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ENVIRONMENTAL PROTECTION

NATURAL AND HISTORIC RESOURCES

Endangered Plant Species Program

Proposed Amendments N.J.A.C. 7:5C-4.1 and 5.1

Authorized by Bob Martin, Commissioner
Department of Environmental Protection

Authority: N.J.S.A. 13:1B-1 et seq.
N.J.S.A. 13:1B-15.151 et seq.
N.J.S.A. 13:1D-9

Calendar Reference: See summary below for explanation of exception to calendar requirement.

DEP Docket No.: 02-12-07

Proposal Number: PRN ____ - ____

Submit comments by (60 days after publication) electronically at

<http://www.nj.gov/dep/rules/comments>. The Department of Environmental Protection

(Department) encourages electronic submittal of comments. In the alternative, comments may be submitted on paper to:

Gary J. Brower, Esq.
Attn: DEP Docket No. 01-07-12
Office of Legal Affairs
Department of Environmental Protection
401 East State Street, Floor 4
Mail Code 401-04L
P.O. Box 402

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Trenton, New Jersey 08625-0402

This rule proposal can be viewed or downloaded from the Department's website at <http://www.state.nj.us/dep/rules>.

The agency proposal follows:

Summary

As the Department has provided a 60-day comment period on this notice of proposal, this notice is excepted from the rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5.

The Department is proposing to amend the Endangered Plant Species Program rules at N.J.A.C. 7:5C. The Endangered Plant Species Program rules implement the Endangered Plant Species List Act (Act), N.J.S.A. 13:1B-15.151 through 15.158. Under the Act, the Department has adopted a list of plant species native to the State that are endangered due to the destruction, drastic modification or severe curtailment of their habitat, or for other natural or anthropogenic reasons. (See N.J.S.A. 13:1B-15.154.) The Act is intended to highlight the value of and threats to many of New Jersey's native plant species and create a definitive, officially recognized State list of endangered plant species to more effectively incorporate the preservation of natural diversity into government planning functions. (See N.J.S.A. 13:1B-15.152.)

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Under the Act and these rules, an endangered species is defined as a native plant species whose survival in the State or the nation is in jeopardy, including any plant species designated as listed, proposed, or under review by the Federal government as endangered or threatened throughout its range in the United States pursuant to the Federal Endangered Species Act of 1973, 16 U.S.C. §§ 1533 et seq., any additional species known or believed to be rare throughout its worldwide range, and any species having five or fewer extant populations within the State. (See N.J.S.A. 13:1B-15.153 and N.J.A.C. 7:5C-1.4.)

The listing of plants on the official list of endangered plant species native to the State must be based on research, investigations and other available scientific data on plant species. (See N.J.S.A. 13:1B-15.154 and N.J.A.C. 7:5C-2.1.) The Act provides for needed research and investigations, allows the Commissioner of the Department to cooperate with and accept funding from government agencies or private sources for the purposes of the Act, and authorizes educational and informational programs to inform the public as to the status and significance of New Jersey's endangered plant species. (See N.J.S.A. 13:1B-15.155 through 15.157.)

The Department is proposing amendments to this chapter based upon information developed on various plant species and after stakeholder outreach, which is described below after the description of the amendments.

Proposed Amendments

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The Department proposes to update N.J.A.C. 7:5C-4.1, Public participation, to include the current mailing address and email address of the Office of Natural Lands Management which administers these rules and is the recipient of information from the public on endangered plant species.

The Department proposes to amend the Endangered Plant Species List at N.J.A.C. 7:5C-5.1 to bring the List up to date based upon research and investigations on the State's rare flora conducted by the Department and subsequently incorporated into the Natural Heritage Database. The Natural Heritage Database is the manual and digital file maintained within the Division of Parks and Forestry which includes continually updated information on the location and status of native New Jersey plant species, as authorized by N.J.S.A. 13:1B-15.146 – 15.150.

The Natural Heritage Program is a member of and uses the methodology and software used by NatureServe, an international network of natural heritage programs operating throughout the Western Hemisphere. Members of NatureServe collect, analyze and manage scientific information about plants, animals and ecological communities using compatible methods that allow for data to be shared and combined regionally, nationally and internationally. Information developed by New Jersey's Natural Heritage Program is, in turn, used by NatureServe and its network of natural heritage programs to determine the global status and rarity of species. For additional information on NatureServe methodology for assigning species ranks at the State and global level please go to: http://www.natureserve.org/publications/ConsStatusAssess_RankMethodology.jsp.

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N.J.A.C. 7:5C-2.2 specifies the criteria utilized to determine if native plant species should be designated as endangered. Species are designated endangered based upon a determination that the species' survival in the State or nation is in jeopardy, the species is listed, proposed or under review by the Federal government as endangered or threatened, the species is known or believed to be rare worldwide, and/or the species has five or fewer extant populations in the State. One species can qualify for listing based on more than one criterion. For example, a species can qualify both because it is globally rare and because it has five or fewer extant populations in the State. Based on application of these criteria to the data developed utilizing the methodology summarized above, the Department proposes to amend the Endangered Plant Species List at N.J.A.C. 7:5C-5.1 to add an additional 37 endangered plant species to the List.

Of the 37 species proposed for addition to the List, three species are being proposed for addition because they are considered globally rare (N.J.A.C. 7:5C-2.2(a)3). That is, they have been determined to be rare throughout their worldwide range. These three species are as follows:

Boltonia montana (Appalachian mountain boltonia)

Eleocharis olivacea var. *reductiseta* (Pine Barren spike-rush)

Rubus novocaesarius (New Jersey dewberry)

The terms “rare worldwide” or “globally rare” are defined by NatureServe, the international network of natural heritage programs, as having 80 or fewer populations or

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occurrences worldwide. *Boltonia montana* occurs at fewer than 20 documented locations in Sussex and Warren counties in New Jersey and is only extant elsewhere in Virginia, where there are fewer than seven documented extant occurrences. The worldwide distribution of *Eleocharis olivacea* var. *reductisetata* is restricted to freshwater intertidal rivers within southern New Jersey, with 15 documented records in the Natural Heritage Database of which three are currently confirmed to be extant. The worldwide distribution of *Rubus novocaesarius* is restricted to a single occurrence in Cape May County, New Jersey. *Rubus novocaesarius* and *Eleocharis olivacea* var. *reductisetata* also qualify for listing as endangered because each species is documented as having five or fewer extant populations in New Jersey. Both of these species are also endemic to New Jersey.

Of the 37 species proposed for addition to the List, 36 species qualify for listing because they are now documented in the Natural Heritage Database as having five or fewer extant populations in New Jersey (N.J.A.C. 7:5C-2.2(a)4). These 36 species include *Eleocharis olivacea* var. *reductisetata* and *Rubus novocaesarius*, identified above as globally rare, but not *Boltonia montana*. *Boltonia montana*, while globally rare, has been found to have more than five extant populations in the State. These 36 species are as follows:

Abies balsamea (balsam fir)

Arabis missouriensis (Missouri rock-cress)

Bidens mitis (small-fruit beggars-ticks)

Blephilia ciliata (downy woodmint)

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Carex laxiculmis var. *copulata* (coupled sedge)

Carex meadii (Mead's sedge)

Carex stipata var. *maxima* (large awl-fruit sedge)

Carex woodii (Wood's sedge)

Crataegus holmesiana (Holmes' hawthorne)

Dryopteris celsa (log fern)

Eleocharis olivacea var. *reductiseta* (Pine Barren spike-rush)

Eragrostis hirsuta (stout love grass)

Honckenya peploides var. *robusta* (seabeach sandwort)

Hypericum gymnanthum (clasping-leaf St. John's-wort)

Juncus diffusissimus (slim-pod rush)

Ledum groenlandicum (Labrador tea)

Limnobium spongia (American frog's-bit)

Lysimachia lanceolata (lance-leaf loosestrife)

Malaxis unifolia (green adder's-mouth)

Panicum dichotomum var. *yadkinense* (spotted-sheath panic grass)

Panicum longiligulatum (coastal-plain panic grass)

Phacelia bipinnatifida (fern-leaf scorpion-flower)

Poa sylvestris (woodland spear grass)

Polygala curtissii (Curtiss' milkwort)

Polypremum procumbens (juniper-leaf)

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Prunus pumila var. *depressa* (low sand cherry)
Pyrrhopappus carolinianus (Carolina desert-chicory)
Quercus macrocarpa var. *macrocarpa* (mossy-cup oak)
Rhynchospora grayi (Gray's beaked-rush)
Rubus novocaesarius (New Jersey dewberry)
Rumex hastatulus (Engelmann's sorrel)
Saccharum alopecuroidum (silver plume grass)
Sagittaria filiformis (narrow-leaf arrowhead)
Trillium grandiflorum (large-flower trillium)
Valerianella chenopodiifolia (goose-foot cornsalad)
Vicia americana var. *americana* (American purple vetch)

Twelve of the above species are known and have historically been known to have only a single confirmed extant population statewide. These 12 species are: *Abies balsamea*; *Arabis missouriensis*; *Carex woodii*; *Eragrostis hirsuta*; *Juncus diffusissimus*; *Limnobium spongia*; *Phacelia bipinnatifida*; *Polygala curtissii*; *Pyrrhopappus carolinianus*; *Quercus macrocarpa* var. *macrocarpa*; *Rubus novocaesarius* and *Trillium grandiflorum*.

For example, *Phacelia bipinnatifida* was discovered at a single large occurrence within Whittingham Wildlife Management Area, Sussex County, in 2008. Prior to 2008, the species had not been documented as occurring in New Jersey, and this isolated occurrence in northwestern New Jersey is more than 300 miles northeast of the nearest documented

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populations in Virginia and West Virginia. Because *Phacelia bipinnatifida* is extant only at this single location in New Jersey, it is proposed for listing as Endangered.

The Department is not proposing to add any plant species to the List based on criteria for listing of plant species as endangered at N.J.A.C. 7:5C-2.2(a)1 or N.J.A.C. 7:5C-2.2(a)2. These criteria specify that plants will be classified as endangered if: 1. the Department makes a determination that the species' survival in the State or nation is in jeopardy based on the best available scientific information, including, but not limited to: i. the number of apparently secure populations in the State as compared to the number of populations vulnerable to decimation by natural or man-made factors; ii. the total number of individuals or number of individuals per population of the species in the State; or iii. the inherent ability of the species or population to perpetuate itself in the State; or 2. the plant species is listed, proposed, or under review by the Federal government as endangered or threatened throughout its range in the United States pursuant to the "Endangered Species Act of 1973," P.L. 93-205 (16 U.S.C. 1533 et seq.), as amended.

To summarize the justification for listing of the 37 proposed species additions, 36 species are proposed for addition because they are now documented to have five or fewer extant populations in the State; three species are proposed for addition because they are known to be rare throughout their worldwide range, with two of the 36 species, *Eleocharis olivacea* var. *reductiseta* and *Rubus novocaesarius*, proposed for addition because they are both globally rare and documented to have five or fewer extant populations in the State.

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The 37 species proposed for addition to the List are evidenced by a total of 145 extant populations or occurrences. With regard to the geographical distribution of occurrences of the species proposed for addition to the List, 23 are located in Sussex County. This is the southern limit of many of these species' range. Coincidentally, 23 occurrences are located in Cape May County where many plant species reach their northern range limit. Atlantic, Burlington and Warren counties support 17, 15 and 14 occurrences of species proposed for listing, respectively. With the exceptions of Hudson, Middlesex, Passaic and Union counties, which contain no extant occurrences of species proposed for listing, the remainder of New Jersey's 21 counties support between one and nine occurrences of the species proposed for addition to the List.

The Department proposes to amend the Endangered Plant Species List at N.J.A.C. 7:5C-5.1 to delete 20 endangered plant species currently on the List. All species proposed for deletion are either no longer considered species native to the State or no longer satisfy the criteria specified for endangered designation at N.J.A.C. 7:5C-2.2(a)1-4.

Of the 20 species proposed for deletion from the List, three species are being proposed for deletion because information gained through recent studies, taxonomical revisions or evaluations have resulted in reduced taxonomic rank or uncertain taxonomic standing for these species in New Jersey or because their presence in New Jersey has been determined to be based on misidentified herbarium specimens. Therefore, these species may no longer be considered

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components of the native flora of the State (see N.J.A.C. 7:5C-2.2(a)) and no longer meet the criteria for listing of species as endangered in New Jersey. These three species are as follows:

Euphorbia marilandica (Maryland spurge)

Potamogeton alpinus (northern pondweed)

Vitis novae-angliae (New England grape)

Kartesz, J.T and C.A. Meacham (1999. Synthesis of the North American flora, Version 1.0. North Carolina Botanical Garden, Chapel Hill) no longer recognizes *Euphorbia marilandica* as a species. The specimens of *Potamogeton alpinus* collected in New Jersey have subsequently been identified as hybrid material by Dr. Alfred E. Schuyler of the Philadelphia Academy of Natural Sciences. *Vitis novae-angliae* is treated as a hybrid in Kartesz, J.T and C.A. Meacham (1999).

Of the 20 species proposed for deletion from the List, seven species are proposed for deletion because they are now documented in the Natural Heritage Database as more frequent or abundant than they were at the time of the last revision of the List in 1999, and now support more than five extant populations in New Jersey. These seven species no longer meet listing criteria at N.J.A.C. 7:5C-2.2(a)4 and are as follows:

Carex albursina (sedge)

Galium trifidum (small bedstraw)

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Oenothera humifusa (sea-side evening-primrose)

Potamogeton robbinsii (Robbins' pondweed)

Prunus angustifolia (Chickasaw plum)

Rhododendron atlanticum (dwarf azalea)

Sisyrinchium montanum (strict blue-eyed grass)

Of the 20 species proposed for deletion from the List, 10 species are proposed for deletion because information documented in the Natural Heritage Database gained through extensive field studies and evaluation has resulted in a determination that these species are no longer extant in New Jersey. That is, all documented occurrences have been determined to be extirpated from the State and the species are no longer part of the State's native plant flora as required at N.J.A.C. 7:7C-2.2(a). These 10 species are as follows:

Aster firmus (shining aster)

Eleocharis minima (small skikerush)

Filipendula rubra (queen-of-the-prairie)

Glaux maritima (sea-beach milkwort)

Goodyera tessellata (checkered rattlesnake plantain)

Juncus elliotii (Elliott's rush)

Lathyrus venosus (smooth veiny peavine)

Prunus alleghaniensis (Alleghany plum)

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Sphagnum austinii (sphagnum)

Sphagnum platyphyllum (sphagnum)

The following summarizes the circumstances leading to the proposed delisting of the aforementioned species due to extirpation from New Jersey. *Aster firmus* was documented from a single specimen collected once in 1922 from a wooded swamp in Sussex County. The collection location on the herbarium specimen lists only a general place name. The Natural Heritage botanist unsuccessfully searched suitable areas at and near the immediate location repeatedly since 1981. Some of the wetlands that might have supported this species are now flooded through damming by beavers. Additional areas with suitable habitat have also been unsuccessfully searched throughout Sussex, Warren and Morris counties.

Eleocharis minima was documented from a single specimen collected once in 1940 from a wet depression in Cumberland County. The documented site, as well as suitable habitat in the general area, has been unsuccessfully searched by the Natural Heritage Program botanist between 1989 and 2007. The known site has been confirmed destroyed by either house construction or agricultural land use.

The single documented native population for *Filipendula rubra* was located in an open limestone fen (alkaline wetland) in Warren County where it was last observed in 1978. In 2007, the Natural Heritage Program botanist confirmed that the population was destroyed through a combination of succession, ditching and clearing for the fencing of the property.

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Glaux maritima was documented from a single collection made in the mid-1800s from an ocean beach in Monmouth County and from two sight records made in approximately 1979 in Atlantic County. The Natural Heritage Program botanist has confirmed that the Monmouth County population has been destroyed by loss of habitat through the creation of a sea wall. The Natural Heritage Program botanist unsuccessfully searched for both of the Atlantic County populations between 1980 and 2010. Both these populations appear to have been destroyed by a combination of loss of habitat through storm related beach erosion and off-road vehicle use. Between 2001 and 2010, Department staff annually and unsuccessfully searched suitable contiguous beach habitat from southern Monmouth County to Cape May Point.

Goodyera tessellata was documented from two plants at a single population discovered on a wooded hillside in Warren County in 1981. The Natural Heritage Program botanist confirmed this population as destroyed by the creation of a reservoir in 2006.

Juncus elliotii was documented from a single 1918 herbarium collection from the edge of coastal wetlands in Cape May County. Unsuccessful searches by the Natural Heritage Program botanist were conducted between 1981 and 1999. The population is believed destroyed by either the creation of the intracoastal waterway canal or by residential development.

Lathyrus venosus was documented from collections from three locations: a single collection in Sussex County made and last observed in 1907; a single collection from Warren

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County made in 1881 and last observed in 1910; and single location in Hunterdon County collected first in 1882 and last observed in 1981. The Hunterdon County location was the only documented extant population in New Jersey until 1993 when the Natural Heritage Program botanist confirmed that it was destroyed after several unsuccessful searches. The population was destroyed by the placement of gravel and other fill associated with the upgrading of adjacent railroad tracks. The site where the population grew also has been treated with herbicide. Subsequent searches by the Natural Heritage Program botanist of suitable habitat in the immediate vicinity of the destroyed occurrence through 2010 have all been unsuccessful. The Sussex and Warren county populations also could not be located and are believed to be extirpated.

Prunus alleghaniensis was documented from a single population in Hunterdon County first collected in 1965 and last observed in 1981. This population was repeatedly and unsuccessfully searched for by the Natural Heritage Program botanist from 1994 through 2007. In 2007 the location of the documented population was confirmed destroyed by clearing and ornamental planting of a wooded thicket in the area where the trees had formerly grown.

Sphagnum austinii was documented from two collection localities: one from Ocean County last collected in 1869; and a single collection from Cumberland County in 1882. *Sphagnum platyphyllum* was documented from a single 1882 herbarium collection from Cumberland County. Both species are believed to be extirpated because no confirmed extant populations have been located in more than 100 years.

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The Department proposes to amend the Endangered Plant Species List at N.J.A.C. 7:5C-5.1 to revise the scientific nomenclature of 62 endangered plant species currently on the List to reflect the currently recognized nomenclature for these species. The proposed nomenclature changes are as follows:

From:	To:
<i>Amelanchier sanguinea</i>	<i>Amelanchier sanguinea</i> var. <i>sanguinea</i>
<i>Andromeda glaucophylla</i>	<i>Andromeda polifolia</i> var. <i>glaucophylla</i>
<i>Antennaria neglecta</i> var. <i>canadensis</i>	<i>Antennaria howellii</i> ssp. <i>canadensis</i>
<i>Arenaria stricta</i>	<i>Minuartia michauxii</i> var. <i>michauxii</i>
<i>Armoracia lacustris</i>	<i>Neobeckia aquatica</i>
<i>Aster praealtus</i>	<i>Aster praealtus</i> var. <i>praealtus</i>
<i>Athyrium pycnocarpon</i>	<i>Diplazium pycnocarpon</i>
<i>Bidens beckii</i>	<i>Megalodonta beckii</i>
<i>Bouteloua curtipendula</i>	<i>Bouteloua curtipendula</i> var. <i>curtipendula</i>
<i>Cacalia atriplicifolia</i>	<i>Arnoglossum atriplicifolium</i>
<i>Calystegia spithamea</i>	<i>Calystegia spithamea</i> ssp. <i>spithamea</i>
<i>Carex amphibola</i> var. <i>amphibola</i>	<i>Carex planispicata</i>
<i>Carex brunnescens</i>	<i>Carex brunnescens</i> var. <i>sphaerostachya</i>
<i>Carex deweyana</i>	<i>Carex deweyana</i> var. <i>deweyana</i>

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<i>Cercis canadensis</i>	<i>Cercis canadensis</i> var. <i>canadensis</i>
<i>Commelina erecta</i>	<i>Commelina erecta</i> var. <i>erecta</i>
<i>Cuscuta indecora</i>	<i>Cuscuta indecora</i> var. <i>indecora</i>
<i>Cyperus polystachyos</i>	<i>Cyperus polystachyos</i> var. <i>texensis</i>
<i>Cyperus tenuifolius</i>	<i>Kyllinga pumila</i>
<i>Diodia virginiana</i>	<i>Diodia virginiana</i> var. <i>virginiana</i>
<i>Eleocharis pauciflora</i>	<i>Eleocharis quinqueflora</i>
<i>Equisetum variegatum</i>	<i>Equisetum variegatum</i> var. <i>variegatum</i>
<i>Eriophorum gracile</i>	<i>Eriophorum gracile</i> var. <i>gracile</i>
<i>Glyceria grandis</i>	<i>Glyceria grandis</i> var. <i>grandis</i>
<i>Gnaphalium helleri</i>	<i>Gnaphalium helleri</i> var. <i>micradenium</i>
<i>Hemicarpha micrantha</i>	<i>Lipocarpha micrantha</i>
<i>Hieracium kalmii</i>	<i>Hieracium kalmii</i> var. <i>fasciculatum</i>
<i>Kuhnia eupatorioides</i>	<i>Brickellia eupatorioides</i> var. <i>eupatorioides</i>
<i>Limosella subulata</i>	<i>Limosella australis</i>
<i>Linnaea borealis</i>	<i>Linnaea borealis</i> var. <i>americana</i>
<i>Linum sulcatum</i>	<i>Linum sulcatum</i> var. <i>sulcatum</i>
<i>Listera cordata</i>	<i>Listera cordata</i> var. <i>cordata</i>
<i>Luzula acuminata</i>	<i>Luzula acuminata</i> var. <i>acuminata</i>
<i>Malaxis monophyllos</i>	<i>Malaxis brachypoda</i>
<i>Muhlenbergia capillaris</i>	<i>Muhlenbergia capillaris</i> var. <i>capillaris</i>

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<i>Ophioglossum vulgatum</i> var. <i>pycnostichum</i>	<i>Ophioglossum vulgatum</i>
<i>Phlox divaricata</i>	<i>Phlox divaricata</i> var. <i>divaricata</i>
<i>Phlox pilosa</i>	<i>Phlox pilosa</i> var. <i>pilosa</i>
<i>Pluchea foetida</i>	<i>Pluchea foetida</i> var. <i>foetida</i>
<i>Polymnia uvedalia</i>	<i>Smallanthus uvedalius</i>
<i>Potentilla palustris</i>	<i>Comarum palustre</i>
<i>Potentilla tridentata</i>	<i>Sibbaldiopsis tridentata</i>
<i>Prenanthes racemosa</i>	<i>Prenanthes racemosa</i> var. <i>racemosa</i>
<i>Ptelea trifoliata</i>	<i>Ptelea trifoliata</i> var. <i>trifoliata</i>
<i>Ranunculus reptans</i>	<i>Ranunculus flammula</i> var. <i>filiformis</i>
<i>Rhexia interior</i>	<i>Rhexia mariana</i> var. <i>ventricosa</i>
<i>Rhynchospora globularis</i>	<i>Rhynchospora recognita</i>
<i>Rudbeckia fulgida</i>	<i>Rudbeckia fulgida</i> var. <i>fulgida</i>
<i>Scheuchzeria palustris</i>	<i>Scheuchzeria palustris</i> var. <i>americana</i>
<i>Scirpus maritimus</i>	<i>Schoenoplectus maritimus</i>
<i>Smilacina trifolia</i>	<i>Maianthemum trifolium</i>
<i>Solidago rigida</i>	<i>Solidago rigida</i> var. <i>rigida</i>
<i>Sphagnum macrophyllum</i> var. <i>floridanum</i>	<i>Sphagnum cribrosum</i>
<i>Sparganium minimum</i>	<i>Sparganium natans</i>
<i>Stachys palustris</i> var. <i>homotricha</i>	<i>Stachys pilosa</i> var. <i>pilosa</i>
<i>Stellaria borealis</i>	<i>Stellaria borealis</i> var. <i>borealis</i>

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<i>Streptopus amplexifolius</i>	<i>Streptopus amplexifolius</i> var. <i>amplexifolius</i>
<i>Streptopus roseus</i>	<i>Streptopus lanceolatus</i>
<i>Tiarella cordifolia</i>	<i>Tiarella cordifolia</i> var. <i>cordifolia</i>
<i>Viburnum alnifolium</i>	<i>Viburnum lantanoides</i>
<i>Viola canadensis</i>	<i>Viola canadensis</i> var. <i>canadensis</i>
<i>Wolffiella floridana</i>	<i>Wolffiella gladiata</i>

With a few exceptions, the above nomenclature revisions are based on the following source: Kartesz, J.T. and C.A. Meacham, C.A., 1999. Synthesis of the North American flora, Version 1.0. North Carolina Botanical Garden, Chapel Hill. The exceptions include: *Gnaphalium hellerii* var. *micradenium* and *Solidago rigida* var. *rigida* (Gleason, H.A and A. Cronquist. 1991. Manual of the Vascular Plants of Northeastern United States and Adjacent Canada, New York Botanical Garden, NY); *Carex planispicata* (Naczi, R.F.C. 1999. *Carex planispicata*, a widespread and frequent new species of *Carex* section *Griseae* (Cyperaceae) from the eastern United States of America. *Journal of the Kentucky Academy of Sciences* 60(1):37-44); and *Sphagnum cribrosum* (Shaw, J. A., S. Boles and B. Shaw. 2008. A phylogenetic delimitation of the *Sphagnum subsecundum* complex (Sphagnaceae, Bryophyta). *American Journal of Botany* 95(6):731–744.)

Stakeholder Outreach

Stakeholder outreach regarding the contemplated additions, deletions and nomenclatural revisions to the Endangered Plant Species List summarized above was conducted on March 15,

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2011 for invited external stakeholders, including representatives of environmental attorneys, State builder and planner associations, non-profit conservation organizations, environmental consultants, regional regulatory authorities, the Federal government and academia. For a list of those invited as well as those who participated, see <http://www.nj.gov/dep/workgroups/past.html>.

Comments and recommendations received at the external stakeholder meeting included:

1) the Department should evaluate the effectiveness of this and other rules in protecting populations of endangered plants and the recovery of listed species; 2) economic evaluation of the rule amendments should include associated impacts on other Department rules that incorporate or reference the List; 3) background information on the methodology and information used in identifying plant species proposed for listing, including that derived from NatureServe, the international network of natural heritage programs, should be included in the rule proposal; 4) the Department should reconsider the wisdom of removal from the List of plant species ranked by the Natural Heritage Program as extirpated since these species may be rediscovered in future field surveys; 5) an emergency procedure for listing of species should be considered for addition to the rule to allow for immediate listing of new plant species or extirpated species that are rediscovered; 6) the term “plant species of concern” defined in N.J.A.C. 7:5C-3.1 should be replaced with the term “threatened plant species,” which better describes the status of these non-listed species which are, in fact, extremely rare in the State and valuable as components of the State’s biodiversity; 7) the rule proposal should include detailed information on the reasons for loss of all occurrences of populations for those species proposed for delisting because of extirpation; 8) the rule proposal should include information on the

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regional distribution of occurrences for species proposed for listing; 9) the Department should enhance programs for education and outreach on endangered plant species; and 10) press releases by the Department on this rule and the value and status of rare plant species would be valuable.

With reference to recommendations 1, 9 and 10, the Department agrees that continuous evaluation of regulatory programs and their effectiveness in achieving the goals for which they were established, as well as public education and outreach efforts, are important components of an effective program. The Department strives to monitor the status of plant species throughout the State and to assure that adequate programs are in place to protect species' sustainability. These efforts include monitoring, to the extent possible with staff availability, of known locations of endangered plant species as well as those that are considered to be plant species of concern. Staff also performs field surveys of previously unsurveyed locations to search for new occurrences of endangered plant species and plant species of concern. These efforts lead to regulatory amendments such as those proposed at this time to assure that the programs in place to protect plant species are adjusted to reflect the current status of species found in the State and to increase (or decrease) protections based upon the most currently available information. The Department will continue to assess the efficacy of its various programs and activities aimed at protection and management of endangered plant species and to communicate its findings to the public through publications, press releases and other methods of outreach. An example of this effort is the 2006 report "Endangered Plant Species Populations in New Jersey: Health and Threats," in which the Department collaborated with Rutgers University to examine threats to

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331 endangered plant species populations and 32 extirpated plant species in New Jersey. The Department periodically issues press releases on new and interesting botanical discoveries. These discoveries include the 2008 discovery by Department staff of a population of fern-leaf scorpion-flower (*Phacelia bipinnatifida*), a species not previously documented in New Jersey, in the Whittingham Wildlife Management Area, and the 2010 discovery of the world's largest population of the globally rare spreading globe flower (*Trollius laxus*) on a New Jersey Natural Lands Trust preserve in Sussex County.

Information regarding recommendations 2, 3, 7 and 8 has been included in this rule proposal under Economic Impact analysis and in the summary above.

Recommendation 4, to retain on the List those species ranked as extirpated, was considered but not accepted by the Department. The Act, at N.J.S.A. 13:1B-15.154, directs the Department to develop and amend a list of plant species occurring in the State which are endangered. The Department does not believe it is necessary or appropriate to continue to list as endangered in the State species that, in fact, no longer occur in the State.

Recommendation 5, inclusion of an emergency procedure for listing of species, was suggested as a means to allow immediate protections to be put in place in situations where a plant species was found to qualify for endangered species status. Others conversely argued that an emergency procedure for delisting of species may be warranted if the Department determined that a species had become more common and no longer qualified for listing as endangered based

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on criteria at N.J.A.C. 7:5C-2.2. The Department believes that amending the List through the rulemaking process in accordance with N.J.S.A. 13:1B-15.154, which includes the opportunity for public comment on proposed amendments to the List, is the best method to update the List. Further, since promulgation of the List, the Department is not aware of any situation in which a species was impacted due to the lack of an emergency listing provision in the rules.

The Department considered the suggestion from several stakeholders that the term “plant species of concern” at N.J.A.C. 7:5C-3.1 be replaced with the term “threatened plant species.” Plant species of concern is defined at N.J.A.C. 7:5C-3.1 as a plant species whose status is tracked by the Natural Heritage Program, but which does not qualify for listing as endangered at N.J.A.C. 7:5C-5.1. Plant species of concern are those species in addition to those listed as Endangered that are tracked by the Natural Heritage Program due to their rarity and threats. This group of species constitutes a non-codified working group of species in transition either to or from the List. The Department determined not to change the existing terminology out of concern that a change in terminology could create confusion and potentially result in regulatory protection of species included in the newly renamed category of threatened plant species (for example, see N.J.A.C. 7:7E-3.38, Endangered or threatened wildlife or plant species habitats, which includes protections for “endangered or threatened plant species habitat” in the Coastal Zone Management rules). The designation of plant species of concern was not created for this purpose; while the Department has determined these species warrant monitoring to track trends to allow action to be taken as determined necessary, the Department does not believe it would be appropriate to require protection for all 486 species that are currently identified as plant species

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of concern. If the Department decided to promulgate a statewide list of threatened plant species, the Department would develop the list providing public notice and comment through the rulemaking process. Since the Department does not currently intend to extend regulatory oversight to the non-codified species in this category, the Department will continue to refer to the species referenced at N.J.A.C. 7:5A-3.1 as plant species of concern.

Social Impact

The proposed amendments are expected to have a positive social impact. Information documented in the Department's Natural Heritage Database is periodically updated as a result of ongoing field surveys by staff of the Natural Heritage Program combined with credible, verified information from other professional sources. This updated information is, in turn, reviewed using the criteria for designating plant species as endangered (see N.J.A.C 7:5C-2.2) in order to propose amendments to the List. Amendment and update of the List based on the best available scientific data ensures the reliability and credibility of the List and fosters efforts by the Department, non-profit organizations and others to protect listed species populations and their habitats by directing resources and regulatory protection to those species that are most in jeopardy and in need of conservation. The societal and functional value and resilience of our natural landscapes is in part attributable to the diversity of species, both plant and animal, that are integral components of these landscapes. Loss of biodiversity, for example, due to the proliferation of harmful nonindigenous invasive plant species, can result in a loss to the structure,

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composition and function of our natural ecosystems, and has long been considered a harbinger of broader environmental degradation, with resultant societal impacts.

Further social benefit derived from an accurate and up-to-date list includes promoting awareness, concern and a sense of pride for the State's rich floral diversity. The Department believes that survey, monitoring, planning, protection and management efforts pursued by the Department and others for the purpose of understanding the status of the State's native flora and conserving the State's rare botanical diversity is essential to maintaining a healthy and stable human environment and will ultimately contribute to a higher quality of life for New Jersey residents of all ages as well as an enhanced experience for visitors to the State. In particular, the proposed amendments will have positive consequences for that segment of the population involved in ecotourism and field recreation, conservation, land and species management, and outdoor recreation and planning activities, as well as the general public and land use planners and managers.

Economic Impact

These rules do not directly impose regulatory requirements or impose fees and, therefore, the proposed amendments will not have any direct economic impact on the citizens of the State. However, the rules may affect those portions of the public and companies or corporations that conduct business in New Jersey and that are subject to rules that incorporate or reference the List, including, but not limited to, the following: the Coastal Permit Program Rules (N.J.A.C.

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7:7); the Coastal Zone Management rules (N.J.A.C. 7:7E); the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13); the Highlands Water Protection and Planning Act Rules (N.J.A.C. 7:38); and the Water Quality Management Planning rules (N.J.A.C. 7:15). In addition, the Pinelands Comprehensive Management Plan (N.J.A.C. 7:50) references the State's List, thereby protecting State-endangered species in the Pinelands area.

Effect on Implementing Agencies

Much of the cost associated with updating the List has already been incurred since proposed revisions are primarily based on intensive field surveys performed by the Natural Heritage Program botanist during the 2007-2010 field seasons. Additional costs to the Department will include future monitoring of those species proposed for addition to the list. However, the Department already monitors the status of 825 native New Jersey plant species ranked as critically imperiled to rare statewide; it is not anticipated that the species proposed for amendment will significantly impact these standard program costs.

Several Department rules reference and/or protect plant species listed as endangered. The Coastal Permit Program Rules incorporate protection of “endangered or threatened wildlife or vegetation species habitats” into issuance of coastal general permits for single family homes, and permits for expansions of single family homes, recreational facilities at public parks, telecommunications towers, hotels and motels, commercial developments proposing greater than

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49 parking spaces, residential developments proposing greater than 24 units, geotechnical survey borings and wind turbines.

The Coastal Zone Management rules provide that development of endangered or threatened wildlife or plant species habitat is prohibited unless it can be demonstrated that such habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected. Endangered or threatened wildlife or plant species habitats are defined as terrestrial and aquatic (marine, estuarine or freshwater) areas known to be inhabited on a seasonal or permanent basis by or to be critical at any stage in the life cycle of any wildlife or plant identified as "endangered" or "threatened" species on official Federal or State lists of endangered or threatened species, or under active consideration for State or Federal listing. The rules also reference the Department's Endangered Plant Species List. Dredging or excavation to create new lagoons for residential development is prohibited in wetlands, wetlands buffers, and endangered or threatened wildlife or plant species habitats. The rules also define "natural area" as an area that has retained its natural character, as evidenced by the presence of woody vegetation (trees, saplings, scrub-shrub vegetation) or rare or endangered plants.

The Flood Hazard Area Control Act Rules include in the definition of "threatened or endangered species" those species identified pursuant to the Endangered Plant Species List, N.J.A.C. 7:5C-5.1. N.J.A.C. 7:13 also defines "documented habitat for threatened or endangered species" as an area for which there is recorded evidence of past use by a threatened or endangered species of flora or fauna for breeding, resting or feeding provided the Department

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makes the finding that the area remains suitable for use by the specific documented threatened or endangered species during the normal period(s) the species would use the habitat. Under the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-4.1(c)2, a riparian zone is set at 150 feet wide along both sides of waters flowing through an area that contains documented habitat for a threatened or endangered species of plant or animal which is critically dependent on the regulated water for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the regulated water. Under standards for general permits at N.J.A.C. 7:13-8.1(b)3, a regulated activity will be authorized under a general permit only if the Department determines that the regulated activity will not adversely affect a threatened or endangered species, or a documented habitat for a threatened or endangered species. Pursuant to N.J.A.C. 7:13-10.6(d), the Department will issue an individual permit for a regulated activity only if the activity will not adversely affect a threatened or endangered species, or a documented habitat for a threatened or endangered species. The rules also include specific design and construction standards for any regulated activity proposed in a documented habitat for a threatened or endangered species.

The Highlands Water Protection and Planning Act Rules define “endangered species” as species included on the list of endangered species that the Department promulgates pursuant to the Endangered Plant Species List Act, N.J.S.A. 13:1B-15.151 et seq. These rules also define “rare species” to include Plant Species of Concern listed pursuant to N.J.A.C. 7:5C-3.1. The rules specify that the Department will issue a Highlands Preservation Area Approval (HPAA) only if it determines, based upon the information provided by the applicant, that the proposed

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major Highlands development will not jeopardize the continued existence of species listed pursuant to the Endangered Plant Species List Act. (see N.J.A.C. 7:38-6.2(a)5)

In the Water Quality Management Planning rules the definition of “endangered species” is specific to wildlife species only and the rules contain no language regarding plant species. However, the rules include areas mapped as Natural Heritage Priority Sites as part of the definition of “environmentally sensitive areas.” Natural Heritage Priority Sites are areas identified by the Department’s Natural Heritage Program as critically important areas that should be considered to be top priorities for the preservation of biological diversity in New Jersey. Many Priority Sites were developed to protect occurrences of plant species listed as endangered as well as buffers required to protect the primary boundary that supports the plant species occurrence. A second generation of Natural Heritage Priority Sites was developed by the Natural Heritage Program for the Highlands Council in 2005 which is specific to rare plant and rare ecological community occurrences within the Highlands Planning Area only (rare animal data was incorporated into a separate update to the Endangered and Nongame Species Program’s Landscape Maps). The Highlands Natural Heritage Priority Sites coverage also differs from the statewide coverage as follows: all S-precisions (in other words, precisely documented) occurrences were used; a state-level biodiversity ranking of significance was added; and the most recent Land Use/Land Cover data was used and unsuitable areas to support biodiversity elements were removed from the coverage. The Water Quality Management Planning Rules require that sewer service may only be provided to areas not identified as environmentally sensitive areas, although the Department may allow the extension if it makes a determination “that the

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environmentally sensitive areas included in the sewer service area are not critical to a population of endangered or threatened species, the loss of which could decrease the likelihood of the survival or recovery of the species in the State.” (See N.J.A.C. 7:15-5.24(g)2)

Finally, the Pinelands Comprehensive Management Plan (N.J.A.C. 7:50) prohibits development unless it is designed to avoid irreversible adverse impacts to 54 plant species listed as threatened or endangered plants of the Pinelands as well as any local populations of those plants designated by the Department as endangered plant species pursuant to N.J.A.C 7:5C-5.1.

The degree of economic impact associated with the current and proposed future application of Department rules addressing endangered plant species to the Division of Land Use Regulation (DLUR) and the regulated community was determined by reviewing permit applications to DLUR (See Effect on the Public and Business Community, below). DLUR, which is responsible for permit review for coastal areas, flood hazard areas, freshwater wetlands, and the Highlands, reviewed 8,916 permit applications between March 1, 2009 and November 30, 2010, a period of 21 months. Between April 1, 2009 and December 31, 2010 (also 21 months duration and adjusted to take into account the approximately 30-day time lag between permit receipt and initiation of review), staff of the DLUR performed 45 reviews related to listed endangered plant species. Of those 45 reviews, six applications involved the presence of listed species based on inspection of the site or on a recent record in the Natural Heritage Database. Of these six applications, three were determined by staff of DLUR to require project modification or

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other action. This represents 0.03 percent of DLUR permit applications requiring modification or other action as a result of conflicts with endangered plant species occurrences during the specified 21-month period.

Any increased cost to the Department's permitting programs from this rulemaking is expected to be proportional to the net increase in plant species proposed for listing as endangered (i.e., 17 species, or about a five percent increase in the number of species listed). This is not anticipated to result in DEP staffing or other fiscal (State or DEP budget) impacts. Rejection or modification of a very small number of permit applications reviewed by the DLUR may continue to be expected.

Effect on the Public and Business Community

No fees are currently included in this rule and no new fees are proposed as part of the rule amendments.

The current cost to the regulated community, other stakeholders, and the general public as a result of the List and rules pertaining to the List is not precisely or generally known. While this chapter does not impose requirements on properties containing listed species, as a result of species being listed pursuant to these rules limitations are imposed by other Department and regional authorities' rules, as summarized above. Therefore, the primary persons affected by these proposed amendments are those with an interest in land development in areas containing

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occurrences of plant species proposed for listing as endangered, as well as those with an interest in land development in areas that contain occurrences of species proposed for removal from the list of endangered plant species. It is assumed that the potential degree of regulation by the Department and cost borne by applicants will be proportional to or related to the net increase in the number of listed plant species and amount of geographical area associated with occurrences of these additional listed species.

Following is an estimate of the proposed area encompassed by occurrences of the 37 species proposed for addition to the List. Based on information documented in the Natural Heritage Database, the 37 species proposed for addition are currently represented by a total of 145 populations or occurrences (this excludes 21 extirpated occurrences). The precise locations are known for 51 of these 145 occurrences. The combined acreage of the 51 occurrences is estimated to be 313 acres. The precise location of the remaining 94 occurrences is not known, but it is expected that some of these populations will eventually be found during field surveys. The Natural Heritage Database includes occurrences based upon historical records, such as herbarium records, which may contain only general location information (for example, within a particular municipality or county). Based upon Department experience, many of the populations reflected by historic occurrences still exist and the Department updates location information as verification occurs. Assuming that all 94 occurrences will be found in the field and extrapolating using data on average acreage occupied by each species for precisely documented occurrences results in a possibility of 714 additional acres added. (This figure was calculated by reviewing the acreage occupied by precisely known occurrences and determining an average acreage value

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for each individual species. This specific value was then applied to the remaining occurrences for each species in order to determine an additional hypothetical acreage based on the assumption that all occurrences can eventually be found). The result is a total estimated acreage for all 145 occurrences for the 37 species proposed for addition to the List of 1,027 acres (313 acres plus 714 acres).

Those species being proposed for deletion from the List will potentially offset the impact of the proposed species additions. Following is an estimate of the proposed area encompassed by occurrences of the 20 species proposed for deletion from the List.

Based on information documented in the Natural Heritage Database, the 20 species proposed for deletion are represented by a total of 96 populations or occurrences (this excludes 18 extirpated occurrences). The precise locations are known for 55 of these occurrences. The combined acreage of the 55 occurrences is estimated to be 1,022 acres. The precise location of the remaining 41 occurrences is not known, but it is expected that some of these populations will be located during field surveys. Assuming that all 41 occurrences can be found and extrapolating using data on average acreage occupied by the precisely documented occurrences for each species results in a possible addition of 498 acres. (This figure was calculated by reviewing the acreage occupied by precisely known occurrences and determining an average acreage value for each individual species. This specific value was then applied to the remaining occurrences for each species in order to determine an additional hypothetical acreage based on the assumption that all occurrences can be found). The result is a total estimated acreage for all

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96 occurrences for the 20 species proposed for deletion from the List of 1,520 acres (1,022 acres plus 498 acres).

The net impact of the listing changes therefore is a decrease of 493 acres (1,520 acres for species occurrences deleted from the List vs. 1,027 acres for species occurrences added to the List). Thus, the decrease in acreage resulting from the proposed species deletions is about 48 percent greater than the increase in acreage due to the proposed species additions. It should be noted that acreage added as a result of occurrences of species proposed for addition to the List will vary in geographical location from the acreage removed as a result of occurrences of species proposed for deletion from the List. As a result there may be localized economic impacts even though the Department estimates little to no impact statewide.

Based on information documented in the Natural Heritage Database, the Department used geographic information system (GIS) software to calculate the geographical area occupied by all the occurrences with precise locations for species currently listed as endangered in New Jersey. This results in a total of approximately 17,552 acres or about 0.31 percent of NJ's total area of 5,586,560 acres (land and water). The Department therefore concludes that the net addition of 17 listed endangered plant species will not significantly affect the total area regulated by the Department or the cost to the public and business community. Further, based on the analysis provided above of Division of Land Use Regulation (DLUR) permit applications received by the Department during a 21-month period in 2009 and 2010 that required modification or other action as a result of conflicts with endangered plant species occurrences (see Effect on

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Implementing Agencies), the number and percentage of future applications to the DLUR that will be in conflict with occurrences of endangered plant species is expected to continue to be very low, primarily because of the small geographical area occupied by occurrences with precise locations for species currently listed or proposed for listing as endangered.

Environmental Impact

Amendments to the List to reflect current information documented in the Department's Natural Heritage Database will have a long-term positive environmental impact by promoting the protection and management of occurrences of those species most vulnerable to extirpation or extinction by not only the Department's planning, regulatory and acquisition programs but also by county and municipal governments and the non-profit conservation community. It is anticipated that the updated List will continue to encourage research, investigations and public education regarding endangered plant species at various levels of government and in the private sector. This will support the Department's core mission of protection of the State's natural and historic resources to ensure continued public benefit, which is enhanced through effective and balanced implementation and enforcement of environmental laws to protect these resources. Maintaining the State's floral diversity through regulatory and other means will contribute to the stability and viability of ecosystems. Because many endangered plant species occupy specialized and often harsh habitats, such as sand dunes, rock faces, bogs, fens and mountain tops, their preservation will aid in soil development, in preventing wind and water erosion, and in promoting water quality. In addition, maintaining a diverse flora within the State is essential to

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the conservation of wildlife. All of these factors will result in an overall enhancement of the environment and the quality of life for New Jersey's citizens.

Federal Standards Statement

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c.65) require State agencies that adopt, readopt or amend State regulations that exceed any Federal standards or requirements to include in the rulemaking document a Federal Standards Analysis.

N.J.A.C. 7:5C is not promulgated under the authority of, or in order to implement, comply with or participate in any program established under Federal law. However, N.J.A.C. 7:5C is promulgated under a State statute that refers to Federal law and incorporates Federal standards. The Act, as well as N.J.A.C 7:5C, defines endangered species as including, in part, plant species listed, proposed or under review by the Federal government as endangered or threatened throughout their range in the United States pursuant to the Federal Endangered Species Act of 1973, 16 USC §§ 1533 et seq.

The incorporation of the List by reference in other Department rules does not exceed any Federal standards or requirements. The regulatory programs that utilize the List do not have Federal counterparts that impose standards or requirements with respect to endangered plant species. For example, the Federal Coastal Zone Management Act (P.L. 92-583) provides a coastal planning and management process, but does not set specific regulatory requirements for

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coastal development. Similarly, there is no Federal counterpart to the New Jersey Flood Hazard Area Control Act.

Based on the above, the Department has determined that the rules proposed for amendment do not contain any standards or requirements that exceed the standards or requirements imposed by Federal law. Accordingly, no further analysis is required under Executive Order No. 27(1994) and N.J.S.A. 52:14B-1 et seq.

Jobs Impact

The Department believes that amendment of the rules, by itself, will have neither a positive nor a negative impact on employment and jobs in New Jersey because the administration and management tasks required under these rules are performed solely by personnel of the Department. With regard to the Department's regulatory oversight of development through various rules that reference or incorporate the List, although it is not possible to determine if any occurrence of any species proposed for addition to the List will occur on land or in waters that become the subject of a permit application to the Department, the above analysis of land use permit applications received by the Department during a 21-month period in 2009 and 2010 (see Effect on Implementing Agencies), as well as data provided on the estimated area of occurrences of species proposed for addition to and deletion from the List (see Economic Impact), indicate potentially minimal economic consequences from the proposed rule amendments and, subsequently, likely no impact on economic growth and jobs.

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Jobs that may be positively impacted would include biologists, ecologists, consulting industry staff with expertise in plant biology, as well as positions in various levels of government and non-profit entities that use the List in their planning, acquisition, management and regulatory activities.

Agriculture Industry Statement

N.J.S.A. 52:14B-4(a)2 requires that agencies proposing a rule include a statement setting forth the nature and extent of the impact of the proposed rule on the agricultural industry. The Department has determined that the proposed amendments will have no impact on the agriculture industry because the rules do not contain any prohibitions or enforcement mechanisms or impose any regulatory requirements on the public.

Impacts to the agricultural industry through adoption of proposed amendments to the List could potentially occur through the various land use regulations of the Department identified and discussed in the Economic Impact statement. The Department, however, expects that, based on the above analysis of land use permit applications and data provided on the estimated area of occurrences of species proposed for addition to and deletion from the List, no impacts to agricultural industry as a result of amendments to the List are expected since none of the plant species proposed for addition to the List are known to occur on or to be associated with active agricultural land.

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Regulatory Flexibility Analysis

In accordance with the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department has determined that the proposed amendments will not impose reporting, consulting, recordkeeping, or other compliance requirements on small businesses. Although this chapter does not contain regulatory requirements or impose fees, as discussed in the Economic Impact analysis, the rules may affect those portions of the public and companies or corporations that conduct business in New Jersey and that are subject to rules that incorporate or reference the List, including, but not limited to, the Coastal Permit Program Rules (N.J.A.C. 7:7), the Coastal Zone Management rules (N.J.A.C. 7:7E), the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13), the Highlands Water Protection and Planning Act Rules (N.J.A.C. 7:38), the Water Quality Management Planning rules (N.J.A.C. 7:15), and the Pinelands Comprehensive Management Plan (N.J.A.C. 7:50). Those subject to these other regulatory requirement may include small businesses. The potential indirect requirements resulting from reference to or incorporation of the List in the various permitting programs listed above are discussed in the Economic Impact analysis. Small businesses applying to the Department for permits pertaining to the rules listed above may require the services of a professional biologist, botanist or ecologist to ensure that all application materials are suitable for submission to the Department. The Department has determined that the proposed amendments, which will result in a net addition of 17 species to the List, as well as the secondary impacts associated with compliance with other Department regulations that recognize or incorporate the amended list, are the minimum

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necessary to ensure protection of the listed species. Accordingly, no amendments are proposed to any of the regulations that reference the list to create an exception or reduce the requirements for small businesses.

Housing Affordability Impact

Pursuant to N.J.S.A. 52:14B-4, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the rules proposed for amendment to determine their impact, if any, on the affordability of housing. Since these rules concern the listing of native plant species as endangered, the Department has determined that there is an extreme unlikelihood that the rules will evoke a change in the average costs associated with housing.

Smart Growth Development Impact

In accordance with N.J.S.A. 52:14B-4, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the proposed rules for purposes of determining their impact, if any, on the availability of affordable housing and on new construction in Planning Areas 1 or 2, or within designated centers, under the State Plan. Since these rules concern the listing of native plant species as endangered, the Department has determined that the rules do not impact the type or number of housing units, increase or decrease the availability of affordable housing in any manner, or affect new construction within Planning areas 1, 2, or within designated centers,

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under the New Jersey State Development and Redevelopment Plan (State Plan), N.J.S.A.

52:18A-196 et seq.

Full text of the proposed amendments follows (additions indicated by bold **thus**; deletions indicated in brackets [thus]):

SUBCHAPTER 4. PUBLIC PARTICIPATION

7:5C-4.1 Public participation

Persons with information that will help the Department in determining whether a plant species qualifies under the criteria at N.J.A.C. 7:5C-2.2 as endangered may submit specific information to the Division at the following address detailing how the species may qualify as endangered pursuant to N.J.A.C. 7:5C-2.2:

Office of Natural Lands Management

Division of Parks and Forestry

[PO Box 404]

Mail Code 501-04

P.O. Box 420

5 Station Plaza

501 East State Street

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Trenton, New Jersey [08625-0404] **08625-0420**

e-mail: NatLands@dep.state.nj.us

SUBCHAPTER 5. ENDANGERED PLANT SPECIES LIST

7:5C-5.1 Endangered Plant Species List

The following plant species are designated as endangered plant species:

1.	Scientific Name	Common Name
	Abies balsamea	balsam fir
	...	
	[Amelanchier sanguinea	running serviceberry]
	Amelanchier sanguinea var. sanguinea	round-leaf service-berry
	...	
	[Andromeda glaucophylla	bog rosemary]
	Andromeda polifolia var. glaucophylla	bog rosemary
	...	
	Antennaria howellii ssp. canadensis	Canada pussytoes
	[Antennaria neglecta var. canadensis	Canada pussytoes]
	...	
	Arabis missouriensis	Missouri rock-cress
	...	
	[Arenaria stricta	rock sandwort]

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...

[Armoracia lacustris	lake cress]
Arnoglossum atriplicifolium	pale Indian plantain

...

[Aster firmus	shining aster]
[Aster praealtus	willow-leaved aster]
Aster praealtus var. praealtus	willow-leaf aster

...

[Athyrium pycnocarpon	glade fern]
-----------------------	-------------

...

[Bidens beckii	water-marigold]
----------------	-----------------

...

Bidens mitis	small-fruit beggar-ticks
---------------------	---------------------------------

Blephilia ciliata	downy woodmint
--------------------------	-----------------------

...

Boltonia montana	Appalachian mountain boltonia
-------------------------	--------------------------------------

...

[Bouteloua curtipendula	side-oats gramma grass]
-------------------------	-------------------------

Bouteloua curtipendula var. curtipendula	side-oats grama grass
---	------------------------------

Brickellia eupatorioides var. eupatorioides	false boneset
--	----------------------

[Cacalia atriplicifolia	pale indian plantain]
-------------------------	-----------------------

...

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[<i>Calystegia spithamea</i>	erect bindweed]
<i>Calystegia spithamea ssp. spithamea</i>	erect bindweed
...	
[<i>Carex albursina</i>	sedge]
...	
[<i>Carex amphibola</i> var. <i>amphibola</i>	narrow-leaved sedge]
...	
[<i>Carex brunnescens</i>	brownish sedge]
<i>Carex brunnescens</i> var. <i>sphaerostachya</i>	round-spike brownish sedge
...	
[<i>Carex deweyana</i>	Dewey's sedge]
<i>Carex deweyana</i> var. <i>deweyana</i>	Dewey's sedge
...	
<i>Carex laxiculmis</i> var. <i>copulata</i>	coupled sedge
...	
<i>Carex meadii</i>	Mead's sedge
...	
<i>Carex planispicata</i>	narrow-leaf sedge
...	
<i>Carex stipata</i> var. <i>maxima</i>	large awl-fruit sedge
...	
<i>Carex woodii</i>	Wood's sedge

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...

[*Cercis canadensis* redbud]

***Cercis canadensis* var. *canadensis* redbud**

...

***Comarum palustre* marsh cinquefoil**

[*Commelina erecta* slender dayflower]

***Commelina erecta* var. *erecta* slender dayflower**

...

***Crataegus holmesiana* Holmes' hawthorn**

...

[*Cuscuta indecora* collared dodder]

***Cuscuta indecora* var. *indecora* collared dodder**

...

[*Cyperus polystachyos* coast flatsedge]

***Cyperus polystachyos* var. *texensis* coast flat sedge**

...

[*Cyperus tenuifolius* low flatsedge]

...

[*Diodia virginiana* larger buttonweed]

***Diodia virginiana* var. *virginiana* larger buttonweed**

***Diplazium pycnocarpon* glade fern**

...

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Dryopteris celsa	log fern
...	
[Eleocharis minima	small spikerush]
Eleocharis olivacea var. reductiseta	Pine Barren spike-rush
[Eleocharis pauciflora	few-flowered spikerush]
Eleocharis quinqueflora	few-flower spike-rush
...	
[Equisetum variegatum	variegated horsetail]
Equisetum variegatum var. variegatum	variegated horsetail
Eragrostis hirsuta	stout love grass
[Eriophorum gracile	slender cottongrass]
Eriophorum gracile var. gracile	slender cotton-grass
...	
[Euphorbia marilandica	Maryland spurge]
...	
[Filipendula rubra	queen-of-the-prairie]
...	
[Galium trifidum	small bedstraw]
...	
[Glaux maritima	sea-beach milkwort]
...	
[Glyceria grandis	American mannagrass]

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Glyceria grandis var. grandis	American manna grass
[Gnaphalium helleri	Heller's everlasting]
Gnaphalium helleri var. micradenium	small everlasting
...	
[Goodyera tessellata	checkered rattlesnake plantain]
...	
[Hemicarpha micrantha	Hemicarpha]
[Hieracium kalmii	Canada hawkweed]
Hieracium kalmii var. fasciculatum	Canada hawkweed
Honckenya peploides var. robusta	seabeach sandwort
...	
Hypericum gymnanthum	clasping-leaf St. John's-wort
...	
Juncus diffusissimus	slim-pod rush
[Juncus elliotii	Elliott's rush]
...	
[Kuhnia eupatorioides	false boneset]
Kyllinga pumila	low spike sedge
...	
[Lathyrus venosus	smooth veiny peavine]
...	
Ledum groenlandicum	Labrador tea

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...

Limnobium spongia **American frog's-bit**

Limosella australis **awl-leaf mudwort**

[Limosella subulata] mudweed]

[Linnaea borealis] twin-flower]

Linnaea borealis var. americana **twinflower**

...

[Linum sulcatum] grooved yellow flax]

Linum sulcatum var. sulcatum **grooved yellow flax**

Lipocarpa micrantha **small-flower halfchaff sedge**

[Listera cordata] heart-leaved twayblade]

Listera cordata var. cordata **heartleaf twayblade**

...

[Luzula acuminata] hairy woodrush]

Luzula acuminata var. acuminata **hairy wood-rush**

...

Lysimachia lanceolata **lance-leaf loosestrife**

...

Maianthemum trifolium **three-leaf false Solomon's-seal**

...

Malaxis brachypoda **white adder's-mouth**

[Malaxis monophyllos] white adder's-mouth]

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Malaxis unifolia	green adder's-mouth
Megalodonta beckii	water-marigold
...	
Minuartia michauxii var. michauxii	rock sandwort
...	
[Muhlenbergia capillaris	long-awned smoke grass]
Muhlenbergia capillaris var. capillaris	long-awn smoke grass
...	
Neobeckia aquatica	lake water-cress
...	
[Oenothera humifusa	sea-side evening-primrose]
...	
[Ophioglossum vulgatum var. pycnostichum	sheathed adder's tongue]
Ophioglossum vulgatum	southern adder's-tongue
...	
Panicum dichotomum var. yadkinense	spotted-sheath panic grass
...	
Panicum longiligulatum	Coastal-plain panic grass
...	
Phacelia bipinnatifida	fern-leaf scorpion-flower
[Phlox divaricata	wild blue phlox]
Phlox divaricata var. divaricata	wild blue phlox

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[Phlox pilosa	downy phlox]
Phlox pilosa var. pilosa	downy phlox
...	
[Pluchea foetida	stinking fleabane]
Pluchea foetida var. foetida	stinking fleabane
...	
Poa sylvestris	woodland spear grass
...	
Polygala curtissii	Curtiss' milkwort
...	
[Polymnia uvedalia	bearsfoot]
Polypremum procumbens	juniper-leaf
[Potamogeton alpinus	northern pondweed]
...	
[Potamogeton robbinsii	Robbins' pondweed]
...	
[Potentilla palustris	marsh cinquefoil]
[Potentilla tridentata	three-toothed cinquefoil]
[Prenanthes racemosa	smooth rattlesnake root]
Prenanthes racemosa var. racemosa	smooth rattlesnake-root
[Prunus alleghaniensis	Alleghany plum]
[Prunus angustifolia	Chickasaw plum]

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Prunus pumila var. depressa	low sand cherry
[Ptelea trifoliata	wafer ash]
Ptelea trifoliata var. trifoliata	wafer-ash
...	
Pyrrhopappus carolinianus	Carolina desert-chicory
...	
Quercus macrocarpa var. macrocarpa	mossy-cup oak
...	
Ranunculus flammula var. filiformis	creeping spearwort
[Ranunculus reptans	creeping buttercup]
...	
[Rhexia interior	showy meadowbeauty]
Rhexia mariana var. ventricosa	showy meadow-beauty
[Rhododendron atlanticum	dwarf azalea]
...	
[Rhynchospora globularis	grass-like beaked rush]
...	
Rhynchospora grayi	Gray's beaked-rush
...	
Rhynchospora recognita	coarse grass-like beaked-rush
...	
Rubus novocaesarius	New Jersey dewberry

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[<i>Rudbeckia fulgida</i>	orange coneflower]
<i>Rudbeckia fulgida</i> var. <i>fulgida</i>	orange coneflower
...	
<i>Rumex hastatulus</i>	Engelmann's sorrel
<i>Saccharum alopecuroidum</i>	silver plume grass
...	
<i>Sagittaria filiformis</i>	narrow-leaf arrowhead
...	
[<i>Scheuchzeria palustris</i>	arrow-grass]
<i>Scheuchzeria palustris</i> var. <i>americana</i>	arrow-grass
...	
<i>Schoenoplectus maritimus</i>	saltmarsh bulrush
...	
[<i>Scirpus maritimus</i>	salt marsh bulrush]
...	
<i>Sibbaldiopsis tridentata</i>	three-toothed cinquefoil
...	
[<i>Sisyrinchium montanum</i>	strict blue-eyed grass]
<i>Smallanthus uvedalius</i>	bear's-foot
[<i>Smilacina trifolia</i>	three-leaved Solomon's seal]
[<i>Solidago rigida</i>	stiff goldenrod]
<i>Solidago rigida</i> var. <i>rigida</i>	prairie goldenrod

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...	
[Sparganium minimum	small bur-reed]
Sparganium natans	small burr-reed
...	
[Sphagnum austinii	sphagnum]
...	
Sphagnum cribrosum	sphagnum
[Sphagnum macrophyllum var. floridanum	sphagnum]
...	
[Sphagnum platyphyllum	sphagnum]
...	
[Stachys palustris var. homotricha	marsh hedge-nettle]
Stachys pilosa var. pilosa	hairy hedge-nettle
[Stellaria borealis	northern stichwort]
Stellaria borealis var. borealis	boreal starwort
...	
[Streptopus amplexifolius	white twisted-stalk]
Streptopus amplexifolius var. amplexifolius	white twisted-stalk
Streptopus lanceolatus	rosy twisted-stalk
[Streptopus roseus	rosy twisted-stalk]
...	
[Tiarella cordifolia	foamflower]

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Tiarella cordifolia var. cordifolia	foamflower
...	
Trillium grandiflorum	large-flower trillium
...	
Valerianella chenopodiifolia	goose-foot cornsalad
...	
[Viburnum alnifolium	witch hobble]
Viburnum lantanoides	witch-hobble
Vicia americana var. americana	American purple vetch
...	
[Viola canadensis	Canada violet]
Viola canadensis var. canadensis	Canadian violet
...	
[Vitis novae-angliae	New England grape]
...	
[Wolffiella floridana	Florida bogmat]
Wolffiella gladiata	sword bogmat
...	