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**ECOLOGICAL SYSTEM: ATLANTIC COASTAL PLAIN NORTHERN BOG**

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**Summary:** This system is comprised of dwarf-shrub sphagnum bogs dominated by *Chamaedaphne calyculata* (leatherleaf) occurring on Cape Cod, Massachusetts; Long Island, New York; and the Coastal Plain of New Jersey. North of the glacial border, this system typically occurs in isolated glacial kettleholes and in New Jersey in similar isolated basins. This system occurs in regions of deep sands supporting a pine barrens landscape. The system is characterized by acidic, tannic water supporting a floating or grounded *Sphagnum* (peatmoss) mat over which *Chamaedaphne calyculata* (leatherleaf), *Gaylussacia dumosa* (dwarf huckleberry), and other dwarf-shrubs have rooted. Taller shrubs such as *Vaccinium corymbosum* (highbush blueberry) may occur at the periphery of the bog, and *Decodon verticillatus* (swamp-loosestrife) often forms a distinct zone adjacent to open water. Rooted hydromorphic plants such as *Nymphaea odorata* (white water-lily) occur in open water.

**High-ranked Species:** *Eupatorium resinosum* (G3, pine barren thoroughwort), *Papaipema sulphurata* (G2, decodon stem borer moth), *Scirpus longii* (G2G3, Long's bulrush)

**Range:** This system occurs on Cape Cod, Massachusetts; Long Island, New York; and the Coastal Plain of New Jersey. United States: MA, NJ, NY

**Delaware Estuary Associations:**

- Coastal Plain Atlantic White-cedar Swamp
- Pine Barrens Bog
- Pitch Pine Bog
- Water-lily Aquatic Wetland

**CLASSIFIERS FOR ATLANTIC COASTAL PLAIN NORTHERN BOG**

**Primary Division:** 203

**Land Cover Class:** Woody Wetland

**Spatial Scale & Pattern:** Small patch

**Required Classifiers:** Natural/Semi-natural; Vegetated (>10% vasc.); Wetland

**Non-diagnostic Classifiers:** Shrubland (Shrub-dominated); Depressional; Isolated Wetland [Partially Isolated];  
Acidic Water

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**COASTAL PLAIN ATLANTIC WHITE-CEDAR SWAMP**

*Chamaecyparis thyoides* / *Ilex glabra* - *Rhododendron viscosum* Forest

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**Range:** This association occurs on the Atlantic Coastal Plain from Massachusetts to New Jersey and Delaware.

**Environmental Description:** This community generally occurs in basins overlying sand and gravel deposits or occasionally over glacial lake sediments. Water-saturated peat overlies mineral sediments. Standing water is usually present for at least half the growing season. Water and soil are nutrient-poor, especially low in nitrogen and phosphorus, and high in iron.

**Vegetation Description:** This Atlantic white-cedar swamp is dominated by *Chamaecyparis thyoides* (Atlantic white-cedar) or codominated with *Acer rubrum* (red maple). Less frequent canopy associates include *Pinus rigida* (pitch pine), *Nyssa sylvatica* (blackgum), and *Magnolia virginiana* (sweetbay). The shrub layer is very dense and diverse with *Clethra alnifolia* (coastal sweet-pepperbush), *Ilex glabra* (inkberry or little gallberry), *Morella pensylvanica* (northern bayberry), *Gaylussacia frondosa* (dangleberry), *Leucothoe racemosa* (swamp doghobble), *Rhododendron viscosum* (swamp azalea), *Ilex verticillata* (common winterberry), *Photinia melanocarpa* (black chokeberry), and *Vaccinium corymbosum*

(highbush blueberry). The herbaceous layer tends to be sparse or patchy and is limited to sunny openings with *Osmunda regalis* (royal fern), *Thelypteris palustris* (eastern marsh fern), *Woodwardia virginica* (Virginia chainfern), *Drosera* (sundew) spp., *Sarracenia purpurea* (purple pitcherplant), *Pogonia ophioglossoides* (rose pogonia), *Carex striata* var. *brevis* (northern peatland sedge), *Carex collinsii* (collins' sedge), *Carex atlantica* (prickly bog sedge), and *Smilax rotundifolia* (roundleaf greenbrier). The nonvascular layer includes several species of *Sphagnum* (peatmoss), commonly *Sphagnum fallax* (flat-top bogmoss), *Sphagnum flavicomans* (peatmoss), *Sphagnum magellanicum* (Magellan's peatmoss), *Sphagnum pulchrum* (beautiful peatmoss), *Sphagnum recurvum* (recurved peatmoss), and *Sphagnum palustre* (prairie peatmoss).

**Noteworthy Associated Plant and/or Animal Species:** *Narthecium americanum* (bog asphodel)

**Characteristic Species:** *Chamaecyparis thyoides* (Atlantic white-cedar), *Ilex glabra* (inkberry or little gallberry), *Rhododendron viscosum* (swamp azalea)

**Management Concerns:** Although naturally limited by the range of Atlantic white-cedar, it is likely that this community has declined from historic abundances as a result of logging and fire suppression.

**Reference Sites:** Brendan Byrne State Forest, NJ; Pemberton Branch in Sussex County, DE

**Global and State Conservation Ranks and Reasons:** G3 (10-Dec-1998). DE: SNR, NJ: S3. There are 100-200 estimated occurrences of this community covering perhaps 2500 to 7500 acres rangewide. The range is limited to the Atlantic Coastal Plain from Massachusetts to New Jersey and Delaware.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.688211](http://vegbank.org/natureserve/element_global.2.688211)

**References:** Barrett 1996, Bowman 2000, Breden 1989, Breden et al. 2001, Eastern Ecology Working Group n.d., Edinger et al. 2002, Enser 1999, Laderman 1989, McCormick 1979, Metzler and Barrett 1992, Metzler and Barrett 2001, Motzkin 1991, Olsson 1979, Rawinski 1984, Reschke 1990, Sperduto 2000b, Sperduto and Crowley 2002b, Swain and Kearsley 2001

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Needle-leaved tree	<i>Chamaecyparis thyoides</i> (Atlantic white-cedar)
Tree canopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> (red maple)
Shrub/sapling (tall & short)	Broad-leaved deciduous shrub	<i>Rhododendron viscosum</i> (swamp azalea)
Shrub/sapling (tall & short)	Broad-leaved evergreen shrub	<i>Ilex glabra</i> (inkberry or little gallberry)
Herb (field)	Fern or fern ally	<i>Osmunda regalis</i> (royal fern)

## PINE BARRENS BOG

*Chamaedaphne calyculata* / *Carex striata* Dwarf-shrubland

**Range:** This community type occurs in the Pine Barrens of New Jersey.

**Environmental Description:** Pine barrens bog; "spung." This Pine Barrens bog or "spung" is associated with seasonally flooded sites, often covering entire shallow, circular depressions and swales, or it occurs along margins of intermittent ponds and streamsides.

**Vegetation Description:** Dense *Chamaedaphne calyculata* (leatherleaf) occurs over a continuous carpet of *Sphagnum* (peatmoss) spp. *Carex striata* (peatland sedge) is interspersed within the dwarf-shrubs or forms significant cover in wetter openings. Associated herbs of wetter openings include *Utricularia* (bladderwort) spp., *Rhynchospora* (beaksedge) spp., and *Drosera* (sundew) spp.

**Characteristic Species:** *Chamaedaphne calyculata* (leatherleaf)

**Reference Sites:** Belleplain Pond, NJ; Peaslee WMA, NJ; Brendan Byrne State Forest, NJ; Fort Dix, NJ

**Global and State Conservation Ranks and Reasons:** GNR (1-Dec-1997). NJ: S2S3.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.688436](http://vegbank.org/natureserve/element_global.2.688436)

**References:** Breden 1989, Breden et al. 2001, Eastern Ecology Working Group n.d.

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Short shrub/sapling	Broad-leaved evergreen shrub	<i>Chamaedaphne calyculata</i> (leatherleaf)
Herb (field)	Graminoid	<i>Carex striata</i> (peatland sedge)

## PITCH PINE BOG

*Pinus rigida* / *Chamaedaphne calyculata* / *Sphagnum* spp. Woodland

**Range:** This association comprises pitch pine bogs of the northeastern United States. It is currently described from Maine, Vermont, New York, and New Jersey but possibly occurs sporadically within the Northeast. This community occurs in New Jersey Pine Barrens complex in the Delaware Estuary.



Photo by Andrew Windisch

**Environmental Description:** This association occurs in shallow, poorly drained depressions or basins that may have deep accumulation of peat or shallow peat over sandy mineral soil. This type is often found, but not exclusively, in proximity to upland sandplain pine barrens.

**Vegetation Description:** It is characterized by an open canopy of *Pinus rigida* (pitch pine) with an understory of ericaceous shrubs such as *Chamaedaphne calyculata* (leatherleaf). *Sphagnum* (peatmoss) mosses form a dense mat. Canopy associates include *Acer rubrum* (red maple), *Betula populifolia* (gray birch), and *Nyssa sylvatica* (blackgum). Other shrubs include *Vaccinium corymbosum* (highbush blueberry), *Kalmia angustifolia* (sheep laurel), *Photinia pyrifolia* (red chokeberry), *Vaccinium myrtilloides* (velvetleaf blueberry), and *Gaylussacia baccata* (black huckleberry). *Eriophorum* (cotton-grass) spp., *Scirpus* (bulrush) spp., *Calopogon tuberosus* (tuberous grass-pink), *Vaccinium macrocarpon* (large cranberry), *Rhynchospora alba* (white beaksedge), *Drosera rotundifolia* (roundleaf sundew), *Drosera intermedia* (water sundew), and *Carex trisperma* (three-seed sedge) are typical herbs. Other herbs are *Cornus canadensis* (Canadian bunchberry), *Gaultheria procumbens* (wintergreen), *Pteridium aquilinum* (bracken fern), *Osmunda cinnamomea* (cinnamon fern), *Maianthemum canadense* (Canada mayflower), and *Trientalis borealis* (starflower).

**Characteristic Species:** *Chamaedaphne calyculata* (leatherleaf), *Pinus rigida* (pitch pine)

**Reference Sites:** Brendan Byrne State Forest, NJ

**Global and State Conservation Ranks and Reasons:** G3G5 (1-Dec-1997). NJ: S3S4, PA: SNR.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.687571](http://vegbank.org/natureserve/element_global.2.687571)

**References:** Breden 1989, Breden et al. 2001, Cowardin et al. 1979, Eastern Ecology Working Group n.d., Edinger et al. 2002, Fike 1999, Gawler 2001, Gawler 2002, Reschke 1990, Sperduto and Nichols 2004, Thompson 1996, Thompson and Sorenson 2000.

MOST ABUNDANT SPECIES		
STRATUM	LIFEFORM	SPECIES
Tree canopy	Needle-leaved tree	<i>Pinus rigida</i> (pitch pine)

## WATER-LILY AQUATIC WETLAND

*Nuphar lutea* ssp. *advena* - *Nymphaea odorata* Herbaceous Vegetation

**Range:** This rooted aquatic community occupies shallow, quiet waters throughout the central and eastern United States, extending from Maine to Ontario and Minnesota, south to Oklahoma and east to Georgia. In the Delaware Estuary, this pond community occurs on the Inner Coastal Plain of Pennsylvania, New Jersey and Delaware.

**Environmental Description:** This community occupies shallow water depressions, oxbow ponds, and backwater sloughs of river floodplains, ponds, and small lakes.



Photo by Pennsylvania Natural Heritage Program

**Vegetation Description:** This community is dominated by rooted, floating-leaved aquatic species, with both submergent and emergent aquatics also present. *Nuphar lutea* ssp. *advena* (broadleaf pond-lily) and *Nymphaea odorata* (white water-lily) can be dominants. Other species present include *Brasenia schreberi* (watershield), various *Potamogeton* (pondweed) spp., *Polygonum amphibium* (water smartweed), *Sparganium* (bur-reed) spp., *Sagittaria latifolia* (broadleaf arrowhead), *Alisma* (water-plantain) spp., *Schoenoplectus tabernaemontani* (softstem bulrush), *Peltandra virginica* (green arrow-arum), and *Polygonum amphibium* var. *emersum* (water smartweed) (Anderson 1982). Submerged aquatic species more common in the southern part of the range include *Cabomba caroliniana* (Carolina fanwort), *Ceratophyllum demersum* (coontail), and *Heteranthera dubia* (grassleaf mud-plantain). This broadly conceived type may include ponds, or zones of ponds, dominated by *Nymphaea odorata* (white water-lily), with or without *Nuphar lutea* ssp. *advena* (broadleaf pond-lily).

**Characteristic Species:** *Nuphar lutea* ssp. *advena* (broadleaf pond-lily), *Nymphaea odorata* (white water-lily)

**Management Concerns:** This is not a rare or imperiled vegetation type, even though its occurrence is poorly documented. Stands may occur in natural lakes and ponds or in artificial impoundments.

**Reference Sites:** Swatara State Park, PA; Schuylkill County, PA

**Global and State Conservation Ranks and Reasons:** G4G5 (15-Oct-2002). DE: SNR, NJ: S4, PA: SNR. The dominant species in stands of this vegetation are widespread across the eastern and central United States and adjacent Canada.

**VegBank Link for Plot Data:** [http://vegbank.org/natureserve/element\\_global.2.686226](http://vegbank.org/natureserve/element_global.2.686226)

**References:** Ambrose 1990a, Anderson 1982, Breden et al. 2001, Clancy 1996, FNAI 1990, Fike 1999, Fleming et al. 2001, Foti et al. 1994, Gawler 2002, Harrison 2004, Hoagland 2000, INAI unpubl. data, Midwestern Ecology Working Group n.d., NAP pers. comm. 1998, NatureServe Ecology - Southeastern

U.S. unpubl. data, Peet et al. unpubl. data 2002, Penfound 1953, Rawinski 1984, Schafale and Weakley 1990, Schmalzer and DeSelm 1982, Schotz pers. comm., Sperduto and Nichols 2004, Swain and Kearsley 2001, TDNH unpubl. data, Thompson and Jenkins 1992, WINHIP unpubl. data, Zaroni et al. 1979

### **MOST ABUNDANT SPECIES**

<b>STRATUM</b>	FLOATING AQUATIC
<b>Lifeform</b>	Aquatic herb (floating & submergent)
<b>Species</b>	<i>Nuphar lutea</i> ssp. <i>advena</i> (broadleaf pond-lily)