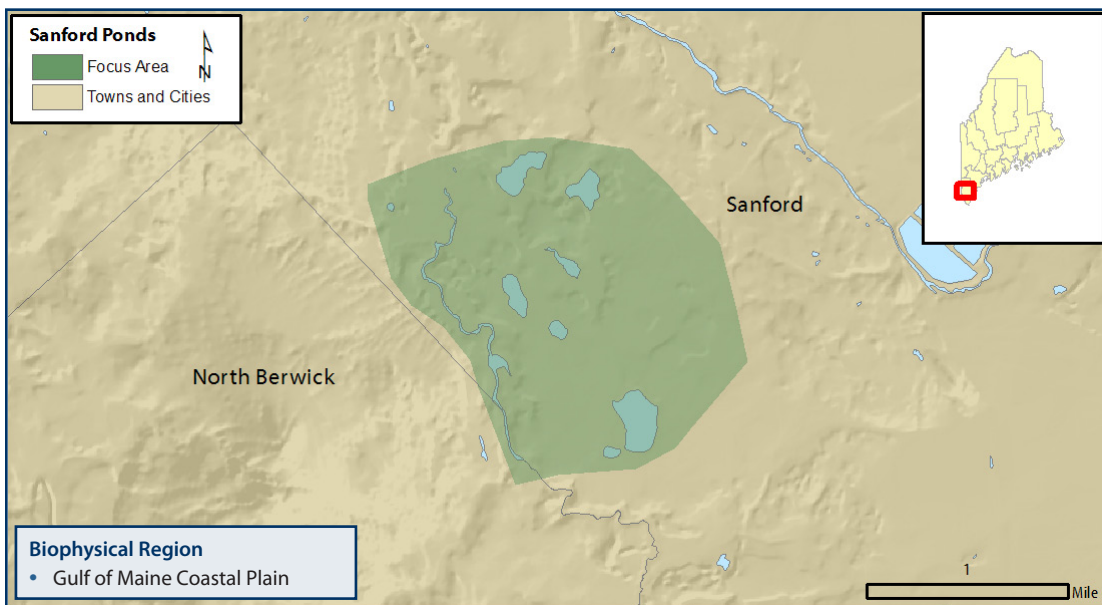
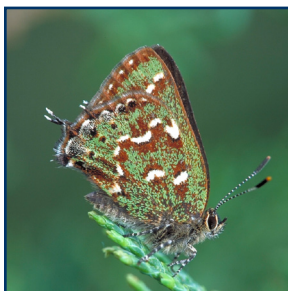


Sanford Ponds



WHY IS THIS AREA SIGNIFICANT?

Glacially formed ponds and swamps interspersed with well-drained glaciated upland ridges create a diversity of habitats in the Sanford Ponds Focus Area and support a variety of natural community types and plant and animal species, including several rare species. One of the state's largest Atlantic white cedar swamps, a rare natural community type only found in a handful of locations in Maine, is located here.

OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to permanently protect remaining undeveloped areas and significant features.
- » Encourage town planners to improve approaches to development that may impact Focus Area functions.
- » Encourage landowners to maintain enhanced riparian buffers to protect natural communities, rare species, and wetland integrity.
- » Maintain natural hydrologic regime by avoiding drainage or impoundment of the ponds, wetlands, streams or adjacent water bodies.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Photo credits, top to bottom: Jonathan Mays, Maine Natural Areas Program, Maine Natural Areas Program, Maine Department of Inland Fisheries and Wildlife, Jonathan Mays

Rare Animals

- Hessel's Hairstreak
- Spotted Turtle
- Blanding's Turtle
- Eastern or Northern Ribbon Snake

Rare Plants

- Atlantic White-cedar
- Smooth Winterberry Holly
- Yellow-eyed Grass

Rare and Exemplary Natural Communities

- Atlantic White Cedar Bog
- Atlantic White Cedar Swamp
- Leatherleaf Bog
- Pitch Pine-Scrub Oak Barren

Significant Wildlife Habitats

- Inland Wading Bird and Waterfowl Habitat
- Significant Vernal Pool



Atlantic White Cedar Swamp, Maine Natural Areas Program

FOCUS AREA OVERVIEW

The Sanford Ponds Focus Area covers approximately 1,300 acres and consists of a series of ponds and swamps located on a glacial meltwater formation of kame terraces and eskers. Low, steep-sided, sand and gravel ridges border kettlehole depressions with ponds and swamps. The Great Works River runs through the Focus Area on the west side but shows only a minimal surface water connection to the pond area. Several of the ponds are surrounded by marshy margins of floating peat and have organic substrates. Other ponds have sand and gravel shores and mostly sandy to silty bottoms. The water in the ponds is mostly highly acidic and darkly stained with tannins from the peat. Forested swamps are interspersed with the ponds, and also occur along some stretches of the Great Works River.

Several natural community types of statewide significance are associated with the ponds and swamps of the Focus Area. Most notably, the site supports one of Maine's largest Atlantic white cedar swamps, a rare natural community type known from only a handful of locations in southern and midcoast Maine. The Focus Area uplands are well drained and support mostly dry oak-pine forest with heath shrubs such as sheep laurel, low-bush blueberry, and huckleberry. There is an upland area to the south of Round Pond that supports a low

quality example of a pitch pine barren natural community that is dominated by a somewhat closed canopy of relatively even aged pitch pine. A severe fire within the dry upland forest could eventually lead to greater abundance of pitch pine and an expansion of this natural community.

NATURAL COMMUNITIES

Atlantic white cedar swamp is characterized by a mostly closed-canopy of Atlantic white cedar that is mixed with black spruce or red maple. Openings within the swamp typically have mixtures of highbush blueberry, mountain holly, and winterberry, with patches of ferns and sedges. Dense mosses cover the hummock-and-hollow ground surface. Often the Atlantic white cedar forms a dense canopy that allows little light penetration and limits understory growth. Since Atlantic white cedar seedlings are relatively intolerant of shade, some form of disturbance (e.g., fire, wind throw, or timber harvesting) may be required to regenerate Atlantic white cedar.

Atlantic white cedar bogs, located around Pitcher and Round Ponds, are peatlands dominated by dwarf ericaceous shrubs with a sparse tree layer of Atlantic white cedar. Shrubs can form an almost continuous carpet beneath the stunted cedars. Abundant peat moss covers the ground and forms the

substrate. These bogs are typically part of larger peatlands. Maintaining the hydrologic integrity of the entire wetland with upland buffers is very important.

A small area of **leatherleaf boggy fen** is located near Little Long Pond. Leatherleaf boggy fen is characterized by peatland vegetation dominated by leatherleaf mixed with other low heath shrubs, mostly growing less than 1 m tall. Graminoid cover is usually less than 30%. Typical bog plants like pitcher plants, sundews, and small cranberry are scattered on the sphagnum substrate. Trees, if present at all, are < 15% total cover. This type is commonly found in bogs and nutrient-poor fens, usually in settings where groundwater contact is maintained. The substrate is sphagnum peat. Leatherleaf boggy fen is often a major constituent of “kettlehole bog” vegetation.

An example of a **pitch pine-scrub oak barren** is also found within some of the upland portions of the Sanford Ponds Focus Area. Pitch pine-scrub oak barrens are woodlands with sandy outwash with patchy vegetation in which pitch pine is dominant. In openings, a dense shrub/sapling layer of scrub oak and/or gray birch is typical. The low layer of heath shrubs is dominated by lowbush blueberry, with bracken fern and woodland sedge as characteristic herbs. Mosses are virtually absent. Soils tend to be excessively drained and accumulate very little organic matter.

CHARACTERISTIC SPECIES

The Sanford Ponds Focus Area includes several vernal pools. Vernal pools are ephemeral wetlands that typically fill with water from snow melt and spring run-off and often dry out over the course of the summer. They offer critical breeding habitat for some species of amphibians and invertebrates such as wood frogs, spotted and blue-spotted salamanders, and fairy shrimp. The seasonal nature of the temporary pools maintains a fishless environment conducive to the successful breeding of these animals. Vernal pools are also used as feeding and breeding habitat by many other animals such as spring peepers, gray tree frogs, and other common amphibians, as well as several rare species. The amphibians and aquatic invertebrates that are dependent on these ponds for survival are an important food resource for other forest dwellers such as turtles, snakes, birds, and small mammals. The vegetated condition of vernal pools varies from completely vegetated, usually with sedges, grasses, ferns, and scattered shrubs, to non-vegetated, with only dead leaves carpeting the pool bottom.

The ponds, swamps, vernal pools and uplands in this Focus Area support the state Threatened **spotted turtle** and the state Endangered **Blanding’s turtle**. Spotted and Blanding’s turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools in large, intact forested land-

Ecological Services of the Focus Area

- Purifies and regulates the flow of water in entering the Great Works River
- Supports regional biodiversity by providing habitat for rare plants, animals, and communities
- Provides habitat to diverse wildlife species

Economic Contributions of the Focus Area

- Provides wildlife habitat for a number of game species important to Maine’s rural economy
- Serves as valuable recreational resource for local residents

scapes. They also use small streams, shrub swamps, forested swamps, wet meadows, and emergent marshes. Although these turtles spend most of their time in the water, they readily travel overland between wetlands during the spring and summer months. Upland habitats are also critical for basking, aestivating (a period of late summer inactivity), and nesting.

Spotted and Blanding’s turtles have evolved relatively long adult life spans to offset the long time it takes to reach reproductive maturity (15 years or more) and to offset high levels of nest and juvenile mortality. Because of this unusual life history, spotted and Blanding’s turtle populations occur at low densities, and thus populations are highly vulnerable to any human sources of adult mortality. Road mortality and collecting for pets, for example, can be extremely deleterious, as the attrition of just a few individuals every year can lead to the long-term decline and extinction of a local population. The secondary effects of human development – increased predator populations (e.g., dogs, cats, raccoon, skunks), water, light, and noise pollution, filling of small wetlands, and blocking upland travel corridors (roads, rail beds, yards) – also impact populations. Spotted and Blanding’s turtles are strictly protected from take (collecting, possession, or killing) by the Maine Endangered Species Act.

The wetlands of the Focus Area also provide habitat for the **ribbon snake**, a species of Special Concern in Maine. Ribbon snakes are semi-aquatic snakes that frequent bogs, shrub swamps, forested wetlands, wet meadows, streams, and pond/lake edges. They prefer the periphery of these areas where vegetation and supplies of amphibians are abundant. Most of Maine’s ribbon snake population occurs in southern and

south-central Maine. Due to the high rates of development in these areas, this species are also vulnerable to habitat loss, fragmentation, and degradation of their habitats. The wetland-upland ecology of this snake puts it at further risk due to inadequate regulations protecting riparian and upland habitat around smaller wetlands.

A globally rare and state Endangered invertebrate species, the **Hessel's Hairstreak butterfly**, is known from the Sanford Pond area as well. This butterfly is found exclusively near swamps and bogs where its host plant, Atlantic white cedar, is abundant, and this Focus Area hosts one of only four known populations of Hessel's Hairstreak in Maine. While probably never common on the northern end of its range, Hessel's Hairstreak is now vulnerable to extinction in Maine due to the incremental loss and fragmentation of remaining cedar swamps from logging and development activity in rapid growth areas of York County

The kettlehole ponds and their associated wetlands, in particular Curtis Pond, Little Long Pond and Pitcher Pond, also provide important **Inland Waterfowl and Wadingbird Habitat**. These areas provide undisturbed nesting habitat and feeding areas and are essential for maintaining viable waterfowl and wading bird populations.

The Great Works River still supports wild brook trout. However, this fishery is threatened by heavy development in the area, especially at the river's headwaters.

Three rare plants, **smooth winterberry holly**, **yellow-eyed grass**, and **Atlantic white cedar**, have all been documented growing within the Focus Area. The population of yellow-eyed grass found in one of the bogs here is the only one known from the state. Smooth winterberry holly occurs in southern Maine in swamps and wet thickets. Some populations, particularly in smaller wetlands are vulnerable to conversion of their habitat to residential or commercial use. All three of these plant species are at the north end of their range in southern Maine.

CONSERVATION CONSIDERATIONS

» The integrity of wetlands and the processes and life forms they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that can degrade the high quality natural systems that occur here. Improperly sized crossing structures such as culverts can impede movement of fish and aquatic invertebrates effectively fragmenting local aquatic ecosystems and ultimately leading to local extirpation of some species. Future management activity should avoid additional impacts to the site's hydrology.



Top- Ribbon Snake, Jonathan Mays
Middle- Blanding's Turtle, Jonathan Mays
Bottom- Hessel's Hairstreak, MDIFW

- » No activities should be permitted that could lead to the loss or degradation of wetlands including filling, dredging, sedimentation, or changing of hydrology unless the activity is approved by MDIFW.
- » A minimum 250-foot forested buffer zone should be maintained around wetlands with known rare animal locations.
- » Impervious surfaces such as yards, buildings, parking lots, and roads should be minimized in the upland landscape within 1/4 mile of rare animal wetlands. Natural forest habitat should predominate the landscape.
- » Less pervasive is degradation from incidental uses related to the increasing residential development in the area. Upland buffers can also play a major role in protection here. Care needs to be taken that ORV's stay on existing trails and remain out of all wetlands when the ground is not frozen. Existing trails should be reviewed with particular recreation and access needs in mind, and trails closed if they run counter to protection needs. Fragmenting features should be minimized where possible.
- » Low-intensity cutting (single tree or small group selection, firewood harvest) is likely compatible with sensitive features as long as operators avoid wetlands. Winter harvests are recommended to minimize impacts to rare plants, animals, and wetland systems. Close adherence to Best Management Practices for forestry activities near vernal pools (available from Maine Audubon Society at 207-781-6180 ext. 222 or bwilson@maineaudubon.org) will generally ensure the protection of all major wetland habitats and the amphibian food source they supply.
- » Conservation planning for upland features should include setting some areas aside from timber harvesting to allow for the development of some unmanaged forest ecosystems.
- » No activities should be permitted that could lead to the loss or degradation of Atlantic white cedar swamps hosting Hessel's hairstreak including filling, ditching, polluting, or changes to the water level.
- » A minimum 250 foot upland forested buffer zone should be maintained around Atlantic white cedar swamps hosting the Hessel's hairstreak. A buffer of ½ mile should be used for these sites when spraying pesticides for control of gypsy moths and other pests.
- » With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an important safety net for biodiversity as species adjust their ranges to future climate conditions.
- » Invasive plants and aquatic organisms have become an increasing problem in Maine and a threat to the state's natural communities. Disturbances to soils and natural vegetation and introductions of non-native species to terrestrial and aquatic habitats can create opportunities for colonization. Landowners and local conservation groups should be made aware of the potential threat of invasive species, of methods to limit establishment, and/or of appropriate techniques for removal. For more information on invasive plants visit: <http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm>.

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Hessel's Hairstreak	<i>Callophrys hesseli</i>	E	S1	G3G4
	Spotted Turtle	<i>Clemmys guttata</i>	T	S3	G5
	Blanding's Turtle	<i>Emys blandingii</i>	E	S2	G4
	Eastern or Northern Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
Plants	Atlantic White-cedar	<i>Chamaecyparis thyoides</i>	SC	S2	G4
	Smooth Winterberry Holly	<i>Ilex laevigata</i>	SC	S3	G5
	Yellow-eyed Grass	<i>Xyris smalliana</i>	E	S1	G5
Natural Communities	Atlantic White Cedar Bog	Atlantic white cedar bog		S1	G3G4
	Atlantic White Cedar Swamp	Atlantic white cedar swamp		S2	G3G5
	Leatherleaf Bog	Leatherleaf boggy fen		S4	G5
	Pitch Pine - Scrub Oak Barren	Pitch pine - scrub oak barren		S2	G2

State Status*

- E** Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T** Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC** Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

*State status rankings are not assigned to natural communities.

State Rarity Rank

- S1** Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2** Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (on the order of 20–100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.

Global Rarity Rank

- G1** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2** Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (on the order of 20–100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.