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## Aquatic Plant Survey and Field and Herbarium Studies of Tentatively Undetermined Plant Species

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Final Report for Grant Agreement ME#380129

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### Abstract

We carried out aquatic plant surveys at 22 sites and documented 85 occurrences of PNDI listed vascular plants of which 63 were new records and 22 were updates of earlier reports submitted by ourselves and others. Field reports have been submitted to DCNR Bureau of Forestry and PNDI-East. Data on distribution and abundance of aquatic plants gathered during these surveys resulted in recommendations for a change in the status of 7 species. Five of these, *Elatine minima*, *Eleocharis olivacea*, *Orontium aquaticum*, *Potamogeton robbinsii*, and *Sporobolus cryptandrus*, will be dropped from the PNDI list following action by the Rare Plant Forum and the Vascular Plants Technical Committee, which met on March 23, 2002. One other will remain on the list but eastern populations will not be considered natural.

We presented three aquatic plant identification workshops and three slide lectures to foster an appreciation of the diversity and ecological importance of aquatic plants. We also met with lake residents at many of the lakes we surveyed.

We conducted additional field surveys in Delaware, Bucks, Lehigh, and Northampton Counties resulting in the discovery and documentation of 8 new occurrences of PNDI listed species. Four field visits and numerous telephone consultations were held regarding PNDI reviews.

### Keywords

Pennsylvania Natural Diversity Inventory (PNDI)

### Disciplines

Botany

### Comments

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**Final Report for Grant Agreement ME#380129**

**Aquatic Plant Survey and Field and Herbarium Studies of  
Tentatively Undetermined Plant Species**

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**March 27, 2002**

### **Abstract**

We carried out aquatic plant surveys at 22 sites and documented 85 occurrences of PNDI-listed vascular plants of which 63 were new records and 22 were updates of earlier reports submitted by ourselves and others. Field reports have been submitted to DCNR Bureau of Forestry and PNDI-East. Data on distribution and abundance of aquatic plants gathered during these surveys resulted in recommendations for a change in the status of 7 species. Five of these, *Elatine minima*, *Eleocharis olivacea*, *Orontium aquaticum*, *Potamogeton robbinsii*, and *Sporobolus cryptandrus*, will be dropped from the PNDI list following action by the Rare Plant Forum and the Vascular Plants Technical Committee, which met on March 23, 2002. One other will remain on the list but eastern populations will not be considered natural.

We presented three aquatic plant identification workshops and three slide lectures to foster an appreciation of the diversity and ecological importance of aquatic plants. We also met with lake residents at many of the lakes we surveyed.

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### **Objectives**

1. Extend the survey of aquatic plants of glacial lakes in northeastern Pennsylvania initiated in 2000 to at least 10 additional lakes.
2. Provide recommendations for appropriate PNDI status of the plants involved.
3. Provide information to lake community residents and lake managers regarding the diversity and ecological role of aquatic plants.
4. Evaluate Penn DOT project impacts on occurrences of PNDI-listed plants as needed.

### **Justification**

Many glacial lakes in northeastern Pennsylvania have not been surveyed for vascular plants recently or at all (Pennsylvania Flora Database, PNDI database). Furthermore, many publicly owned lakes were not included in earlier surveys because it was thought that they did not need protection and therefore were a lower priority for inventorying. Consequently data are not available to accurately assess the true status of many aquatic vascular plants. In addition, several invasive, non-native aquatic plants have been spreading throughout the region and their impact on native lake flora has not been fully evaluated.

Adding to the problem, lake residents and lake managers have little appreciation for the role of aquatic plants in lake ecosystems and little knowledge of the diversity of aquatic vegetation, which is frequently referred to as "seaweed". Demands are frequently made to control aquatic vegetation in privately and publicly owned water bodies to facilitate

various recreational and aesthetic uses. The assumption has often been made, in the absence of any inventory data, that the offending vegetation is non-native invasive species such as Eurasian water milfoil.

### **Materials and Methods**

Lake surveys were carried out during July and August 2001. A rowboat was used to make a circuit of the each lake for the purpose of observing and sampling the aquatic flora. A viewing tube, constructed from a section of PVC pipe was employed to see below the surface. A grappling tool constructed from 2 garden rakes bolted together back to back was dragged across the lake bottom at regular intervals to obtain samples from water too deep to reach otherwise. Samples were identified on the spot or later in the laboratory, and herbarium specimens prepared for each site. GPS data points were recorded at each site where PNDI-listed plants were found.

### **Products Delivered**

1. A progress report and a final report have been submitted to the Wild Resources Conservation Fund.
2. Field reports were submitted to PNDI-East and the Bureau of Forestry for all PNDI-listed species found.
3. One hundred and fifty-eight (158) herbarium specimens were deposited permanently documenting findings.
4. Recommendations for changes in the status of 7 species were submitted to the Rare Plant Forum and the Vascular Plants Technical Committee.

### **Results and Conclusions**

#### **Aquatic Plant Surveys**

Appendix A contains a complete list of species observed and specimens collected at each site. As a direct result of these surveys, we recommended that several species, including *Potamogeton robbinsii* (PR), *Eleocharis olivacea* (PT), *Orontium aquaticum* (PR), and *Elatine minima* (TU/PR) be dropped from the PNDI list. Our finding of additional large populations of *Utricularia purpurea* is further evidence that our recommendation last year to drop this species from the PNDI list was correct.

The presence of large populations of *Myriophyllum heterophyllum* at two sites in northeastern Pennsylvania (Lily Lake in Luzerne Co. and Shohola Lake in Pike Co.) was unexpected. This species, which is listed as endangered in Pennsylvania (PE), was previously known only from a few scattered sites in the northwestern part of the state (Rhoads and Klein 1993). Native from NY and western Ontario to ND and south to FL and TX (Gleason and Cronquist 1991), this plant is considered an invasive exotic in New Hampshire (New Hampshire DES 1999). It appears to be spreading very aggressively in northeastern PA and should be monitored carefully, especially at Lily Lake where it seems to be a fairly recent introduction.

Another interesting finding was three new populations of *Elatine americana* (synonym: *E. triandra* var. *americana*). Until very recently this species was considered extirpated in Pennsylvania. It is now appearing with increasing frequency in glacial lakes in

northeastern Pennsylvania in mixed populations with *Elatine minima*. Have we just begun to recognize it, or is it expanding its range? All historical occurrences were in the southeastern corner of the state (Rhoads and Klein 1993).

Another interesting observation was the greatly decreased abundance of *Utricularia inflata* at two sites where it was discovered in 2000 (Pecks Pond and Tobyhanna Lake) and its discovery at at least one additional site in Pike County (Twin Lakes). The cause of apparent year-to-year fluctuation in population size is not known.

### **Assessment of PNDI Status**

At the request of PNDI staff more emphasis was placed on aquatic plant surveys during 2001 than we originally envisioned. The part of our original proposal in which we planned to investigate the status of 4 undetermined (TU status) plant species was deferred as a result. However, as outlined above, the expanded work on aquatic species resulted in important recommendations for changes in status that increased the overall scientific accuracy of PNDI classifications.

### **Additional Field Surveys**

Additional field surveys were carried out in Bucks, Carbon, Delaware, Lackawanna, Lehigh, and Luzerne Counties. Field reports have been sent to DCNR Bureau of Forestry and PNDI-East. Our documentation of a large stand of *Sporobolus cryptandrus* (PR) at a highly disturbed site in Delaware County resulted in a recommendation that this species be dropped from the PNDI list. Other visits resulted in documenting newly discovered populations of *Najas marina* (PE) and *Tipularia discolor* (PR) in Delaware County; *Trillium cernuum* (TU) in Northampton County; *Erythronium albidum* (TU) in Lehigh County; *Ellisia nyctalea* (PT), *Rotala ramosior* (PR), and *Carex crinita* var. *brevicrinus* (PE) in Bucks County; *Ledum groenlandicum* in Lackawanna Co; *Utricularia geminiscapa* in Luzerne Co.; *Gentiana linearis* in Carbon Co. See Appendix B. for a list of specimens deposited.

### **Aquatic Plant Workshops and Lectures**

We conducted 3 hands-on workshops and gave 3 illustrated lectures on aquatic plants in conjunction with the Pike County Conservation District DCNR Bureau of Forestry District 19, and the Pennsylvania Lake Management Society (PALMS). The purpose of the workshops and lectures was to acquaint residents and managers of lakes with the diversity and ecological role of native aquatic vegetation and enlist them in monitoring for non-native invasive species. These meetings enabled us to make numerous contacts, which have resulted in opportunities to survey additional privately owned lakes. We also met with lake community residents at many of the lakes where we conducted surveys.

### **Environmental Reviews**

At the request of Jeanne Harris and Chris Firestone we have consulted on numerous projects that have come up for environmental review because of potential impact on PNDI-listed plants. We made field visits to three Penn DOT project sites (Bristol Road extension - Chalfont, Bucks Co., Route 309 exit ramp - Hilltown Twp., Bucks Co., Galloway Road extension - Bensalem Twp., Bucks Co.) and a pond project site at

Schuylkill Center for Environmental Education in Philadelphia. In addition we consulted via telephone and email regarding numerous other PNDI reviews.

### **Discussion of Management Recommendations**

Management recommendations resulting from this work relate most directly to the status of species classified as endangered, threatened, rare or undetermined by the Pennsylvania Natural Diversity Inventory. It is very important to the credibility of the PNDI program overall, that the classifications accurately reflect each species true status in the state. Although progress is made every year, continuing studies and inventories are needed to provide a strong scientific basis for status determinations and effective conservation programs.

### **Literature/Sources Cited**

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## Appendix A

### Site Inventory Lists for Lakes Surveyed in 2001

by Ann Rhoads and Tim Block, Morris Arboretum of the University of Pennsylvania

*All specimens deposited in the Herbarium of the Morris Arboretum (MOAR).*

<u>Taxon name</u>	<u>County</u>	<u>Location</u>	<u>Specimen</u>
<i>Aronia melanocarpa</i>	Luzerne	Cranberry Pond	F
<i>Aster macrophyllus</i>	Luzerne	Cranberry Pond	T
<i>Calamagrostis canadensis</i>	Luzerne	Cranberry Pond	F
<i>Calla palustris</i>	Luzerne	Cranberry Pond	F
<i>Carex canescens</i>	Luzerne	Cranberry Pond	F
<i>Carex lasiocarpa</i> var. <i>americana</i>	Luzerne	Cranberry Pond	T
<i>Carex limosa</i>	Luzerne	Cranberry Pond	T
<i>Carex stricta</i>	Luzerne	Cranberry Pond	F
<i>Carex utriculata</i>	Luzerne	Cranberry Pond	F
<i>Cephalanthus occidentalis</i>	Luzerne	Cranberry Pond	F
<i>Chamaedaphne calyculata</i>	Luzerne	Cranberry Pond	F
<i>Cicuta bulbifera</i>	Luzerne	Cranberry Pond	F
<i>Decodon verticillata</i>	Luzerne	Cranberry Pond	F
<i>Drosera intermedia</i>	Luzerne	Cranberry Pond	F
<i>Drosera rotundifolia</i>	Luzerne	Cranberry Pond	F
<i>Dulichium arundinacea</i>	Luzerne	Cranberry Pond	F
<i>Eleocharis olivacea</i>	Luzerne	Cranberry Pond	T
<i>Eriophorum virginicum</i>	Luzerne	Cranberry Pond	F
<i>Galium tinctorium</i>	Luzerne	Cranberry Pond	F
<i>Glyceria canadensis</i>	Luzerne	Cranberry Pond	F
<i>Hypericum ellipticum</i>	Luzerne	Cranberry Pond	F
<i>Ludwigia palustris</i>	Luzerne	Cranberry Pond	F
<i>Lysimachia terrestris</i>	Luzerne	Cranberry Pond	F
<i>Menyanthes trifoliata</i>	Luzerne	Cranberry Pond	F
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Luzerne	Cranberry Pond	F
<i>Nymphaea odorata</i>	Luzerne	Cranberry Pond	F
<i>Osmunda regalis</i>	Luzerne	Cranberry Pond	F
<i>Pontederia cordata</i>	Luzerne	Cranberry Pond	F
<i>Rhyncospora alba</i>	Luzerne	Cranberry Pond	F
<i>Sarracenia purpurea</i>	Luzerne	Cranberry Pond	F
<i>Scutellaria galericulata</i>	Luzerne	Cranberry Pond	F
<i>Spiraea latifolia</i>	Luzerne	Cranberry Pond	F
<i>Spiraea tomentosa</i>	Luzerne	Cranberry Pond	F
<i>Toxicodendron vernix</i>	Luzerne	Cranberry Pond	F
<i>Typha latifolia</i>	Luzerne	Cranberry Pond	F
<i>Utricularia geminiscapa</i>	Luzerne	Cranberry Pond	T
<i>Utricularia macrorhiza</i>	Luzerne	Cranberry Pond	F
<i>Vaccinium macrocarpon</i>	Luzerne	Cranberry Pond	F
<i>Vaccinium oxycoccus</i>	Luzerne	Cranberry Pond	F
<i>Xyris montana</i>	Luzerne	Cranberry Pond	T
<i>Acer rubrum</i>	Luzerne	Dorrance Bog	F
<i>Betula populifolia</i>	Luzerne	Dorrance Bog	F



<i>Calla palustris</i>	Luzerne	Dorrance Bog	F
<i>Carex trisperma</i>	Luzerne	Dorrance Bog	F
<i>Chamaedaphne calyculata</i>	Luzerne	Dorrance Bog	F
<i>Drosera intermedia</i>	Luzerne	Dorrance Bog	F
<i>Eriophorum virginicum</i>	Luzerne	Dorrance Bog	F
<i>Kalmia angustifolia</i>	Luzerne	Dorrance Bog	F
<i>Menyanthes trifoliata</i>	Luzerne	Dorrance Bog	F
<i>Orontium aquaticum</i>	Luzerne	Dorrance Bog	F
<i>Osmunda cinnamomea</i>	Luzerne	Dorrance Bog	F
<i>Picea mariana</i>	Luzerne	Dorrance Bog	F
<i>Platanthera blephariglottis</i>	Luzerne	Dorrance Bog	F
<i>Rhyncospora alba</i>	Luzerne	Dorrance Bog	F
<i>Sarracenia purpurea</i>	Luzerne	Dorrance Bog	F
<i>Symplocarpus foetidus</i>	Luzerne	Dorrance Bog	F
<i>Triadenum virginicum</i>	Luzerne	Dorrance Bog	F
<i>Vaccinium corymbosum</i>	Luzerne	Dorrance Bog	F
<i>Vaccinium macrocarpon</i>	Luzerne	Dorrance Bog	F
<i>Xyris montana</i>	Luzerne	Dorrance Bog	F
<i>Acer rubrum</i>	Luzerne	Lily Lake	F
<i>Chara</i> (an alga)	Luzerne	Lily Lake	F
<i>Drosera intermedia</i>	Luzerne	Lily Lake	F
<i>Drosera rotundifolia</i>	Luzerne	Lily Lake	F
<i>Elatine americana</i>	Luzerne	Lily Lake	T
<i>Eleocharis olivacea</i>	Luzerne	Lily Lake	T
<i>Eleocharis palustris</i>	Luzerne	Lily Lake	F
<i>Eriocaulon aquaticum</i>	Luzerne	Lily Lake	T
<i>Hypericum ellipticum</i>	Luzerne	Lily Lake	T
<i>Juncus pelocarpus</i>	Luzerne	Lily Lake	T
<i>Ludwigia palustris</i>	Luzerne	Lily Lake	F
<i>Myriophyllum heterophyllum</i>	Luzerne	Lily Lake	T
<i>Myriophyllum humile</i>	Luzerne	Lily Lake	F
<i>Najas flexilis</i>	Luzerne	Lily Lake	F
<i>Nuphar lutea</i> (variegata?)	Luzerne	Lily Lake	F
<i>Nymphaea odorata</i>	Luzerne	Lily Lake	F
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	Luzerne	Lily Lake	T
<i>Pontederia cordata</i>	Luzerne	Lily Lake	F
<i>Potamogeton bicupulatus</i>	Luzerne	Lily Lake	T
<i>Potamogeton epihydrus</i>	Luzerne	Lily Lake	T
<i>Potamogeton robbinsii</i>	Luzerne	Lily Lake	T
<i>Rosa palustris</i>	Luzerne	Lily Lake	F
<i>Sagittaria graminea</i> var. <i>graminea</i>	Luzerne	Lily Lake	T
<i>Schoenoplectus torreyi</i>	Luzerne	Lily Lake	T
<i>Sparganium americanum</i>	Luzerne	Lily Lake	F
<i>Spiraea latifolia</i>	Luzerne	Lily Lake	F
<i>Utricularia intermedia</i>	Luzerne	Lily Lake	T
<i>Utricularia macrorhiza</i>	Luzerne	Lily Lake	T
<i>Utricularia minor</i>	Luzerne	Lily Lake	T
<i>Utricularia purpurea</i>	Luzerne	Lily Lake	T
<i>Xyris montana</i>	Luzerne	Lily Lake	T

<i>Carex canescens</i>	Luzerne	Mud Pond	F
<i>Carex stricta</i>	Luzerne	Mud Pond	F
<i>Chamaedaphne calyculata</i>	Luzerne	Mud Pond	F
<i>Drosera intermedia</i>	Luzerne	Mud Pond	F
<i>Drosera rotundifolia</i>	Luzerne	Mud Pond	F
<i>Dulichium arundinaceum</i>	Luzerne	Mud Pond	F
<i>Eleocharis olivacea</i>	Luzerne	Mud Pond	T
<i>Juncus pelocarpus</i>	Luzerne	Mud Pond	F
<i>Kalmia angustifolia</i>	Luzerne	Mud Pond	F
<i>Kalmia polifolia</i>	Luzerne	Mud Pond	T
<i>Larix laricina</i>	Luzerne	Mud Pond	F
<i>Nuphar lutea (variegata?)</i>	Luzerne	Mud Pond	F
<i>Orontium aquaticum</i>	Luzerne	Mud Pond	T
<i>Rhododendron canadense</i>	Luzerne	Mud Pond	F
<i>Rhyncospora alba</i>	Luzerne	Mud Pond	F
<i>Sarracenia purpurea</i>	Luzerne	Mud Pond	F
<i>Schoenoplectus subterminalis</i>	Luzerne	Mud Pond	F
<i>Spiraea tomentosa</i>	Luzerne	Mud Pond	F
<i>Triadenum virginicum</i>	Luzerne	Mud Pond	F
<i>Vaccinium corymbosum</i>	Luzerne	Mud Pond	F
<i>Vaccinium macrocarpon</i>	Luzerne	Mud Pond	F
<i>Vaccinium oxycoccus</i>	Luzerne	Mud Pond	F
<i>Xyris montana</i>	Luzerne	Mud Pond	T
<i>Acer rubrum</i>	Monroe	Gouldsboro Lake	F
<i>Agrostis scabra</i>	Monroe	Gouldsboro Lake	F
<i>Aronia</i> sp.	Monroe	Gouldsboro Lake	F
<i>Betula populifolia</i>	Monroe	Gouldsboro Lake	F
<i>Callitriche</i> sp.	Monroe	Gouldsboro Lake	F
<i>Carex stricta</i>	Monroe	Gouldsboro Lake	F
<i>Ceratophyllum muricatum</i>	Monroe	Gouldsboro Lake	F
<i>Chamaedaphne calyculata</i>	Monroe	Gouldsboro Lake	F
<i>Drosera rotundifolia</i>	Monroe	Gouldsboro Lake	F
<i>Dulichium arundinaceum</i>	Monroe	Gouldsboro Lake	F
<i>Elatine minima</i>	Monroe	Gouldsboro Lake	T
<i>Eleocharis acicularis</i>	Monroe	Gouldsboro Lake	F
<i>Elodea nuttallii</i>	Monroe	Gouldsboro Lake	F
<i>Hypericum ellipticum</i>	Monroe	Gouldsboro Lake	F
<i>Juncus effusus</i>	Monroe	Gouldsboro Lake	F
<i>Kalmia angustifolia</i>	Monroe	Gouldsboro Lake	F
<i>Ludwigia palustris</i>	Monroe	Gouldsboro Lake	F
<i>Lysimachia terrestris</i>	Monroe	Gouldsboro Lake	F
<i>Myriophyllum farwellii</i>	Monroe	Gouldsboro Lake	T
<i>Myriophyllum humile</i>	Monroe	Gouldsboro Lake	T
<i>Najas flexilis</i>	Monroe	Gouldsboro Lake	F
<i>Nemopanthus mucronatus</i>	Monroe	Gouldsboro Lake	F
<i>Nuphar lutea (variegata?)</i>	Monroe	Gouldsboro Lake	F
<i>Nymphaea odorata</i>	Monroe	Gouldsboro Lake	F
<i>Onoclea sensibilis</i>	Monroe	Gouldsboro Lake	F
<i>Osmunda cinnamomea</i>	Monroe	Gouldsboro Lake	F

<i>Potamogeton crispus</i>	Monroe	Gouldsboro Lake	F
<i>Potamogeton diversifolius</i>	Monroe	Gouldsboro Lake	T
<i>Potamogeton epihydrus</i>	Monroe	Gouldsboro Lake	F
<i>Potamogeton pusillus</i>	Monroe	Gouldsboro Lake	T
<i>Potamogeton spirillus</i>	Monroe	Gouldsboro Lake	T
<i>Sium suave</i>	Monroe	Gouldsboro Lake	F
<i>Sparganium americanum</i>	Monroe	Gouldsboro Lake	F
<i>Sparganium angustifolium</i>	Monroe	Gouldsboro Lake	T
<i>Sparganium chlorocarpum</i>	Monroe	Gouldsboro Lake	T
<i>Spiraea latifolia</i>	Monroe	Gouldsboro Lake	F
<i>Spiraea tomentosa</i>	Monroe	Gouldsboro Lake	F
<i>Triadenum virginicum</i>	Monroe	Gouldsboro Lake	F
<i>Utricularia gibba</i>	Monroe	Gouldsboro Lake	T
<i>Utricularia macrorhiza</i>	Monroe	Gouldsboro Lake	F
<i>Utricularia purpurea</i>	Monroe	Gouldsboro Lake	T
<i>Viburnum recognitum</i>	Monroe	Gouldsboro Lake	F
<i>Myriophyllum humile</i>	Monroe	Tobyhanna Lake	T
<i>Potamogeton bicupulatus</i>	Monroe	Tobyhanna Lake	T
<i>Brasenia schreberi</i>	Pike	Fairview Lake	F
<i>Decodon verticillata</i>	Pike	Fairview Lake	F
<i>Elatine minima</i>	Pike	Fairview Lake	T
<i>Elodea nuttallii</i>	Pike	Fairview Lake	F
<i>Eriocaulon aquaticum</i>	Pike	Fairview Lake	T
<i>Hypericum ellipticum</i>	Pike	Fairview Lake	F
<i>Isoetes engelmannii</i>	Pike	Fairview Lake	F
<i>Nuphar lutea (variegata?)</i>	Pike	Fairview Lake	F
<i>Orontium aquaticum</i>	Pike	Fairview Lake	T
<i>Sagittaria graminea</i> var. <i>graminea</i>	Pike	Fairview Lake	F
<i>Acer rubrum</i>	Pike	Lake Greeley	F
<i>Alnus serrulata</i>	Pike	Lake Greeley	F
<i>Apios americana</i>	Pike	Lake Greeley	F
<i>Asclepias incarnata</i>	Pike	Lake Greeley	F
<i>Betula populifolia</i>	Pike	Lake Greeley	F
<i>Brasenia schreberi</i>	Pike	Lake Greeley	F
<i>Calamagrostis canadensis</i>	Pike	Lake Greeley	F
<i>Callitriche heterophylla</i>	Pike	Lake Greeley	F
<i>Carex atlantica</i> var. <i>atlantica</i>	Pike	Lake Greeley	F
<i>Carex canescens</i>	Pike	Lake Greeley	F
<i>Carex stricta</i>	Pike	Lake Greeley	F
<i>Cephalanthus occidentalis</i>	Pike	Lake Greeley	F
<i>Ceratophyllum muricatum</i>	Pike	Lake Greeley	T
<i>Chamaedaphne calyculata</i>	Pike	Lake Greeley	F
<i>Drosera rotundifolia</i>	Pike	Lake Greeley	F
<i>Dulichium arundinaceum</i>	Pike	Lake Greeley	F
<i>Eleocharis acicularis</i>	Pike	Lake Greeley	F
<i>Galium tinctorium</i>	Pike	Lake Greeley	F
<i>Hydrocotyle americana</i>	Pike	Lake Greeley	F
<i>Hypericum canadense</i>	Pike	Lake Greeley	F
<i>Iris versicolor</i>	Pike	Lake Greeley	F

<i>Juncus effusus</i>	Pike	Lake Greeley	F
<i>Kalmia angustifolia</i>	Pike	Lake Greeley	F
<i>Lysimachia terrestris</i>	Pike	Lake Greeley	F
<i>Myriophyllum farwellii</i>	Pike	Lake Greeley	T
<i>Najas gracillima</i>	Pike	Lake Greeley	F
<i>Nuphar lutea (variegata?)</i>	Pike	Lake Greeley	F
<i>Nymphaea odorata</i>	Pike	Lake Greeley	F
<i>Polygonum hydropiperoides</i>	Pike	Lake Greeley	F
<i>Potamogeton bicupulatus</i>	Pike	Lake Greeley	T
<i>Potamogeton epihydrus</i>	Pike	Lake Greeley	F
<i>Ranunculus aquatilis var. diffusus</i>	Pike	Lake Greeley	T
<i>Rhododendron viscosum</i>	Pike	Lake Greeley	F
<i>Rosa palustris</i>	Pike	Lake Greeley	F
<i>Sambucus canadensis</i>	Pike	Lake Greeley	F
<i>Scirpus cyperinus</i>	Pike	Lake Greeley	F
<i>Scutellaria galericulata</i>	Pike	Lake Greeley	F
<i>Sparganium americanum</i>	Pike	Lake Greeley	F
<i>Spiraea tomentosa</i>	Pike	Lake Greeley	F
<i>Torreyochloa pallida</i>	Pike	Lake Greeley	F
<i>Triadenum virginicum</i>	Pike	Lake Greeley	F
<i>Utricularia macrorhiza</i>	Pike	Lake Greeley	T
<i>Utricularia purpurea</i>	Pike	Lake Greeley	T
<i>Vaccinium corymbosum</i>	Pike	Lake Greeley	F
<i>Viburnum recognitum</i>	Pike	Lake Greeley	F
<i>Callitriche sp. (no fruits)</i>	Pike	Lily Pond	F
<i>Carex stricta</i>	Pike	Lily Pond	F
<i>Ceratophyllum muricatum</i>	Pike	Lily Pond	T
<i>Dulichium arundinaceum</i>	Pike	Lily Pond	F
<i>Eleocharis acicularis</i>	Pike	Lily Pond	F
<i>Eleocharis palustris</i>	Pike	Lily Pond	F
<i>Elodea nuttallii</i>	Pike	Lily Pond	F
<i>Isoetes echinospora</i>	Pike	Lily Pond	F
<i>Najas flexilis</i>	Pike	Lily Pond	F
<i>Nuphar lutea (variegata?)</i>	Pike	Lily Pond	F
<i>Pontederia cordata</i>	Pike	Lily Pond	F
<i>Potamogeton epihydrus</i>	Pike	Lily Pond	F
<i>Potamogeton spirillus</i>	Pike	Lily Pond	F
<i>Scutellaria x churchilliana</i>	Pike	Lily Pond	T
<i>Sparganium americanum</i>	Pike	Lily Pond	F
<i>Torreyochloa pallida</i>	Pike	Lily Pond	F
<i>Utricularia macrorhiza</i>	Pike	Lily Pond	F
<i>Acer rubrum</i>	Pike	Log Tavern Pond	F
<i>Betula lenta</i>	Pike	Log Tavern Pond	F
<i>Betula populifolia</i>	Pike	Log Tavern Pond	F
<i>Brasenia schreberi</i>	Pike	Log Tavern Pond	F
<i>Carex stricta</i>	Pike	Log Tavern Pond	F
<i>Clethra acuminata</i>	Pike	Log Tavern Pond	T
<i>Decodon verticillata</i>	Pike	Log Tavern Pond	F
<i>Elatine minima</i>	Pike	Log Tavern Pond	T

<i>Eleocharis acicularis</i>	Pike	Log Tavern Pond	F
<i>Eleocharis palustris</i>	Pike	Log Tavern Pond	F
<i>Eriocaulon aquaticum</i>	Pike	Log Tavern Pond	T
<i>Isoetes echinospora</i>	Pike	Log Tavern Pond	F
<i>Juncus militaris</i>	Pike	Log Tavern Pond	T
<i>Kalmia latifolia</i>	Pike	Log Tavern Pond	F
<i>Lobelia dortmanna</i>	Pike	Log Tavern Pond	T
<i>Lysimachia terrestris</i>	Pike	Log Tavern Pond	F
<i>Lythrum salicaria</i>	Pike	Log Tavern Pond	F
<i>Myriophyllum farwellii</i>	Pike	Log Tavern Pond	T
<i>Nuphar lutea (variegata?)</i>	Pike	Log Tavern Pond	F
<i>Nymphaea odorata</i>	Pike	Log Tavern Pond	F
<i>Nyssa sylvatica</i>	Pike	Log Tavern Pond	F
<i>Phragmites australis</i>	Pike	Log Tavern Pond	F
<i>Pontederia cordata</i>	Pike	Log Tavern Pond	F
<i>Potamogeton bicupulatus</i>	Pike	Log Tavern Pond	T
<i>Potamogeton epihydrus</i>	Pike	Log Tavern Pond	F
<i>Quercus alba</i>	Pike	Log Tavern Pond	F
<i>Quercus montana</i>	Pike	Log Tavern Pond	F
<i>Quercus rubra</i>	Pike	Log Tavern Pond	F
<i>Schoenoplectus subterminalis</i>	Pike	Log Tavern Pond	T
<i>Sparganium americanum</i>	Pike	Log Tavern Pond	F
<i>Triadenum virginicum</i>	Pike	Log Tavern Pond	F
<i>Typha latifolia</i>	Pike	Log Tavern Pond	F
<i>Utricularia purpurea</i>	Pike	Log Tavern Pond	T
<i>Eleocharis olivacea</i>	Pike	Pecks Pond	T
<i>Nymphaea odorata</i>	Pike	Pecks Pond	T
<i>Potamogeton bicupulatus</i>	Pike	Pecks Pond	T
<i>Potamogeton epihydrus</i>	Pike	Pecks Pond	T
<i>Utricularia inflata</i>	Pike	Pecks Pond	T
<i>Acer rubrum</i>	Pike	Pine Lake	F
<i>Agrostis scabra</i>	Pike	Pine Lake	F
<i>Andromeda polifolia</i> var. <i>glaucophylla</i>	Pike	Pine Lake	T
<i>Arceuthobium pusillum</i>	Pike	Pine Lake	T
<i>Aronia melanocarpa</i>	Pike	Pine Lake	F
<i>Calamagrostis canadensis</i>	Pike	Pine Lake	F
<i>Calla palustris</i>	Pike	Pine Lake	F
<i>Carex atlantica</i> ssp. <i>capillacea</i>	Pike	Pine Lake	F
<i>Carex canescens</i>	Pike	Pine Lake	F
<i>Carex gynandra</i>	Pike	Pine Lake	F
<i>Carex lurida</i>	Pike	Pine Lake	F
<i>Carex scoparia</i>	Pike	Pine Lake	F
<i>Carex stipata</i>	Pike	Pine Lake	F
<i>Carex stricta</i>	Pike	Pine Lake	F
<i>Carex trisperma</i>	Pike	Pine Lake	F
<i>Carex utriculata</i>	Pike	Pine Lake	F
<i>Chamaedaphne calyculata</i>	Pike	Pine Lake	F
<i>Decodon verticillata</i>	Pike	Pine Lake	F
<i>Drosera rotundifolia</i>	Pike	Pine Lake	F

<i>Dryopteris carthusiana</i>	Pike	Pine Lake	F
<i>Dulichium arundinaceum</i>	Pike	Pine Lake	F
<i>Elaeagnus umbellata</i>	Pike	Pine Lake	T
<i>Eleocharis obtusa</i>	Pike	Pine Lake	F
<i>Eleocharis olivacea</i>	Pike	Pine Lake	F
<i>Eriophorum virginicum</i>	Pike	Pine Lake	F
<i>Galium tinctorium</i>	Pike	Pine Lake	F
<i>Glyceria canadensis</i>	Pike	Pine Lake	F
<i>Glyceria melicaria</i>	Pike	Pine Lake	F
<i>Hydrocotyle americana</i>	Pike	Pine Lake	F
<i>Hypericum canadense</i>	Pike	Pine Lake	F
<i>Ilex verticillata</i>	Pike	Pine Lake	F
<i>Impatiens capensis</i>	Pike	Pine Lake	F
<i>Iris versicolor</i>	Pike	Pine Lake	F
<i>Juncus brevicaudatus</i>	Pike	Pine Lake	F
<i>Juncus effusus</i>	Pike	Pine Lake	F
<i>Kalmia angustifolia</i>	Pike	Pine Lake	F
<i>Larix laricina</i>	Pike	Pine Lake	F
<i>Leersia oryzoides</i>	Pike	Pine Lake	F
<i>Lemna minor</i>	Pike	Pine Lake	F
<i>Lycopus uniflorus</i>	Pike	Pine Lake	F
<i>Lysimachia terrestris</i>	Pike	Pine Lake	F
<i>Nuphar lutea (variegata?)</i>	Pike	Pine Lake	F
<i>Osmunda cinnamomea</i>	Pike	Pine Lake	F
<i>Picea mariana</i>	Pike	Pine Lake	F
<i>Platanthera blephariglottis</i>	Pike	Pine Lake	F
<i>Polygonum arifolium</i>	Pike	Pine Lake	F
<i>Polygonum sagittatum</i>	Pike	Pine Lake	F
<i>Rhododendron maximum</i>	Pike	Pine Lake	F
<i>Rhododendron viscosum</i>	Pike	Pine Lake	F
<i>Rhyncospora alba</i>	Pike	Pine Lake	F
<i>Rubus hispidus</i>	Pike	Pine Lake	F
<i>Sagittaria latifolia</i>	Pike	Pine Lake	F
<i>Sarracenia purpurea</i>	Pike	Pine Lake	F
<i>Scirpus atrocinctus</i>	Pike	Pine Lake	T
<i>Scirpus polyphyllus</i>	Pike	Pine Lake	F
<i>Scutellaria galericulata</i>	Pike	Pine Lake	F
<i>Scutellaria lateriflora</i>	Pike	Pine Lake	F
<i>Sium suave</i>	Pike	Pine Lake	F
<i>Sparganium americanum</i>	Pike	Pine Lake	F
<i>Sparganium chlorocarpum</i>	Pike	Pine Lake	T
<i>Spiraea latifolia</i>	Pike	Pine Lake	F
<i>Spiraea tomentosa</i>	Pike	Pine Lake	F
<i>Thelypteris palustris</i>	Pike	Pine Lake	F
<i>Triadenum virginicum</i>	Pike	Pine Lake	F
<i>Utricularia macrorhiza</i>	Pike	Pine Lake	F
<i>Vaccinium corymbosum</i>	Pike	Pine Lake	F
<i>Vaccinium macrocarpon</i>	Pike	Pine Lake	F
<i>Vaccinium oxycoccus</i>	Pike	Pine Lake	F

<i>Brasenia schreberi</i>	Pike	Shohola Lake	T
<i>Isoetes echinospora</i>	Pike	Shohola Lake	F
<i>Myriophyllum heterophyllum</i>	Pike	Shohola Lake	T
<i>Myriophyllum humile</i>	Pike	Shohola Lake	F
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	Pike	Shohola Lake	T
<i>Potamogeton epihydrus</i>	Pike	Shohola Lake	F
<i>Potamogeton natans</i>	Pike	Shohola Lake	T
<i>Potamogeton robbinsii</i>	Pike	Shohola Lake	T
<i>Sparganium americanum</i>	Pike	Shohola Lake	F
<i>Acer rubrum</i>	Pike	Twin Lakes	F
<i>Betula lenta</i>	Pike	Twin Lakes	F
black aquatic moss	Pike	Twin Lakes	F
<i>Brasenia schreberi</i>	Pike	Twin Lakes	F
<i>Callitriche heterophylla</i>	Pike	Twin Lakes	F
<i>Carex stricta</i>	Pike	Twin Lakes	F
<i>Clethra alnifolia</i>	Pike	Twin Lakes	T
<i>Elatine americana</i>	Pike	Twin Lakes	T
<i>Elatine minima</i>	Pike	Twin Lakes	T
<i>Gaylussacia baccata</i>	Pike	Twin Lakes	F
<i>Hamamelis virginiana</i>	Pike	Twin Lakes	F
<i>Isoetes echinospora</i>	Pike	Twin Lakes	F
<i>Kalmia latifolia</i>	Pike	Twin Lakes	F
<i>Lysimachia terrestris</i>	Pike	Twin Lakes	F
<i>Myriophyllum humile</i>	Pike	Twin Lakes	T
<i>Nuphar lutea</i> (variegata?)	Pike	Twin Lakes	F
<i>Nymphaea odorata</i>	Pike	Twin Lakes	F
<i>Nymphoides cordata</i>	Pike	Twin Lakes	T
<i>Pontederia cordata</i>	Pike	Twin Lakes	F
<i>Potamogeton diversifolius</i>	Pike	Twin Lakes	T
<i>Potamogeton epihydrus</i>	Pike	Twin Lakes	F
<i>Potamogeton pusillus</i>	Pike	Twin Lakes	T
<i>Potamogeton spirillum</i>	Pike	Twin Lakes	T
<i>Quercus montana</i>	Pike	Twin Lakes	F
<i>Quercus rubra</i>	Pike	Twin Lakes	F
<i>Rhododendron viscosum</i>	Pike	Twin Lakes	F
<i>Sparganium americanum</i>	Pike	Twin Lakes	F
<i>Utricularia inflata</i>	Pike	Twin Lakes	T
<i>Utricularia macrorhiza</i>	Pike	Twin Lakes	F
<i>Utricularia purpurea</i>	Pike	Twin Lakes	T
<i>Vaccinium corymbosum</i>	Pike	Twin Lakes	F
black aquatic moss	Pike	Walker Lake	F
<i>Brasenia schreberi</i>	Pike	Walker Lake	F
<i>Calamagrostis canadensis</i>	Pike	Walker Lake	F
<i>Callitriche heterophyllum</i>	Pike	Walker Lake	F
<i>Carex stricta</i>	Pike	Walker Lake	F
<i>Carex utriculata</i>	Pike	Walker Lake	F
<i>Ceratophyllum muricatum</i>	Pike	Walker Lake	F
<i>Chamaedaphne calyculata</i>	Pike	Walker Lake	F
<i>Chara</i> (an alga)	Pike	Walker Lake	F

<i>Decodon verticillata</i>	Pike	Walker Lake	F
<i>Elatine americana</i>	Pike	Walker Lake	T
<i>Elatine minima</i>	Pike	Walker Lake	T
<i>Eleocharis acicularis</i>	Pike	Walker Lake	F
<i>Eleocharis palustris</i>	Pike	Walker Lake	F
<i>Elodea nuttallii</i>	Pike	Walker Lake	F
<i>Hydrocotyle americana</i>	Pike	Walker Lake	F
<i>Impatiens capensis</i>	Pike	Walker Lake	F
<i>Iris versicolor</i>	Pike	Walker Lake	F
<i>Isoetes echinospora</i>	Pike	Walker Lake	F
<i>Juncus effusus</i>	Pike	Walker Lake	F
<i>Lysimachia terrestris</i>	Pike	Walker Lake	F
<i>Lythrum salicaria</i>	Pike	Walker Lake	F
<i>Microstegium vimineum</i>	Pike	Walker Lake	F
<i>Myriophyllum humile</i>	Pike	Walker Lake	F
<i>Najas flexilis</i>	Pike	Walker Lake	F
<i>Nuphar lutea (variegata?)</i>	Pike	Walker Lake	F
<i>Peltandra virginica</i>	Pike	Walker Lake	F
<i>Phragmites australis</i>	Pike	Walker Lake	F
<i>Polygonum amphibium</i> var. <i>emersum</i>	Pike	Walker Lake	T
<i>Polygonum hydropiperoides</i>	Pike	Walker Lake	F
<i>Pontederia cordata</i>	Pike	Walker Lake	F
<i>Potamogeton diversifolius</i>	Pike	Walker Lake	T
<i>Potamogeton epihydrus</i>	Pike	Walker Lake	F
<i>Sagittaria graminea</i> var. <i>graminea</i>	Pike	Walker Lake	T
<i>Scirpus cyperinus</i>	Pike	Walker Lake	F
<i>Scutellaria galericulata</i>	Pike	Walker Lake	F
<i>Sparganium americanum</i>	Pike	Walker Lake	F
<i>Sparganium chlorocarpum</i>	Pike	Walker Lake	T
<i>Spiraea tomentosa</i>	Pike	Walker Lake	F
<i>Triadenum virginicum</i>	Pike	Walker Lake	F
<i>Typha latifolia</i>	Pike	Walker Lake	F
<i>Vaccinium corymbosum</i>	Pike	Walker Lake	F
<i>Veronica scutellata</i>	Pike	Walker Lake	F
<i>Acer pensylvanicum</i>	Wayne	Belmont Lake	F
<i>Acer saccharum</i>	Wayne	Belmont Lake	F
<i>Alisma subcordatum</i>	Wayne	Belmont Lake	T
<i>Amelanchier laevis</i>	Wayne	Belmont Lake	F
<i>Betula allegheniensis</i>	Wayne	Belmont Lake	F
<i>Betula lenta</i>	Wayne	Belmont Lake	F
<i>Betula nigra</i>	Wayne	Belmont Lake	F
<i>Betula papyrifera</i>	Wayne	Belmont Lake	F
<i>Betula populifolia</i>	Wayne	Belmont Lake	F
<i>black aquatic moss</i>	Wayne	Belmont Lake	F
<i>Callitriche heterophylla</i>	Wayne	Belmont Lake	F
<i>Carex gynandra</i>	Wayne	Belmont Lake	F
<i>Dulichium arundinaceum</i>	Wayne	Belmont Lake	F
<i>Elatine minima</i>	Wayne	Belmont Lake	T
<i>Eleocharis acicularis</i>	Wayne	Belmont Lake	F



<i>Eleocharis obtusa</i>	Wayne	Belmont Lake	F
<i>Eleocharis palustris</i>	Wayne	Belmont Lake	F
<i>Elodea nuttallii</i>	Wayne	Belmont Lake	F
<i>Fagus grandifolia</i>	Wayne	Belmont Lake	F
<i>Fraxinus americana</i>	Wayne	Belmont Lake	F
<i>Galium obtusum</i>	Wayne	Belmont Lake	T
<i>Galium tinctorium</i>	Wayne	Belmont Lake	F
<i>Glyceria borealis</i>	Wayne	Belmont Lake	T
<i>Glyceria grandis</i>	Wayne	Belmont Lake	T
<i>Hypericum canadense</i>	Wayne	Belmont Lake	F
<i>Hypericum ellipticum</i>	Wayne	Belmont Lake	F
<i>Inula helenium</i>	Wayne	Belmont Lake	T
<i>Iris versicolor</i>	Wayne	Belmont Lake	F
<i>Isoetes</i> <i>hyb.</i> (shrunken, collapsed spores)	Wayne	Belmont Lake	F
<i>Juncus acuminatus</i>	Wayne	Belmont Lake	F
<i>Juncus tenuis</i>	Wayne	Belmont Lake	F
<i>Lysimachia terrestris</i>	Wayne	Belmont Lake	F
<i>Mentha arvensis</i>	Wayne	Belmont Lake	F
<i>Myosotis scorpioides</i>	Wayne	Belmont Lake	F
<i>Myriophyllum farwellii</i>	Wayne	Belmont Lake	T
<i>Najas flexilis</i>	Wayne	Belmont Lake	F
<i>Onoclea sensibilis</i>	Wayne	Belmont Lake	F
<i>Phalaris arundinacea</i>	Wayne	Belmont Lake	F
<i>Potamogeton amplifolius</i>	Wayne	Belmont Lake	F
<i>Potamogeton epihydrus</i>	Wayne	Belmont Lake	F
<i>Potamogeton obtusifolius</i>	Wayne	Belmont Lake	T
<i>Potamogeton pusillus</i>	Wayne	Belmont Lake	T
<i>Potamogeton spirillus</i>	Wayne	Belmont Lake	F
<i>Proserpinaca palustris</i> var. <i>crebra</i>	Wayne	Belmont Lake	T
<i>Prunus serotina</i>	Wayne	Belmont Lake	F
<i>Ranunculus aquatilis</i> var. <i>diffusus</i>	Wayne	Belmont Lake	T
<i>Salix eriocephala</i>	Wayne	Belmont Lake	T
<i>Salix lucida</i> ssp. <i>lucida</i>	Wayne	Belmont Lake	T
<i>Salix nigra</i>	Wayne	Belmont Lake	F
<i>Salix sericea</i>	Wayne	Belmont Lake	F
<i>Scirpus atrocinctus</i>	Wayne	Belmont Lake	T
<i>Scutellaria galericulata</i>	Wayne	Belmont Lake	F
<i>Sium suave</i>	Wayne	Belmont Lake	T
<i>Sparganium americanum</i>	Wayne	Belmont Lake	F
<i>Spiraea latifolia</i>	Wayne	Belmont Lake	F
<i>Tilia americana</i>	Wayne	Belmont Lake	F
<i>Tsuga canadensis</i>	Wayne	Belmont Lake	F
<i>Typha latifolia</i>	Wayne	Belmont Lake	F
<i>Ulmus americana</i>	Wayne	Belmont Lake	F
<i>Utricularia macrorhiza</i>	Wayne	Belmont Lake	F
<i>Utricularia purpurea</i>	Wayne	Belmont Lake	T
<i>Veronica scutellata</i>	Wayne	Belmont Lake	F
<i>Viburnum lantanoides</i>	Wayne	Belmont Lake	F
<i>Viburnum recognitum</i>	Wayne	Belmont Lake	F

<i>Anabaena</i> (a bluegreen alga)	Wayne	Bone Pond	F
<i>Aster lanceolatus</i> ssp. <i>lanceolatus</i>	Wayne	Bone Pond	T
<i>Aster prenanthoides</i>	Wayne	Bone Pond	T
Black aquatic moss	Wayne	Bone Pond	F
<i>Carex stricta</i>	Wayne	Bone Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Bone Pond	F
<i>Elatine minima</i>	Wayne	Bone Pond	F
<i>Eleocharis acicularis</i>	Wayne	Bone Pond	F
<i>Eleocharis palustris</i>	Wayne	Bone Pond	F
<i>Eleocharis robbinsii</i>	Wayne	Bone Pond	T
<i>Elodea nuttallii</i>	Wayne	Bone Pond	F
<i>Equisetum fluviatile</i>	Wayne	Bone Pond	F
<i>Eriocaulon aquaticum</i>	Wayne	Bone Pond	F
<i>Iris versicolor</i>	Wayne	Bone Pond	F
<i>Isoetes echinospora</i>	Wayne	Bone Pond	F
<i>Juncus militaris</i>	Wayne	Bone Pond	T
<i>Lobelia dortmanna</i>	Wayne	Bone Pond	T
<i>Myriophyllum spicatum</i>	Wayne	Bone Pond	T
<i>Myriophyllum tenellum</i>	Wayne	Bone Pond	T
<i>Najas flexilis</i>	Wayne	Bone Pond	F
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Wayne	Bone Pond	F
<i>Potamogeton epihydrus</i>	Wayne	Bone Pond	F
<i>Potamogeton natans</i>	Wayne	Bone Pond	F
<i>Potamogeton nodosus</i>	Wayne	Bone Pond	T
<i>Potamogeton pusillus</i>	Wayne	Bone Pond	T
<i>Potamogeton spirillus</i>	Wayne	Bone Pond	T
<i>Sagittaria latifolia</i>	Wayne	Bone Pond	F
<i>Torreyochloa pallida</i>	Wayne	Bone Pond	F
<i>Utricularia macrorhiza</i>	Wayne	Bone Pond	T
<i>Vallisneria americana</i> var. <i>americana</i>	Wayne	Bone Pond	T
<i>Anabaena</i> (a bluegreen alga)	Wayne	Duck Harbor Pond	F
<i>Callitriche</i> sp. (no fruits)	Wayne	Duck Harbor Pond	F
<i>Carex comosa</i>	Wayne	Duck Harbor Pond	T
<i>Ceratophyllum</i> sp.	Wayne	Duck Harbor Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Duck Harbor Pond	F
<i>Elodea nuttallii</i>	Wayne	Duck Harbor Pond	F
<i>Glyceria borealis</i>	Wayne	Duck Harbor Pond	T
<i>Ilex verticillata</i>	Wayne	Duck Harbor Pond	F
<i>Iris versicolor</i>	Wayne	Duck Harbor Pond	F
<i>Myosotis scorpioides</i>	Wayne	Duck Harbor Pond	F
<i>Najas flexilis</i>	Wayne	Duck Harbor Pond	F
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Wayne	Duck Harbor Pond	F
<i>Phalaris arundinacea</i>	Wayne	Duck Harbor Pond	F
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	Wayne	Duck Harbor Pond	T
<i>Potamogeton robbinsii</i>	Wayne	Duck Harbor Pond	F
<i>Potamogeton spirillus</i>	Wayne	Duck Harbor Pond	T
<i>Sagittaria latifolia</i>	Wayne	Duck Harbor Pond	F
<i>Sium suave</i>	Wayne	Duck Harbor Pond	F
<i>Sparganium americanum</i>	Wayne	Duck Harbor Pond	F

<i>Vallisneria americana</i> var. <i>americana</i>	Wayne	Duck Harbor Pond	T
<i>Acer pensylvanicum</i>	Wayne	Little Hickory Lake	F
<i>Acer rubrum</i>	Wayne	Little Hickory Lake	F
<i>Amelanchier laevis</i>	Wayne	Little Hickory Lake	F
<i>Betula allegheniensis</i>	Wayne	Little Hickory Lake	F
<i>Elatine minima</i>	Wayne	Little Hickory Lake	T
<i>Eleocharis acicularis</i>	Wayne	Little Hickory Lake	F
<i>Equisetum fluviatile</i>	Wayne	Little Hickory Lake	F
<i>Eriocaulon aquaticum</i>	Wayne	Little Hickory Lake	T
<i>Fagus grandifolia</i>	Wayne	Little Hickory Lake	F
<i>Ilex montana</i>	Wayne	Little Hickory Lake	F
<i>Isoetes echinospora</i>	Wayne	Little Hickory Lake	F
<i>Kalmia latifolia</i>	Wayne	Little Hickory Lake	F
<i>Lobelia dortmanna</i>	Wayne	Little Hickory Lake	T
<i>Lysimachia terrestris</i>	Wayne	Little Hickory Lake	F
<i>Myriophyllum humile</i>	Wayne	Little Hickory Lake	F
<i>Myriophyllum tenellum</i>	Wayne	Little Hickory Lake	T
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Wayne	Little Hickory Lake	F
<i>Orontium aquaticum</i>	Wayne	Little Hickory Lake	T
<i>Phalaris arundinacea</i>	Wayne	Little Hickory Lake	F
<i>Pontederia cordata</i>	Wayne	Little Hickory Lake	F
<i>Potamogeton epihydrus</i>	Wayne	Little Hickory Lake	F
<i>Prunus pensylvanica</i>	Wayne	Little Hickory Lake	F
<i>Schoenoplectus tabernaemontana</i>	Wayne	Little Hickory Lake	F
<i>Sparganium angustifolium</i>	Wayne	Little Hickory Lake	T
<i>Torreyochloa pallida</i>	Wayne	Little Hickory Lake	F
<i>Tsuga canadensis</i>	Wayne	Little Hickory Lake	F
<i>Utricularia cornuta</i>	Wayne	Little Hickory Lake	T
<i>Viburnum lantanoides</i>	Wayne	Little Hickory Lake	F
<i>Viburnum recognitum</i>	Wayne	Little Hickory Lake	F
<i>Anabaena</i> (a bluegreen alga)	Wayne	Long Pond	F
<i>Carex lasiocarpa</i> var. <i>americana</i>	Wayne	Long Pond	T
<i>Cephalanthus occidentalis</i>	Wayne	Long Pond	F
<i>Chara</i> (an alga)	Wayne	Long Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Long Pond	F
<i>Elatine minima</i>	Wayne	Long Pond	T
<i>Eleocharis palustris</i>	Wayne	Long Pond	F
<i>Najas flexilis</i>	Wayne	Long Pond	F
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Wayne	Long Pond	F
<i>Nymphaea odorata</i>	Wayne	Long Pond	F
<i>Pontederia cordata</i>	Wayne	Long Pond	F
<i>Potamogeton amplifolius</i>	Wayne	Long Pond	F
<i>Potamogeton crispus</i>	Wayne	Long Pond	F
<i>Potamogeton robbinsii</i>	Wayne	Long Pond	T
<i>Schoenoplectus tabernaemontana</i>	Wayne	Long Pond	F
<i>Sparganium americanum</i>	Wayne	Long Pond	F
<i>Typha latifolia</i>	Wayne	Long Pond	F
<i>Utricularia macrorhiza</i>	Wayne	Long Pond	F
<i>Veronica scutellata</i>	Wayne	Long Pond	F

<i>Viburnum recognitum</i>	Wayne	Long Pond	F
<i>Acer rubrum</i>	Wayne	Lower Woods Pond	F
<i>Asclepias incarnata</i>	Wayne	Lower Woods Pond	F
<i>Carex lasiocarpa</i> var. <i>americana</i>	Wayne	Lower Woods Pond	T
<i>Carex utriculata</i>	Wayne	Lower Woods Pond	F
<i>Ceratophyllum</i> sp.	Wayne	Lower Woods Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Lower Woods Pond	F
<i>Eleocharis palustris</i>	Wayne	Lower Woods Pond	F
<i>Elodea nuttallii</i>	Wayne	Lower Woods Pond	F
<i>Galium tinctorium</i>	Wayne	Lower Woods Pond	F
<i>Hydrocotyle americana</i>	Wayne	Lower Woods Pond	F
<i>Impatiens capensis</i>	Wayne	Lower Woods Pond	F
<i>Iris versicolor</i>	Wayne	Lower Woods Pond	F
<i>Isoetes echinospora</i>	Wayne	Lower Woods Pond	F
<i>Juncus effusus</i>	Wayne	Lower Woods Pond	F
<i>Lysimachia terrestris</i>	Wayne	Lower Woods Pond	F
<i>Myriophyllum spicatum</i>	Wayne	Lower Woods Pond	F
<i>Najas flexilis</i>	Wayne	Lower Woods Pond	F
<i>Nuphar lutea</i> ( <i>variegata</i> ?)	Wayne	Lower Woods Pond	F
<i>Onoclea sensibilis</i>	Wayne	Lower Woods Pond	F
<i>Platanthera clavellata</i>	Wayne	Lower Woods Pond	F
<i>Polygonum sagittatum</i>	Wayne	Lower Woods Pond	F
<i>Potamogeton epihydrus</i>	Wayne	Lower Woods Pond	F
<i>Potamogeton robbinsii</i>	Wayne	Lower Woods Pond	T
<i>Potamogeton spirillus</i>	Wayne	Lower Woods Pond	T
<i>Sagittaria latifolia</i>	Wayne	Lower Woods Pond	F
<i>Sium suave</i>	Wayne	Lower Woods Pond	F
<i>Sparganium americanum</i>	Wayne	Lower Woods Pond	F
<i>Spiraea tomentosa</i>	Wayne	Lower Woods Pond	F
<i>Thalictrum pubescens</i>	Wayne	Lower Woods Pond	F
<i>Thelypteris palustris</i>	Wayne	Lower Woods Pond	F
<i>Triadenum virginicum</i>	Wayne	Lower Woods Pond	F
<i>Acer rubrum</i>	Wayne	Miller Pond	F
<i>Alnus incana</i> ssp. <i>rugosa</i>	Wayne	Miller Pond	F
<i>Asclepias incarnata</i>	Wayne	Miller Pond	F
<i>Callitriche</i> sp.	Wayne	Miller Pond	F
<i>Cephalanthus occidentalis</i>	Wayne	Miller Pond	F
<i>Ceratophyllum muricatum</i>	Wayne	Miller Pond	T
<i>Chamaedaphne calyculata</i>	Wayne	Miller Pond	F
<i>Cicuta bulbifera</i>	Wayne	Miller Pond	F
<i>Decodon verticillata</i>	Wayne	Miller Pond	F
<i>Drosera rotundifolia</i>	Wayne	Miller Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Miller Pond	F
<i>Elatine minima</i>	Wayne	Miller Pond	T
<i>Eleocharis acicularis</i>	Wayne	Miller Pond	F
<i>Eleocharis palustris</i>	Wayne	Miller Pond	F
<i>Elodea nuttallii</i>	Wayne	Miller Pond	T
<i>Iris versicolor</i>	Wayne	Miller Pond	F
<i>Isoetes</i> sp. (no spores)	Wayne	Miller Pond	F

<i>Juncus effusus</i>	Wayne	Miller Pond	F
<i>Lemna minor</i>	Wayne	Miller Pond	F
<i>Lysimachia terrestris</i>	Wayne	Miller Pond	F
<i>Myriophyllum farwellii</i>	Wayne	Miller Pond	T
<i>Myriophyllum spicatum</i>	Wayne	Miller Pond	F
<i>Najas flexilis</i>	Wayne	Miller Pond	T
<i>Nuphar lutea (variegata?)</i>	Wayne	Miller Pond	F
<i>Peltandra virginica</i>	Wayne	Miller Pond	F
<i>Potamogeton amplifolius</i>	Wayne	Miller Pond	T
<i>Potamogeton epihydrus</i>	Wayne	Miller Pond	F
<i>Potamogeton robbinsii</i>	Wayne	Miller Pond	T
<i>Potamogeton spirillus</i>	Wayne	Miller Pond	T
<i>Rosa palustris</i>	Wayne	Miller Pond	F
<i>Salix eriocephala</i>	Wayne	Miller Pond	T
<i>Scutellaria galericulata</i>	Wayne	Miller Pond	F
<i>Solanum dulcamara</i>	Wayne	Miller Pond	F
<i>Sparganium americanum</i>	Wayne	Miller Pond	F
<i>Spiraea latifolia</i>	Wayne	Miller Pond	F
<i>Spiraea tomentosa</i>	Wayne	Miller Pond	F
<i>Spirodela polyrhiza</i>	Wayne	Miller Pond	F
<i>Thelypteris palustris</i>	Wayne	Miller Pond	F
<i>Torreyochloa pallida</i>	Wayne	Miller Pond	F
<i>Triadenum virginicum</i>	Wayne	Miller Pond	F
<i>Typha latifolia</i>	Wayne	Miller Pond	F
<i>Utricularia macrorhiza</i>	Wayne	Miller Pond	T
<i>Vaccinium macrocarpon</i>	Wayne	Miller Pond	F
<i>Viburnum recognitum</i>	Wayne	Miller Pond	F
<i>Acer rubrum</i>	Wayne	Upper Woods Pond	F
<i>Acer saccharum</i>	Wayne	Upper Woods Pond	F
<i>Anabaena</i>	Wayne	Upper Woods Pond	F
<i>Asclepias incarnata</i>	Wayne	Upper Woods Pond	F
<i>Betula allegheniensis</i>	Wayne	Upper Woods Pond	F
<i>Dulichium arundinaceum</i>	Wayne	Upper Woods Pond	F
<i>Ilex montana</i>	Wayne	Upper Woods Pond	F
<i>Iris versicolor</i>	Wayne	Upper Woods Pond	F
<i>Kalmia latifolia</i>	Wayne	Upper Woods Pond	F
<i>Lyonia ligustrina</i>	Wayne	Upper Woods Pond	F
<i>Lysimachia terrestris</i>	Wayne	Upper Woods Pond	F
<i>Potamogeton amplifolius</i>	Wayne	Upper Woods Pond	F
<i>Rhododendron maximum</i>	Wayne	Upper Woods Pond	F
<i>Sagittaria latifolia</i>	Wayne	Upper Woods Pond	F
<i>Schoenoplectus tabernaemontana</i>	Wayne	Upper Woods Pond	F
<i>Scutellaria galericulata</i>	Wayne	Upper Woods Pond	F
<i>Sparganium americanum</i>	Wayne	Upper Woods Pond	F
<i>Thelypteris palustris</i>	Wayne	Upper Woods Pond	F
<i>Tilia americana</i>	Wayne	Upper Woods Pond	F
<i>Tsuga canadensis</i>	Wayne	Upper Woods Pond	F
<i>Vaccinium corymbosum</i>	Wayne	Upper Woods Pond	F
<i>Viburnum cassinoides</i>	Wayne	Upper Woods Pond	F

<i>Viburnum lantanoides</i>	Wayne	Upper Woods Pond	F
<i>Acer rubrum</i>	Wayne	White Oak Pond	F
<i>Brasenia schreberi</i>	Wayne	White Oak Pond	F
<i>Callitriche</i> sp.	Wayne	White Oak Pond	F
<i>Cephalanthus occidentalis</i>	Wayne	White Oak Pond	F
<i>Ceratophyllum muricatum</i>	Wayne	White Oak Pond	F
<i>Chamaedaphne calyculata</i>	Wayne	White Oak Pond	F
<i>Chara</i> sp. (an alga)	Wayne	White Oak Pond	F
<i>Cicuta bulbifera</i>	Wayne	White Oak Pond	F
<i>Cornus amomum</i>	Wayne	White Oak Pond	F
<i>Decodon verticillata</i>	Wayne	White Oak Pond	F
<i>Eleocharis palustris</i>	Wayne	White Oak Pond	F
<i>Eloдея nuttallii</i>	Wayne	White Oak Pond	F
<i>Epilobium ciliatum</i>	Wayne	White Oak Pond	T
<i>Epilobium hirsutum</i>	Wayne	White Oak Pond	T
<i>Eupatorium maculatum</i>	Wayne	White Oak Pond	F
<i>Eupatorium perfoliatum</i>	Wayne	White Oak Pond	F
<i>Ilex verticillata</i>	Wayne	White Oak Pond	F
<i>Impatiens capensis</i>	Wayne	White Oak Pond	F
<i>Larix laricina</i>	Wayne	White Oak Pond	F
<i>Lysimachia terrestris</i>	Wayne	White Oak Pond	F
<i>Myriophyllum spicatum</i>	Wayne	White Oak Pond	T
<i>Najas flexilis</i>	Wayne	White Oak Pond	F
<i>Nuphar lutea</i> (variegata?)	Wayne	White Oak Pond	F
<i>Osmunda regalis</i>	Wayne	White Oak Pond	F
<i>Peltandra virginica</i>	Wayne	White Oak Pond	T
<i>Picea mariana</i>	Wayne	White Oak Pond	F
<i>Polygonum amphibium</i> var. <i>emersum</i>	Wayne	White Oak Pond	F
<i>Polygonum hydropiperoides</i>	Wayne	White Oak Pond	F
<i>Polygonum robustius</i>	Wayne	White Oak Pond	T
<i>Pontederia cordata</i>	Wayne	White Oak Pond	F
<i>Potamogeton amplifolius</i>	Wayne	White Oak Pond	F
<i>Potamogeton robbinsii</i>	Wayne	White Oak Pond	T
<i>Potentilla palustris</i>	Wayne	White Oak Pond	T
<i>Riccia fluitans</i> (aquatic liverwort)	Wayne	White Oak Pond	F
<i>Sagittaria latifolia</i>	Wayne	White Oak Pond	F
<i>Salix fragilis</i>	Wayne	White Oak Pond	T
<i>Schoenoplectus tabernaemontana</i>	Wayne	White Oak Pond	F
<i>Scutellaria galericulata</i>	Wayne	White Oak Pond	F
<i>Sium suave</i>	Wayne	White Oak Pond	F
<i>Solanum dulcamara</i>	Wayne	White Oak Pond	F
<i>Sparganium americanum</i>	Wayne	White Oak Pond	F
<i>Sparganium angustifolium</i>	Wayne	White Oak Pond	T
<i>Spiraea latifolia</i>	Wayne	White Oak Pond	F
<i>Spiraea tomentosa</i>	Wayne	White Oak Pond	F
<i>Spirodela polyrhiza</i>	Wayne	White Oak Pond	F
<i>Thelypteris palustris</i>	Wayne	White Oak Pond	F
<i>Typha latifolia</i>	Wayne	White Oak Pond	F
<i>Utricularia gibba</i>	Wayne	White Oak Pond	T

<i>Utricularia macrorhiza</i>	Wayne	White Oak Pond	T
<i>Vaccinium corymbosum</i>	Wayne	White Oak Pond	F
<i>Viburnum recognitum</i>	Wayne	White Oak Pond	F

**Appendix B**  
**Miscellaneous PNDI Species Documented During 2001**  
**Specimens deposited in the Herbarium of the Morris Arboretum**  
**of the University of Pennsylvania**

<i>Tipularia discolor</i>	Delaware Co.	Wilson's Corner
<i>Najas marina</i>	Delaware Co.	Eddystone
<i>Trillium cernuum</i>	Northampton Co.	Morgan Hill
<i>Ellisia nyctalea</i>	Bucks Co.	Center Bridge
<i>Carex sprengelii</i>	Bucks Co.	Nockamixon Cliffs
<i>Carex crinita</i> v. <i>brevicrinus</i>	Bucks Co.	Woodbourne
<i>Rotala ramosior</i>	Bucks Co.	Delhaas Woods
<i>Erythronium albidum</i>	Lehigh Co.	Zionsville
<i>Ledum groenlandicum</i>	Lackawanna Co.	Lackawanna State Forest
<i>Utricularia geminiscapa</i>	Luzerne Co.	Lackawanna State Forest
<i>Gentiana linearis</i>	Carbon Co.	Mud Run Gorge