ to SD, south to MD, VA, TN and MO.

DISTRIBUTION IN DWGNRA: Known from three locations in Sussex County. Seen at two of these sites during 1985.

COMMENTS: Only recently discovered in NJ; its known NJ distribution is restricted to the DWGNRA.

Stellaria calycantha (Ledeb.) Bong. Northern Stitchwort

FAMILY: Caryophyllaceae

Pink Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare (Fairbrothers & Hough, 1973).

HABITAT: Boggy areas along streams and at the edges of swamps.

DISTRIBUTION: Newfoundland to AK, south to NJ, PA, and WV, west to MI, MN, CA and OR.

DISTRIBUTION IN DWGNRA: One old collection, an 1884 specimen from the Kittatinny Mountain in Sussex County. Not seen in 1985.

COMMENTS: Reported from four northern NJ counties, and currently known from sites in Passaic and Sussex counties. At the southern limit of its range in NJ.

Nuphar microphyllum (Pers.) Fern. Small Yellow Pond Lily

FAMILY: Nymphaeaceae Water-Lily Family

## STATUS:

Federal: none

TNC: G?, SH

Other: Undetermined (Snyder &amp; Vivian, 1981).

HABITAT: Ponds and slow moving water.

DISTRIBUTION: Newfoundland to Man., south to NJ, PA,  
and west to WI and MN.DISTRIBUTION IN DWGNRA: There is an 1884 herbarium  
record from Warren County. The site was checked  
in 1985, though the species is probably no longer  
present.COMMENTS: At the southern limit of its range in NJ,  
and last reported from Passaic County in the  
1960's. The Warren County site has been altered  
considerably over the years.Anemone canadensis L.

Canada Anemone

FAMILY: Ranunculaceae Buttercup Family

## STATUS:

Federal: none

TNC: G5, SU

Other: Rare (Snyder & Vivian, 1981),  
Priority 2 (DEP, 1984).HABITAT: Thickets, meadows and shores, often in lime-  
stone regions.DISTRIBUTION: Quebec to B.C., south to NJ, PA, WV, OH,  
and west to MO, KA and NM.DISTRIBUTION IN DWGNRA: Reported to be present at one  
site along the Delaware River in Sussex County.  
Not found on the 1985 survey.COMMENTS: The report of this species from the DWGNRA  
may have involved confusion with A. riparia, a  
similar species which occurs with some regularity  
in limestone areas along the Delaware River.

Clematis occidentalis (Hornem.) DC. Purple Clematis

FAMILY: Ranunculaceae                      Buttercup Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Rocky slopes and woods.

DISTRIBUTION: Quebec to Manitoba, south to DE, MD,  
WV and OH, west to WI and IA.

DISTRIBUTION IN DWGNRA: One recent report, from  
Sussex County. Not seen on the 1985 survey,  
but probably still present.

COMMENTS: An ornamental species which has suffered  
from over-collecting. A few sites are known in  
Hunterdon, Passaic, Sussex, and Warren counties.

Ranunculus aquatilis L.                      White Water Buttercup

FAMILY: Ranunculaceae                      Buttercup Family

STATUS:

Federal: none

TNC: G5?, S2

Other: none

HABITAT: ponds and streams.

DISTRIBUTION: Labrador to AK, south to NJ, PA, MN,  
and SD, west to NM, AZ and CA.

DISTRIBUTION IN DWGNRA: There are three herbarium  
records: two from Sussex and one from Warren  
County. Searched for but not found in 1985.

COMMENTS: A transient species which appears and  
disappears as conditions change.

Ranunculus fascicularis Muhl.      Early Buttercup

FAMILY: Ranunculaceae      Buttercup Family

STATUS:

Federal: none

TNC: G5, S1

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Dry soil in open woods and on ledges.

DISTRIBUTION: NH to MN and Ontario, south to GA and west to TX and IA.

DISTRIBUTION IN DWGNRA: Known from one site in Sussex County, and seen during the 1985 survey.

COMMENTS: Currently only known in NJ from the Sussex County site in the DWGNRA. Many earlier records reported from elsewhere in the state have proven to be misidentifications.

Ranunculus longirostris Godr.

Eastern White Water Buttercup

FAMILY: Ranunculaceae      Buttercup Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare (Fairbrothers & Hough, 1973).

HABITAT: Slow waters of ponds, lakes and streams.

DISTRIBUTION: Quebec to OR, south to DE, PA and TN, west to KA, TX, NM and AZ.

DISTRIBUTION IN DWGNRA: Reported from one Sussex County location. An additional site was located during the 1985 survey, also in Sussex.

COMMENTS: Flowering is probably dependent upon low water levels in streams and rivers.

Ranunculus reptans L.

## Creeping Buttercup

FAMILY: Ranunculaceae

Buttercup Family

## STATUS:

Federal: none

TNC: G5, SH

Other: Extirpated (Snyder & Vivian, 1981),  
Priority 3 (DEP, 1984).

HABITAT: Sandy or muddy shores.

DISTRIBUTION: Newfoundland to AK, south to NJ, PA,  
NY, WI and MN, and west to CO, and OR.DISTRIBUTION IN DWGNRA: There is an 1884 herbarium  
record from Warren County, and apparently not seen  
since. Could not be found in 1985.COMMENTS: There have been only three collections of  
this species in NJ, all from the 1800's. Although  
considered extirpated, it is small and easily  
overlooked, and may eventually be relocated. At  
the southern limit of its range in NJ.

Trollius laxus ssp. laxus Salisb.

Spreading Globe Flower

FAMILY: Ranunculaceae      Buttercup Family

STATUS:

Federal: Category 3C, Federal Register, 1985.

TNC: G4T3Q, S2.

Other: Rare (Snyder & Vivian, 1981), Rare,  
(Fairbrothers & Hough, 1973), Priority  
1 (DEP, 1984).

HABITAT: Wet pastures, meadows and swamp margins,  
usually in limestone regions.

DISTRIBUTION: Restricted to the five northeastern  
states of CT, NJ, NY, OH and PA.

DISTRIBUTION IN DWGNRA: There is one herbarium record,  
from a limestone meadow in Sussex County. The  
site was searched in 1985, without success.

COMMENTS: Restricted to the limestone belt in Sussex  
and Warren counties. New Jersey contains some of  
the best remaining populations of this declining  
species, which even in the old literature was con-  
sidered to be rare and local.

Adlumia fungosa (Ait.) Greene

Allegheny-Vine

FAMILY: Papaveraceae

Poppy Family

## STATUS:

Federal: none

TNC: G4, S2

Other: none

HABITAT: Wooded talus slopes and rocky woods.

DISTRIBUTION: Quebec to Ontario and MN, south to New England, and in the mountains to NC and TN.

DISTRIBUTION IN DWGNRA: There is a 1975 record from a talus slope in Warren County. Not searched for during 1985, though probably still present.

COMMENTS: Local in Hunterdon, Passaic, Sussex and Warren counties, usually in very small numbers. Wild plants are sought-after by gardeners and nurserymen.

Dicentra canadensis (Goldie) Walp. Squirrel Corn

FAMILY: Papaveraceae

Poppy Family

## STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Rich, moist woods.

DISTRIBUTION: Quebec to MN, south to NC, TN and MO.

DISTRIBUTION IN DWGNRA: There is an herbarium record from one Sussex County site, which was seen in 1985. Also, two additional Sussex sites were discovered during the survey.

COMMENTS: Prior to 1985, this species was known in NJ from one station each in Mercer and Sussex counties. The two additional sites discovered in 1985 are both in the DWGNRA in Sussex County.

Dicentra eximia (Ker-Gawl.) Torr. Wild Bleeding Heart

FAMILY: Papaveraceae Poppy Family

STATUS:

Federal: none

TNC: G5, S1

Other: Undetermined (Snyder & Vivian, 1981),  
Undetermined (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Rocky woods, ledges and cliffs.

DISTRIBUTION: GA and TN, north to NJ, PA and NY.

DISTRIBUTION IN DWGNRA: The one known site, in Warren County, was searched several times during 1985, but without success.

COMMENTS: At the northern limit of its range in NJ, and known as a native species in the state from one site in Warren County, where it has not been seen recently. Listed as proposed rare in PA.

Cardamine rotundifolia Michx. Round-leaved Water Cress

FAMILY: Brassicaceae Mustard Family

STATUS:

Federal: none

TNC: G4, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Springy places, seeps, wet areas along brooks.

DISTRIBUTION: NC north to NJ, PA, NY, OH and KY.

DISTRIBUTION IN DWGNRA: There are herbarium records for three sites in Warren County. Only one, seen in 1985, is believed to be extant.

COMMENTS: Approaching the northern limit of its range. The only known NJ population of this species is the Warren County site in the DWGNRA. It is essentially roadside and in a heavily-used area, and should receive protection.

Dentaria diphylla Michx.

Two-leaved Toothwort

FAMILY: Brassicaceae

Mustard Family

## STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder &amp; Vivian, 1981).

HABITAT: Rich woods, often along streams.

DISTRIBUTION: Quebec to Ontario, south to SC, west to KY and MI.

DISTRIBUTION IN DWGNRA: Observed at ten sites in Sussex and Warren counties during the 1985 survey.

COMMENTS: Although found to be more common than previously believed, most of the NJ stations of D. diphylla are within the DWGNRA; it is still rare away from the Delaware.Podostemon ceratophyllum Michx.

Riverweed

FAMILY: Podostemaceae

Riverweed Family

## STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: On rocks in streams and rivers.

DISTRIBUTION: GA to AR, north to New Brunswick, and west to Ontario.

DISTRIBUTION IN THE DWGNRA: The species is known to have occurred at two sites in Sussex County and one in Warren. Two additional Warren County stations were seen during the 1985 survey.

COMMENTS: Aquatic, and easily overlooked. Reported to be abundant at a few sites in Hunterdon and Warren counties, south of the DWGNRA.

Ribes glandulosum Grauer

Skunk Currant

FAMILY: Rosaceae

Rose Family

STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Wet woods and clearings, rocky slopes.

DISTRIBUTION: Labrador to B.C. south to NY and NJ,  
in the mountains to NC, and west to OH, MI, MN  
and Sask.

DISTRIBUTION IN DWGNRA: The single known station, in  
Sussex County, was seen during the 1985 survey.

COMMENTS: The site in the DWGNRA represents the single  
known NJ station.

Geum rivale L.

Water Avens

FAMILY: Rosaceae

Rose Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Wet meadows, wooded swamps, bogs.

DISTRIBUTION: Labrador to B.C., south to NJ, PA and  
WV, west to OH, IL, MN and NM.

DISTRIBUTION IN DWGNRA: There is one herbarium record,  
from a wet meadow in Sussex County. Not found on  
the 1985 survey.

COMMENTS: A few stations are known from Morris and  
Sussex counties. Near the southern limit of its  
range.

Porteranthus trifolius (L.) Britt. Indian Physic

FAMILY: Rosaceae

Rose Family

STATUS:

Federal: none

TNC: G4G5, S2

Other: none

HABITAT: Rich woods and wood margins.

DISTRIBUTION: NY to Ontario and MI, south to GA and AL.

DISTRIBUTION IN DWGNRA: There are two herbarium records, from Sussex and Warren counties. Not seen during 1985.

COMMENTS: Approaching the northeastern limit of its range. There are only a few current NJ records, from Sussex and Warren counties; the species has always been scarce in the state.

Potentilla aruta Pursh

Tall Cinquefoil

FAMILY: Rosaceae

Rose Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Rocky or alluvial soils, on slopes or open areas.

DISTRIBUTION: New Brunswick to B.C., south to DC, WV and OH, west to IN, MO, OK and CO.

DISTRIBUTION IN DWGNRA: Recently seen at a site in Sussex County. Seen during the 1985 survey in Warren County.

COMMENTS: Most extant New Jersey occurrences for this species are confined to the Delaware Valley.

Prunus depressa Pursh

Low Sand Cherry

FAMILY: Rosaceae

Rose Family

## STATUS:

Federal: none

TNC: G?, S1

Other: Endangered (Snyder &amp; Vivian, 1981).

HABITAT: Dry sandy or gravelly shores of lakes, rivers.

DISTRIBUTION: Quebec to Ont., south to NJ, PA, NY and WI.

DISTRIBUTION IN DWGNRA: Seen in 1985 at one site in Sussex County and three in Warren. Previously not known to occur in this area of New Jersey.

COMMENTS: Some manuals refer to this species as Prunus pumilla var. depressa. Known in NJ prior to 1985 from one site in Hunterdon County. Four new stations, one from Sussex County and three from Warren County, were discovered on the 1985 survey. At the southern limit of its range in NJ.Spiraea alba Du Roi

Narrow-leaved Meadow Sweet

FAMILY: Rosaceae

Rose Family

## STATUS:

Federal: none

TNC: G5, SU

Other: Rare (Snyder &amp; Vivian, 1981).

HABITAT: Rocky riverbanks, swamps.

DISTRIBUTION: Quebec to Saskatchewan, south to DE, NC, and west to OH, IL, MO, ND.

DISTRIBUTION IN DWGNRA: Reported from two sites, in Sussex and Warren counties.

COMMENTS: Although plants were found which resembled S. alba in part, none fit the manuals' descriptions well enough to definitely separate them from S. latifolia. Perhaps they are intermediate forms. Further study is needed.

Waldsteinia fragarioides (Michx.) Tratt.

Barren Strawberry

FAMILY: Rosaceae

Rose Family

## STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Woods, clearings and thickets.

DISTRIBUTION: Quebec to Ontario and MN, south to  
GA and TN, west locally to IN and MO.DISTRIBUTION IN DWGNRA : The only known station, in  
Sussex County, was seen in 1985.COMMENTS : The single DWGNRA site holds the largest  
NJ population of this species, which is known only  
from Sussex and Warren counties.Phaseolus polystachios (L.) BSP. Wild Kidney Bean

FAMILY: Fabaceae

Bean Family

## STATUS:

Federal: none

TNC: G4, S2

Other: none

HABITAT: Open woods and thickets.

DISTRIBUTION: FL to TX, north to CT, NJ and NY,  
west to OH, IN, IA and NE.DISTRIBUTION IN DWGNRA: A colony was recently  
discovered on a Sussex County roadbank. Seen in  
1985.COMMENTS: Approaching the northern limit of its range  
in Sussex County, and known from only a few other  
stations. The DWGNRA site could easily be  
eliminated by spraying, improper mowing, or  
roadwork.

Vicia americana Muhl.

## American Purple Vetch

FAMILY: Fabaceae

Bean Family

## STATUS:

Federal: none

TNC: G5?, S2

Other: Rare (Snyder &amp; Vivian, 1981).

HABITAT: Rocky shores and thickets.

DISTRIBUTION: Quebec to AK, south to VA, OH and IL,  
west to IA, KA, NM and AZ.DISTRIBUTION IN DWGNRA: Known from three locations  
in Sussex County, and one in Warren. Seen during  
1985 at one site in each county, and probably  
still present at the others.COMMENTS: Current NJ records for V. americana are  
restricted to four known sites in Sussex and  
Warren counties, all within the boundaries of the  
DWGNRA.Callitriche verna L. emend. Kuetz Spring Water Starwort

FAMILY: Callitrichaceae

Water Starwort Family

## STATUS:

Federal: none

TNC: G?, SU

Other: none

HABITAT: Springs, quiet waters, wet shores.

DISTRIBUTION: Labrador to AK, south to VA, WV and MS,  
west to NB, NM, AZ and CA.DISTRIBUTION IN DWGNRA: The species is known from  
two sites in Warren County, both of which were  
surveyed without success in 1985.COMMENTS: There are very few recent NJ records for  
this species. It is easily overlooked.

Ilex montana T. & G.

Mountain Holly

FAMILY: Aquifoliaceae

Holly Family

## STATUS:

Federal: none

TNC: G5, S1

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Rich, moist woods.

DISTRIBUTION: MA to NY, south to WV, TN, GA and AL.

DISTRIBUTION IN DWGNRA: There is one 1967 report, from woods surrounding a spruce bog in Sussex County. The area has been flooded and cleared by beavers, and the species may no longer be present.

COMMENTS: At present there is one known NJ station for this species, in Passaic County. I. montana resembles a number of small tree species, and can be easily overlooked.Dirca palustris L.

Leatherwood

FAMILY: Thymeliaceae

Mezereum Family

## STATUS:

Federal: none

TNC: G4, S2

Other: none

HABITAT: Rich woods, often along streams.

DISTRIBUTION: New Brunswick to MN, south to FL and LA.

DISTRIBUTION IN DWGNRA: A few plants were seen in 1985 along a Sussex County stream.

COMMENTS: Has been seen recently in Morris, Sussex, and Warren counties, usually only as scattered individuals. When not in bloom, it resembles spicebush (Lindera benzoin), and often occurs in the same habitat with it.

Epilobium leptophyllum Raf.      Linear-Leaved Willow Herb

FAMILY: Onagraceae      Evening-Primrose Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Low ground of swamps and seepage areas.

DISTRIBUTION: Quebec to Alberta, south to NJ, PA, VA and WV, west to OH, IL, MO, KA and CO.

DISTRIBUTION IN DWGNRA: There is one 1917 herbarium specimen from a marsh along the Delaware in Sussex County. Not seen in 1985.

COMMENTS: Suitable habitat for this species still exists within the DWGNRA and the species is likely still present.

Epilobium strictum Muhl.      Downy Willow-Herb

FAMILY: Onagraceae      Evening-Primrose Family

STATUS:

Federal: none

TNC: G5?, S2

Other: none

HABITAT: Bogs, sphagnous meadows, wet thickets.

DISTRIBUTION: Quebec to MN, south to VA, OH, IN and IL.

DISTRIBUTION IN DWGNRA: A few plants were found in 1985 at a small area of limestone fen in Sussex County.

COMMENTS: Nearing the southern limit of its range, and seen recently from a few bogs in the limestone belt of Sussex and Warren counties. The DWGNRA site was not known prior to 1985.

Panax quinquefolius L.

American Ginseng

FAMILY: Araliaceae

Ginseng Family

STATUS:

Federal: Category 3C, Federal Register, 1985.

TNC: G4, S3

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Rich woods.

DISTRIBUTION: Newfoundland to B.C. south to NC, WV,  
OH, IN, IL and MN.

DISTRIBUTION IN DWGNRA: Recently seen in Warren  
County. A small population was discovered during  
1985 in Sussex County.

COMMENTS: Locations are known from Hunterdon, Morris,  
Somerset, Sussex, and Warren counties. Although  
populations at most sites are small, Panax  
quinquefolius seems to be recovering from  
years of over-collecting.

Cornus canadensis L.

Bunchberry

FAMILY: Cornaceae

Dogwood Family

## STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder &amp; Vivian, 1981).

HABITAT: Woods, thickets, and the edges of swamps and bogs.

DISTRIBUTION: Labrador to AK, south to NJ, PA, WV, OH, IL and MN, west to SD, NM and CA.

DISTRIBUTION IN DWGNRA: Known from three sites on the Kittatinnies, in Sussex and Warren counties. Seen at the Warren location in 1985.

COMMENTS: Generally known in NJ from the edges of cold bogs in Sussex and Warren counties, with a less recent report coming from Morris County. May be declining with the diminution of bog habitat due to natural and man-made causes. Approaching the southern limit of its range.

Kalmia polifolia Wang.

Pale Laurel

FAMILY: Ericaceae

Heath Family

## STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough 1973),  
Priority 2 (DEP, 1984).

HABITAT: Bogs and cool peaty areas.

DISTRIBUTION: Labrador to AK, south to NJ, PA, MI, MN, ID, and OR.

DISTRIBUTION IN DWGNRA: Known to have occurred at two bogs in Sussex and Warren counties. Both sites were unsuccessfully searched in 1985.

COMMENTS: A northern bog species which is at the southern limit of its range in NJ. Seen recently at a few black spruce bogs in Sussex County.

Pyrola chlorantha Sw.      Greenish-Flowered Wintergreen

FAMILY: Ericaceae      Heath Family

STATUS:

Federal: none

TNC: G5, SH

Other: Undetermined (Snyder & Vivian, 1981).

HABITAT: Dry woods and thickets.

DISTRIBUTION: Nova Scotia to MN, south to DE, MD, WV,  
and west to WI and NE.

DISTRIBUTION IN DWGNRA: There is one old herbarium  
record from dry woods in Sussex County. Not seen  
on the 1985 survey.

COMMENTS: There are a number of old records from sites  
in northern and southern NJ. It has not been seen  
in the state since 1941.

Rhododendron canadense (L.) Torr. Rhodora

FAMILY: Ericaceae

Heath Family

STATUS:

Federal: none

TNC: G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Bogs, moist to dry thickets.

DISTRIBUTION: Newfoundland to Que., NY, NJ, and PA.

DISTRIBUTION IN DWGNRA: This showy species has been seen at one site each in Sussex and Warren counties. Despite thorough searching, it has not been seen recently.

COMMENTS: Apparently declining. Although reported from a number of sites in Middlesex, Morris, Sussex, and Warren counties, the species is now known from only a few plants in one Sussex County bog. Reaches the southern limit of its range in NJ.

Rhododendron prinophyllum (Small) Millais

Mountain Azalea

FAMILY: Ericaceae

Heath Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Dry woods, thickets, rocky banks, generally at high elevations.

DISTRIBUTION: ME to Quebec, south to VA, TN and MO.

DISTRIBUTION IN DWGNRA: Not clearly known. A few scattered plants were seen in 1985 on the Kittatinnies in Sussex and Warren counties.

COMMENTS: Formerly listed as R. roseum. In the past occasionally treated as a variety of pinxter flower (R. nudiflorum), but R. prinophyllum blooms distinctly later, often into late June. Seen recently in Morris, Passaic, Sussex, and Warren counties.

Vaccinium oxycoccus L.

Small Cranberry

FAMILY: Ericaceae

Heath Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981), Rare  
(Fairbrothers & Hough, 1973).

HABITAT: Bogs and peaty areas.

DISTRIBUTION: Labrador to AK, south to NJ and PA, in  
the mountains south to NC, and west to OH,  
MI, MN and OR.

DISTRIBUTION IN DWGNRA: Seen in 1985 at a small area  
of quaking bog in Warren County.

COMMENTS: Approaching the southern limit of its  
range, and known only from bogs in Morris,  
Passaic, Sussex, and Warren counties. A small  
species which is easily concealed by the low mat  
of bog vegetation.

Lysimachia hybrida Michx.

Lance-Leaved Loosestrife

FAMILY: Primulaceae

Primrose Family

STATUS:

Federal: none

TNC: G5Q, S3

Other: none

HABITAT: Meadows and wet shores.

DISTRIBUTION: Quebec to Ont. and ND, south to FL, MS,  
and TX.

DISTRIBUTION IN DWGNRA: The species was seen at one  
location during the 1985 survey, in Warren County.  
It has been recently seen at two sites in Sussex  
County.

COMMENTS: Occurs at a few widely scattered locations  
throughout the state.

Gentiana quinquefolia L.

Stiff Gentian

FAMILY: Gentianaceae

Gentian Family

STATUS:

Federal: none

TNC: G5, S2

Other: none

HABITAT: Rich woods, damp banks, moist fields.

DISTRIBUTION: ME to NY, south to FL, and west to LA and MO.

DISTRIBUTION IN DWGNRA: Seen in 1985 at three roadside sites in Sussex County.

COMMENTS: Current stations are known from Sussex and Warren counties. Although often abundant where it is found, it is local and apparently declining. As most of the stations known are along maintained roadbanks, the species may benefit from judicious mowing.

Nymphoides cordata (Ell.) Fern.

Floating Heart

FAMILY: Menyanthaceae

Buckbean Family

STATUS:

Federal: none

TNC: G3G5, S3

Other: Rare (Fairbrothers & Hough, 1973).

HABITAT: Ponds and slow streams.

DISTRIBUTION: Newfoundland to Ontario, and south to FL and LA.

DISTRIBUTION IN DWGNRA: A small population was discovered in 1985, in Sussex County.

COMMENTS: The newly discovered Sussex County site represents the only modern northern NJ record for this species, which in New Jersey is more typical of ponds in the Pine Barrens.

Asclepias variegata L.

White Milkweed

FAMILY: Asclepiadaceae

Milkweed Family

STATUS:

Federal: none

TNC: G3G5, S2

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Open woods in sandy soil.

DISTRIBUTION: FL to TX, north to CT, NY, NJ, PA  
and WV, west to KY, IL, MO and OK.

DISTRIBUTION IN DWGNRA: Known only from an 1884  
herbarium specimen, collected from woods in  
Sussex County. Likely habitat in the area was  
unsuccessfully searched during 1985.

COMMENTS: A southern species approaching the north-  
ern limit of its range in NJ. Although once  
known from most southern counties, it has been  
seen recently at only two sites, in  
Burlington and Cape May counties.

Asclepias verticillata L.

Whorled Milkweed

FAMILY: Asclepiadaceae

Milkweed Family

STATUS:

Federal: none

TNC: G5, S2

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Dry woods, ledges, open rocky soil.

DISTRIBUTION: FL to TX, north to MA and NY,  
west to Ontario, MI, WI, and Saskatchewan.

DISTRIBUTION IN DWGNRA: The species has been known for  
a number of years from one Warren County location.  
Seen during the 1985 survey.

COMMENTS: The Warren County record is the only known  
station in the DWGNRA. Although seen recently at  
sites in Bergen, Passaic, Somerset, Sussex, and  
Union counties, A. verticillata has declined  
over much of its former NJ range.

Agastache scrophulariifolia L. Ktz. Purple Giant Hyssop

FAMILY: Lamiaceae

Mint Family

STATUS:

Federal: none

TNC: G4, S1

Other: none

HABITAT: Rich woods and thickets

DISTRIBUTION: VT and MA to Ontario, south to NC, KY,  
MO and KS.

DISTRIBUTION IN DWGNRA: Seen during 1985 at two Sussex  
County locations. There is a herbarium record for  
a third Sussex station.

COMMENTS: The two known sites in the DWGNRA are  
roadside and very vulnerable to mowing, spraying,  
or roadwork. Although reported as frequent in  
the old literature, the species has seriously  
declined and is currently known from a single  
sites in Hunterdon, Mercer, and Union counties.

Monarda didyma L.

Oswego Tea

FAMILY: Lamiaceae

Mint Family

STATUS:

Federal: none

TNC: G5?, S2

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973).

HABITAT: Rich woods, thickets and bottomlands.

DISTRIBUTION: NY to MI, south to GA and TN.

DISTRIBUTION IN DWGNRA: Reported over the years from  
six sites in Sussex County and one in Warren.  
Seen at two locations during the 1985 survey.

COMMENTS: Currently known in NJ only from sites along  
the Delaware in Sussex County. Although the  
manuals exclude NJ from the species' natural  
range, plants along the upper Delaware are  
considered native. A showy species, vulnerable to  
collecting and casual picking.

Stachys palustris L.

Marsh Hedge-Nettle

FAMILY: Lamiaceae

Mint Family

STATUS:

Federal: none

TNC: G5, SU

Other: none

HABITAT: Meadows, fields and shores.

DISTRIBUTION: Newfoundland to AK, south to CT, NJ, NY, OH and IL, west to IA, NM and AZ.

DISTRIBUTION IN DWGNRA: A large colony has been reported from a field in Sussex County. Searched for but not seen during 1985.

COMMENTS: At the southeastern limit of its range in NJ. A variable species, several varieties of which are alien and naturalized. It is not known whether the DWGNRA occurrence is the native variety.

Castilleja coccinea (L.) Spreng.

Scarlet Indian Paintbrush

FAMILY: Scrophulariaceae      Figwort Family

STATUS:

Federal: none

TNC: G5, S2

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973).

HABITAT: Wet meadows and fields.

DISTRIBUTION: NH to Manitoba, south to FL, MS, LA  
and OK.

DISTRIBUTION IN DWGNRA: Seen during the 1985 survey  
in a Sussex county meadow. Also seen at a site  
just outside the DWGNRA.

COMMENTS: In NJ most populations are in the lime-  
stone belt of Sussex and Warren counties, although  
there are records from 12 counties statewide. An  
often transient and sporadic annual, which has  
suffered from habitat destruction and collecting.

Mimulus moschatus Dougl.

Musk Flower

FAMILY: Scrophulariaceae      Figwort Family

STATUS:

Federal: none

TNC: G4G5, S2

Other: none

HABITAT: Springy places, watersides.

DISTRIBUTION: Newfoundland to Ontario, south to MA,  
NC and WV, west to MI.

DISTRIBUTION IN DWGNRA: Seen during 1985 at seven  
sites: six in Sussex County and one in Warren.

COMMENTS: Although the species has traditionally been  
treated as introduced or adventive south of  
Newfoundland and Quebec, the populations along  
the Delaware are considered to be native.

Justicia americana (L.) Vahl      Water Willow

FAMILY: Acanthaceae      Acanthus Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Margins of rivers and lakes, in shallow water.

DISTRIBUTION: GA to TX, north to Quebec, VT and NY, west to Ontario, WI, MD and KA.

DISTRIBUTION IN DWGNRA: Prior to 1985 reported from two sites in Sussex County. Fieldwork during 1985 produced seven additional sites in Sussex and two in Warren County.

COMMENTS: Previously reported as rare in the state, the population is apparently exploding along the Delaware River. Elsewhere in NJ the species remains rare.

Lobelia dortmanna L.      Water Lobelia

FAMILY: Campanulaceae      Bluebell Family

STATUS:

Federal: none

TNC: G4, SH

Other: Extirpated (Snyder & Vivian, 1981),  
Extirpated (Fairbrothers & Hough, 1973),  
Priority 3 (DEP, 1984).

HABITAT: Sandy or gravel shores of lakes and ponds.

DISTRIBUTION: Newfoundland to MN, south to NJ, PA, MI and WI, west to OR.

DISTRIBUTION IN DWGNRA: There are herbarium specimens from two locations, in Sussex and Warren counties. Both sites were searched unsuccessfully in 1985.

COMMENTS: A northern species at the southern limit of its range in NJ, and last seen in 1936.

Aster ericoides L.

White Heath Aster

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G5, S3

Other: Rare (Snyder & Vivian, 1981).

HABITAT: Dry open soil, rocky areas.

DISTRIBUTION: ME to B.C., south to GA, AL and AR,  
west to OK, TX and AZ.

DISTRIBUTION IN DWGNRA: Although reported to be  
rare, in 1985 the species was found at 12 locales  
in Sussex and Warren counties.

COMMENTS: The species is rare elsewhere in  
northern NJ. Listed on the Annotated Species List  
of the 1983 DWGNRA-PA survey (DNS, 1983).

Aster infirmus Michx.

Cornel-Leaved Aster

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G?, S2

Other: Undetermined (Snyder & Vivian, 1981).

HABITAT: Rocky banks of moist or dry woods.

DISTRIBUTION: MA to OH, south to GA, AL and TN.

DISTRIBUTION IN DWGNRA: There is one old herbarium  
specimen, an 1887 collection from Warren County.  
Not recently seen.

COMMENTS: Reported in the past from 12 counties  
throughout the state, but seen recently at  
only a few sites in northern NJ. Apparently  
declining.

Aster prenanthoides Muhl.

Crooked-Stem Aster

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G3G5, S2

Other: Endangered (Snyder & Vivian, 1981).

HABITAT: Woods, rocky or alluvial shores.

DISTRIBUTION: MA to MN, south to DE, VA, KY and IA.

DISTRIBUTION IN DWGNRA: There are no herbarium records prior to 1970, when a small station was discovered in Sussex County. Currently known from four additional sites in Sussex and two in Warren. Six stations were seen during the 1985 survey.

COMMENTS: Most known NJ stations for this species are within the boundaries of the DWGNRA. The populations are small, and vulnerable to trampling and casual collecting.

Aster pringlei (Gray) Britt.

Pringle's Aster

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G3G5, S1

Other: none

HABITAT: Dry rock ledges.

DISTRIBUTION: Ontario to WI, south to DC, and in the mountains to AL and TN.

DISTRIBUTION IN DWGNRA: Known from a single site on rock ledges in Sussex County. Seen in 1985.

COMMENTS: Presently this is the only known occurrence for the species in NJ. It closely resembles A. pilosus Willd., and is treated by some authors as a variety of that species. With searching, it is likely that additional stations will be located within the DWGNRA.

Aster tradescantii L.

Tradescant's Aster

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G?, S1

Other: Priority 2 (DEP, 1984).

HABITAT: Rocky shores.

DISTRIBUTION: Newfoundland to Quebec and MI, south to northern New England, northern NY, and NJ.

DISTRIBUTION IN DWGNRA: Although not reported from NJ prior to 1983, A. tradescantii has now been recorded from seven sites in Sussex and Warren counties. Seen at four of these locations in 1985, and the others are doubtless still extant.

COMMENTS: A northern species with a disjunct range in NJ, where it is confined to the DWGNRA. Identification has been confirmed by Dr. Arthur Cronquist at the NY Botanical Gardens. This species flowers earlier than most members of its genus. It blooms in August and is usually in seed by early September, when most asters are just coming into flower.

Polymnia uvedalia L.

Bearsfoot

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G4G5, S1

Other: Endangered (Snyder & Vivian, 1981),  
Endangered (Fairbrothers & Hough, 1973),  
Priority 2 (DEP, 1984).

HABITAT: Woods, pastures, thickets.

DISTRIBUTION: NY to IL and MO, south to FL, AL and LA  
west to TX.

DISTRIBUTION IN DWGNRA: Herbarium specimens from one  
location only, a roadside and adjacent field in  
Sussex County. Seen in 1985.

COMMENTS: Currently only known in NJ from the DWGNRA  
site in Sussex County, where it is approaching the  
northern limit of its range. Vulnerable to indis-  
criminate mowing, spraying or road construction.

Senecio pauperculus Michx.

Balsam Ragwort

FAMILY: Asteraceae

Aster Family

STATUS:

Federal: none

TNC: G5, S3

Other: none

HABITAT: Gravels, rocks, ledges and cliffs, often  
in limestone areas.

DISTRIBUTION: Labrador to AK, south to MD, VA, GA  
and AL, west to ID, WY B.C..

DISTRIBUTION IN DWGNRA: There are herbarium records  
from two locations, both on calcareous shale  
in Sussex County. Both sites were seen during  
1985.

COMMENTS: In addition to the sites in the DWGNRA, the  
species is currently known from sites in  
Hunterdon and Somerset counties.

## FEDERALLY LISTED ENDANGERED PLANT SPECIES

In New Jersey, the only taxa currently listed by the Federal Government as Endangered is the small whorled pogonia (Isotria medeoloides). Although there are reports that this species has been seen within the boundaries of the DWGNRA, there are no specimens, photographs, or reliable firsthand reports to document such an occurrence. However, given the proximity to the DWGNRA of the two extant Sussex County populations of Isotria medeoloides, it is quite possible that the species may occur here. It has been recorded from the Pennsylvania side of the Water Gap, and its preferred habitat, open deciduous woods, is common in the DWGNRA. Recent fieldwork in other states has refined the knowledge of the species' habitat preferences, and a number of large, previously unknown populations have been discovered. An effort should be made to specifically search for occurrences of Isotria medeoloides in the DWGNRA. Future sightings of this and other rare species should be reported to the New Jersey Natural Heritage Program.

SPECIES IN NEED OF SPECIAL PROTECTION

Not all of the species of plants discussed in the Annotated List are in immediate danger of extinction in New Jersey. Although all of the species are rare in the state, many occur in sufficient numbers so that their continued existence in the New Jersey is relatively secure at the present time.

The forty-seven species listed in Table 1 are recommended for special protection. They represent some of New Jersey's rarest plants. In order to insure the continued survival of these species in the state, viable populations must be protected at all sites in which they occur. Included are globally rare taxa with TNC ranks of G1 - G3, taxa with TNC ranks of S1, SH, or SX, and taxa with TNC ranks of S2 whose center of distribution in the state is in the DWGNRA. Many of these species are not found elsewhere in the state. The fifteen species marked with a single asterisk have not been documented in New Jersey outside of the DWGNRA. The five species with two asterisks are presently known to be extant in New Jersey only within the DWGNRA, although historic records have been documented from elsewhere in the state.

Table 1. Rare and endangered plant species of the DWGNRA which should receive special protection.

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Agastache scrophulariifolia  
Arceuthobium pusillum  
Asplenium bradleyi  
Asplenium pinnatifidum  
Aster prenathoides  
Aster pringlei\*  
Aster tradescantii\*  
Botrychium multifidum  
Botrychium oneidense  
Botrychium simplex var. simplex\*  
Cardamine rotundifolia\*  
Carex bushii  
Carex crawei\*\*  
Carex crawfordii\*\*  
Carex foena  
Carex hitchcockiana  
Carex viridula  
Cerastium beeringianum\*  
Claytonia virginica forma hammondiae\*  
Dicentra canadensis  
Dicentra eximia\*  
Eleocharis compressa\*  
Ilex montana  
Kalmia polifolia  
Listera cordata  
Lobelia dortmanna  
Nuphar microphyllum  
Picea rubens  
Poa lanquida  
Polymnia uvvedalia\*\*  
Prunus depressa  
Pyrola chlorantha  
Ranunculus fascicularis\*\*  
Ranunculus reptans  
Rhododendron canadensis  
Ribes glandulosum\*  
Salix lucida  
Scirpus microcarpus\*  
Scirpus pedicellatus\*  
Scleria pauciflora  
Silene nivea\*  
Sisyrinchium montanum var. crebrum\*  
Streptopus amplexifolius\*  
Trichomanes sp.\*  
Trollius laxus ssp. laxus  
Vicia americana\*\*

## CONCLUSIONS AND RECOMMENDATIONS

The New Jersey Natural Heritage Program maintains a list and collects occurrence information on over 600 rare and endangered plant species in New Jersey. Almost twenty percent of these plants occur or have occurred within the current limits of the DWGNRA, a remarkable fact considering the small section of New Jersey within the Area's boundaries.

A total of 111 species considered to be rare or endangered in New Jersey have been documented for the New Jersey portion of the DWGNRA. The habitats, threats, and current status of these species are summarized in the synoptic table below. The Global Rank and State Rank refer to the TNC ranks assigned to each species. The Total # of EO's refers to the total number of occurrences (EO's), historic and extant, documented for each species within the DWGNRA. Because complete herbarium searches were not done for most species ranked S3, the total number of EO's is not known for those species. From this list, forty-seven species were identified as being in need of special protection. They are species with TNC ranks of G1, G2, G3, S1, SH, or SX, or species ranked S2 whose center of distribution in the state is within the DWGNRA.

A number of trends noted during the fieldwork require further study. It was learned during 1985 that virtually all the black spruce bogs on the Kittatinnies had been damaged or destroyed by beaver activity. Management of the beaver population within the DWGNRA would have little effect at this point in time, as most of the damage has already been done. An effort should be made to preserve whatever habitat remains, particularly in the vicinity of Tocks Swamp. Also, it was found that many of the trees in the largest population of red spruce on the Kittatinnies were dead or dying. Although the cause is unknown, the damage resembles similar red spruce mortality elsewhere in the East, which has been attributed to acid rain.

Purple loosestrife (Lythrum salicaria), an introduced weed of wetlands, is spreading over large areas of the Delaware River shore. There is concern that the native vegetation along the river may be choked out by this noxious weed. If effective means of controlling this plant without harming native vegetation becomes available, it should be considered in management planning.

It is likely that additional occurrences of rare species will be found in the DWGNRA in the future by the New Jersey Natural Heritage Program and others. The Natural Heritage Program will continue to maintain and update its

database on rare species occurrences. The DWGNRA, when siting new facilities, should consult the Natural Heritage data base for recent information on rare species occurrences.

## Report: Synoptic Table

## SPECIES

| SPECIES                              | GLOBAL RANK STATE RANK HABITAT |    | POTENTIAL THREATS | TOTAL # EO'S EO'S VERIFIED 1985 |     |    |
|--------------------------------------|--------------------------------|----|-------------------|---------------------------------|-----|----|
| <i>Adiantum fungosa</i>              | 64                             | S2 | talus slope       | not known                       | 1   | 0  |
| <i>Agastache scrophulariifolia</i>   | 64                             | S1 | roadbanks         | mowing, roadwork                | 3   | 2  |
| <i>Anemone canadensis</i>            | 65                             | SU | alluvial shore    | collecting, erosion             | 1   | 0  |
| <i>Arceuthobium pusillum</i>         | 65                             | S1 | bogs              | flooding                        | 1   | 0  |
| <i>Aristolochia serpentaria</i>      | 65                             | S3 | woods             | none apparent                   | n/a | 0  |
| <i>Asclepias variegata</i>           | 6365                           | S2 | open woods        | not known                       | 1   | 0  |
| <i>Asclepias verticillata</i>        | 65                             | S2 | dry rocky woods   | trampling, erosion              | 1   | 1  |
| <i>Asplenium bradleyi</i>            | 63?                            | S1 | cliffs            | collecting                      | 1   | 0  |
| <i>Asplenium montanum</i>            | 6465                           | S2 | shaded ledges     | none apparent                   | 1   | 1  |
| <i>Asplenium pinnatifidum</i>        | 65                             | S1 | cliffs            | collecting                      | 1   | 0  |
| <i>Aster ericoides</i>               | 65                             | S3 | rocky shores      | trampling                       | n/a | 12 |
| <i>Aster infirmus</i>                | 6?                             | S2 | woods             | trampling                       | 1   | 0  |
| <i>Aster prenanthoides</i>           | 6365                           | S2 | damp shores       | trampling                       | 6   | 5  |
| <i>Aster pringlei</i>                | 6365                           | S1 | rocky shore       | trampling                       | 1   | 1  |
| <i>Aster tradescantii</i>            | 6?                             | S2 | rocky shores      | trampling                       | 7   | 4  |
| <i>Betula papyrifera</i>             | 65                             | S3 | rocky slopes      | none apparent                   | n/a | 2  |
| <i>Botrychium multifidum</i>         | 65                             | S1 | abandoned pasture | succession, trampling           | 1   | 0  |
| <i>Botrychium oneidense</i>          | 6365Q                          | S1 | fields            | none apparent                   | 1   | 0  |
| <i>Botrychium simplex v. simplex</i> | 65TU                           | S1 | seepage area      | trampling, roadwork             | 1   | 1  |
| <i>Callitriche verna</i>             | 6?                             | SU | ponds, slow water | not known                       | 2   | 0  |

| SPECIES                                        | GLOBAL RANK | STATE RANK | HABITAT             | POTENTIAL THREATS     | TOTAL # EO'S | EO'S VERIFIED 1985 |
|------------------------------------------------|-------------|------------|---------------------|-----------------------|--------------|--------------------|
| <i>Cardamine rotundifolia</i>                  | 64          | S1         | wooded seepage area | trampling, roadwork   | 3            | 1                  |
| <i>Carex bicknellii</i>                        | 65          | S2         | dry field, roadside | not known             | 2            | 0                  |
| <i>Carex beshii</i>                            | 6365        | S1         | open woods, fields  | not known             | 1            | 0                  |
| <i>Carex crumii</i>                            | 65          | S1         | rocky shore         | trampling             | 1            | 1                  |
| <i>Carex crawfordii</i>                        | 6465        | S2         | shores              | trampling             | 5            | 4                  |
| <i>Carex cryptolepis</i>                       | 6365        | S2         | limy seep           | trampling             | 1            | 1                  |
| <i>Carex foena</i>                             | 65?         | S1         | dry open areas      | not known             | 3            | 0                  |
| <i>Carex hitchcockiana</i>                     | 65          | S1         | rocky woods         | none apparent         | 1            | 1                  |
| <i>Carex leptonevia</i>                        | 6365        | S2         | rocky woods         | none apparent         | 2            | 1                  |
| <i>Carex viridula</i>                          | 65?         | S1         | wet ledges          | trampling             | 3            | 2                  |
| <i>Castilleja coccinea</i>                     | 65          | S2         | wet meadows         | collecting, trampling | 1            | 1                  |
| <i>Cerastium beerianum</i>                     | 6?          | S1         | seepage areas       | trampling             | 1            | 1                  |
| <i>Cheilanthes lanosa</i>                      | 65          | S2         | ledges              | trampling, collecting | 2            | 2                  |
| <i>Claytonia virginica</i> f. <i>hamondiae</i> | 65TU        | S1         | seeps, hemlocks     | collecting, trampling | 1            | 1                  |
| <i>Clematis occidentalis</i>                   | 65          | S2         | rocky woods         | collecting            | 1            | 0                  |
| <i>Coeloglossum viride</i>                     | 65          | S2         | woods               | collecting, trampling | 2            | 0                  |
| <i>Corallorhiza trifida</i>                    | 65          | S2         | bogs                | flooding, collecting  | 1            | 0                  |
| <i>Cornus canadensis</i>                       | 65          | S2         | edges of bogs       | flooding, trampling   | 3            | 1                  |
| <i>Cystopteris protrusa</i>                    | 65          | S2         | alluvium            | trampling             | 1            | 1                  |
| <i>Dentaria diphylla</i>                       | 65          | S3         | wooded streams      | trampling             | n/a          | 10                 |

| SPECIES                           | GLOBAL RANK | STATE RANK | HABITAT           | POTENTIAL THREATS     | TOTAL # ED'S ED'S VERIFIED 1983 |
|-----------------------------------|-------------|------------|-------------------|-----------------------|---------------------------------|
| <i>Dicentra canadensis</i>        | 65          | S1         | woods             | collecting, roadwork  | 3 3                             |
| <i>Dicentra eximia</i>            | 65          | S1         | cliffs            | collecting, trampling | 1 0                             |
| <i>Dirca palustris</i>            | 65          | S2         | streamsides       | none apparent         | 2 2                             |
| <i>Eleocharis compressa</i>       | 67          | S1         | shores            | trampling             | 4 4                             |
| <i>Epilobium leptophyllum</i>     | 65          | S3         | marsh             | not known             | n/a 0                           |
| <i>Epilobium strictum</i>         | 65?         | S2         | limy seep         | trampling             | 1 1                             |
| <i>Equisetum variegatum</i>       | 65          | S1         | damp shore        | trampling             | 1 1                             |
| <i>Eriophorum viridicarinatum</i> | 65          | S3         | limy seepage area | none apparent         | 1 1                             |
| <i>Gentiana quinquefolia</i>      | 65          | S2         | roadside banks    | roadwork, collecting  | 3 3                             |
| <i>Geum rivale</i>                | 65          | S3         | wet meadow        | not known             | n/a 0                           |
| <i>Glyceria grandis</i>           | 65          | S2         | swamps            | not known             | 2 0                             |
| <i>Gymnocarpium dryopteris</i>    | 65          | S3         | woods             | trampling, collecting | n/a 1                           |
| <i>Ilex montana</i>               | 65          | S1         | bog edge          | flooding              | 1 0                             |
| <i>Justicia americana</i>         | 65?         | S3         | shores, shallows  | not known             | n/a 11                          |
| <i>Kalmia polifolia</i>           | 65          | S1         | bogs              | flooding              | 2 0                             |
| <i>Lemna trisulca</i>             | 65          | S2         | pond              | none apparent         | 1 1                             |
| <i>Lilium philadelphicum</i>      | 65          | S3         | woods, fields     | collecting            | n/a 3                           |
| <i>Listera cordata</i>            | 65          | S1         | bogs              | flooding, collecting  | 2 0                             |
| <i>Lobelia dortmanna</i>          | 64          | S1         | lakes             | herbicides            | 2 0                             |
| <i>Lycopodium inundatum</i>       | 65          | S3         | edges of ponds    | flooding              | n/a 2                           |

| SPECIES                                     | GLOBAL RANK | STATE RANK | HABITAT          | POTENTIAL THREATS     | TOTAL # EO'S | ED'S VERIFIED 1985 |
|---------------------------------------------|-------------|------------|------------------|-----------------------|--------------|--------------------|
| <i>Lysimachia hybrida</i>                   | 650         | S3         | shores           | trampling             | n/a          | 1                  |
| <i>Malaxis unifolia</i>                     | 65          | S2         | bogs, swamps     | flooding, collecting  | 1            | 0                  |
| <i>Mimulus moschatos</i>                    | 6465        | S2         | wet shores       | trampling             | 7            | 7                  |
| <i>Monarda didyma</i>                       | 65?         | S2         | woods            | collecting, roadwork  | 6            | 2                  |
| <i>Nephar microphyllum</i>                  | 6?          | SH         | slow water       | herbicides            | 2            | 0                  |
| <i>Nymphoides cordata</i>                   | 6365        | S3         | lake             | increased use of area | 1            | 1                  |
| <i>Ophioglossum vulgatum</i>                | 65          | S3         | seepage area     | trampling, roadwork   | 1            | 1                  |
| <i>Panax quinquefolius</i>                  | 64          | S3         | woods            | collecting, trampling | n/a          | 1                  |
| <i>Phaseolus polystachios</i>               | 64          | S2         | dry bank         | roadwork, spraying    | 1            | 1                  |
| <i>Picea rabens</i>                         | 65          | S2         | woods, bog edges | flooding              | 5            | 3                  |
| <i>Platanthera ciliaris</i>                 | 65          | S2         | moist thicket    | collecting            | 1            | 0                  |
| <i>Platanthera flava</i> v. <i>herbiola</i> | 64TU        | S2         | woods, meadows   | collecting            | 2            | 0                  |
| <i>Platanthera psycodes</i>                 | 65          | S3         | streamides       | collecting, flooding  | n/a          | 0                  |
| <i>Poa langaia</i>                          | 6263        | S2         | woods            | trampling             | 2            | 1                  |
| <i>Podostemon ceratophyllum</i>             | 65          | S3         | rivers, streams  | not known             | n/a          | 3                  |
| <i>Polymnia uvedalia</i>                    | 6465        | S1         | field, roadbank  | roadwork, mowing      | 1            | 1                  |
| <i>Porteranthus trifolius</i>               | 6465        | S2         | woods, openings  | collecting            | 2            | 0                  |
| <i>Potentilla arguta</i>                    | 65          | S3         | woods, alluvium  | trampling             | n/a          | 1                  |
| <i>Prenos depressa</i>                      | 6?          | S1         | sandy shores     | trampling             | 4            | 4                  |
| <i>Pyrola chlorantha</i>                    | 65          | SH         | pine woods       | not known             | 1            | 0                  |

| SPECIES                                 | GLOBAL RANK | STATE RANK | HABITAT         | POTENTIAL THREATS    | TOTAL # EO'S ED'S VERIFIED 1985 |
|-----------------------------------------|-------------|------------|-----------------|----------------------|---------------------------------|
| <i>Ranunculus aquatilis</i>             | 65?         | S2         | slow water      | not known            | 3 0                             |
| <i>Ranunculus fascicularis</i>          | 65          | S1         | dry woods       | trampling            | 1 1                             |
| <i>Ranunculus longirostris</i>          | 65          | S2         | slow water      | not known            | 2 1                             |
| <i>Ranunculus reptans</i>               | 65          | SH         | wet shore       | trampling            | 1 0                             |
| <i>Rhododendron canadense</i>           | 65          | S1         | thickets, bogs  | collecting, flooding | 2 0                             |
| <i>Rhododendron prinophyllum</i>        | 65          | S3         | rocky woods     | not known            | n/a 1                           |
| <i>Ribes glandulosum</i>                | 65          | S1         | talus slope     | none apparent        | 1 1                             |
| <i>Sagina procumbens</i>                | 65          | S2SE       | shores          | trampling            | 2 0                             |
| <i>Salix lucida</i>                     | 65          | S1         | wet shore       | not known            | 1 0                             |
| <i>Scirpus microcarpus</i>              | 6?          | S1         | damp shore      | trampling            | 1 1                             |
| <i>Scirpus pedicellatus</i>             | 6?          | SH         | marshy glade    | not known            | 1 0                             |
| <i>Scleria pauciflora</i>               | 65          | S1         | dry, rocky area | trampling            | 1 0                             |
| <i>Selaginella rupestris</i>            | 65          | S2         | ledges          | roadwork, trampling  | 2 2                             |
| <i>Senecio pauperculus</i>              | 65          | S3         | dry woods       | trampling            | 2 2                             |
| <i>Silene nivea</i>                     | 6?          | S1         | alluvial banks  | erosion, trampling   | 3 2                             |
| <i>Sisyrinchium montanum v. crebrum</i> | 65TU        | S1         | shores          | trampling            | n/a 0                           |
| <i>Smilacina trifolia</i>               | 65          | S2         | bogs            | flooding             | 1 0                             |
| <i>Sparganium chlorocarpum</i>          | 65          | S2         | pond            | none apparent        | 1 0                             |
| <i>Spiraea alba</i>                     | 65          | SU         | shores          | not known            | 3 0                             |
| <i>Spiranthes lucida</i>                | 65          | S3         | shores, seeps   | trampling            | n/a 3                           |

| SPECIES                                 | GLOBAL RANK | STATE RANK | HABITAT           | POTENTIAL THREATS     | TOTAL # ED'S ED'S VERIFIED 1985 |
|-----------------------------------------|-------------|------------|-------------------|-----------------------|---------------------------------|
| <i>Spiranthes ochroleuca</i>            | 6?          | S3         | dry banks         | trampling, roadwork   | 4                               |
| <i>Stachys palestris</i>                | 65          | SU         | old field         | not known             | 1                               |
| <i>Stellaria calycantha</i>             | 65          | S2         | cool wet areas    | flooding              | 1                               |
| <i>Streptopus amplexifolius</i>         | 65          | S1         | edge of waterfall | collecting, trampling | 2                               |
| <i>Thelypteris phegopteris</i>          | 65          | S3         | woods, alluvium   | trampling, collecting | n/a                             |
| <i>Trichomanes</i> sp.                  | 6U          | S1         | wet rocks         | none apparent         | 1                               |
| <i>Trisetum pennsylvanicum</i>          | 6365        | S2         | woods, bogs       | trampling             | 1                               |
| <i>Trollius laxus</i> ssp. <i>laxus</i> | 64730       | S2         | wet meadow        | collecting, trampling | 1                               |
| <i>Vaccinium oxycoccus</i>              | 65          | S2         | bogs              | flooding              | 1                               |
| <i>Vicia americana</i>                  | 65?         | S2         | alluvial banks    | trampling, collecting | 4                               |
| <i>Waldsteinia fragarioides</i>         | 65          | S2         | streambank        | trampling, flooding   | 1                               |

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