

NATURAL LAKE SHORELINE SWAMP (CYPRESS SUBTYPE)

Concept: Type covers tree-dominated vegetated wetland vegetation on the shores of medium to large permanent natural lakes. It extends inland to where the effect of lake hydrology on vegetation is replaced by the hydrology of the surrounding area, either upland or wetland. Subtype covers wetter examples dominated by *Taxodium distichum* or *Taxodium ascendens*, usually with an open woodland or savanna canopy. The couple examples with canopy of *Nyssa biflora* are also tentatively placed in this subtype.

Sites: Wetland zones along the shore of natural lakes, generally flooded much of the time by lake waters but exposed at low water levels.

Soils: Soil series are generally not mapped, but are shown as water or as part of the adjacent soils. Shorelines may be eroding or accreting. Many lakes are bordered by peatlands, and some shorelines have organic soils. However, sandy soils on wave-worked deposits are also common, even adjacent to peatlands. Organic soils are often eroded edges of surrounded peat or muck deposits. Trees may occur on islands of soils, bound their roots but removed by wave erosion around them.

Hydrology: Permanently to seasonally flooded. Water levels may vary over periods of a few years in response to weather cycles.

Vegetation: Dense to open canopy of water-tolerant trees, primarily *Taxodium ascendens*, but occasionally *Nyssa biflora*, *Acer rubrum*, or *Chamaecyparis thyoides*. Shrubs are often present on tree bases, especially *Cyrilla racemiflora*, *Eubotrys racemosa*, *Vaccinium fuscatum*, *Clethra alnifolia*, and *Lyonia lucida*, sometimes with vines such as *Smilax laurifolia*, *Smilax walteri*, or *Muscadinia rotundifolia*. Occasional shorelines may have other woody species, such as *Zenobia pulverulenta*, *Chamaedaphne calyculata*, or *Decodon verticillatus*. Some emergent herbs may be present in the water between the trees, especially *Panicum hemitomon*, *Juncus* spp., or *Xyris smalliana*. Other herbs may be present on the tree bases, cypress knees, or stumps, or in the shallowest water, including *Hypericum (Triadenum) walteri*, *Boehmeria cylindrica*, *Rhexia nashii*, and potentially any of the species of the Natural Lake Shoreline Marsh (Typic Subtype). Howell (2015), in a floristic study of lake shores found only a handful of species with moderate frequency: *Magnolia virginiana*, *Gordonia lasianthus*, *Gelsemium sempervirens*, *Smilax laurifolia*, *Anchistea (Woodwardia) virginica*, and *Tillandsia usneoides*.

Dynamics: Natural dynamics of lake shore communities are not well known. They may occasionally be subject to moderate to severe disturbance by fire, wind, or storm waves, but they are generally stable. Energy levels of shorelines vary, with some regularly washed by waves, others quiet. Some shorelines are undergoing erosion, causing the lake to expand and leaving a pattern of relict trees in the water, often with a scalloped edge of “headlands” and “bays” behind. In these cases, the trees may be relict, unable to reproduce in the current configuration.

Though not well documented, these communities probably undergo shifts in response to climatic cycles that affect lake levels. Persistent drought can allow a number of more upland species to establish, while high water periods may eliminate them. Even the dominant trees may not be able to reproduce other than in rare periods of low water. Some natural lakes have had their water levels stabilized by dams or weirs at their outlet, and the consequences of this for their shoreline communities are not well known.

Range and Abundance: Ranked G3. This may be an overestimate of abundance. There are 20 natural lakes in North Carolina, one in the Coastal Plain of Virginia, and apparently none in other nearby states. Only seven intact examples of this subtype are known in North Carolina. They occur in three clusters: the Bladen Lakes, the peatlands of Croatan National Forest, and the peatlands of the Pamlico Peninsula and mainland Dare County.

Associations and Patterns: Natural Lake Shoreline Swamp (Cypress Subtype) may occur in the same lakes as the Sweetgum Subtype, and may be associated with Natural Lake Shoreline Marsh (Typic Subtype). The latter may be present as a zone farther out in the water, or may be on a different part of the lake.

Distinguishing Features: The Natural Lake Shoreline Swamp type is distinguished from other forested wetlands by occurrence along a large to medium permanent lake. It is distinguished from the Small Depression Pond type by the size and permanence of the lake and presence of wave action, as well as generally by distinctive vegetation. The size criterion of Cowardin (et al. 1979), 8 hectares (20 acres) may be used as a size threshold for recognizing Natural Lake Shoreline communities.

The Cypress Subtype is distinguished from the Lake Waccamaw Subtype and Rich Subtype by having limited species richness, with few herbs present, and from the Sweetgum Subtype and Rich Subtype by different canopy dominants. See the descriptions of those subtypes for more details. On some eroding lake shores bordered by pocosins, the pocosin vegetation may dominate right to the shoreline, with *Cyrilla* and other shrubs leaning over the water but not forming a distinctive shoreline community.

Variation: Each lake is slightly different, to varying degrees, but no variants are named.

Comments: Lakes that contain this community occur as round to oblong basins in peatlands, and in Carolina bays. Those in Carolina bays too are bordered by peat. All or most have sandy beds at least in part, indicating that their depth is at least as great as the depth of the peat. While the origin of Carolina bays has been subject to much debate, the origin of lakes has been less discussed. A common suggestion for peatland lakes is that they were created by deep peat burns. Given that peat fires in historic times, associated with severe droughts, created depressions only a few meters across and not as much as a meter deep, it is unclear how this could occur. It is likely however, that once a sizeable permanent water body was created in a peatland, wave action would maintain it, and perhaps shape and expand it. It seems to generally be assumed that lakes in Carolina bays are remnants of the lake that originally formed the bay, but this may also not be true. It may be more likely that a lake formed in a peat-filled bay by the same mechanism by which lakes formed in other peatlands, than that the surrounding peat accumulated in

coexistence with the lake. The phenomenon of our peatland lakes may warrant further investigation.

Synonyms: *Taxodium distichum* - *Taxodium ascendens* / *Panicum hemitomom* Woodland (CEGL004466). Ecological Systems: Southeastern Coastal Plain Natural Lakeshore (CES203.044).

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

Howell, N.D. 2015. Guide to the littoral zone vascular flora of Carolina bay lakes. M.S. Thesis, North Carolina State University.