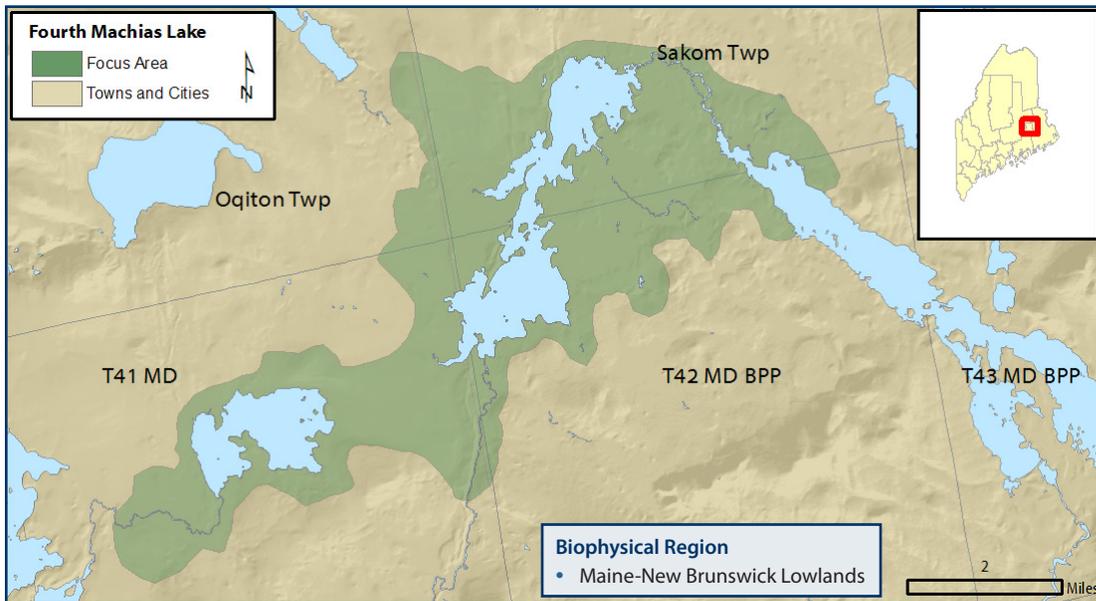
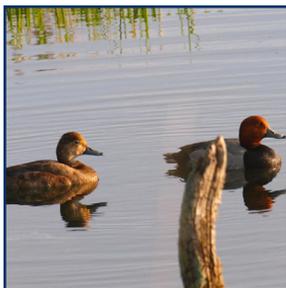
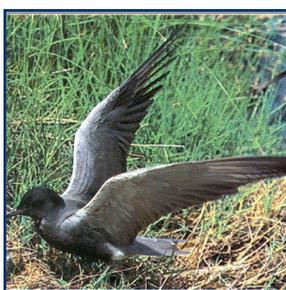


Fourth Machias Lake



WHY IS THIS AREA SIGNIFICANT?

The Machias River system, including Third and Fourth Machias Lakes, is one of the premier wilderness lake and river paddling trips in the Northeast. It is an exceptional recreational and scenic resource. The river system and adjacent wetlands provide habitat for anadromous fish, as well as nesting habitat for State Endangered black terns and bald eagles, a State species of Special Concern.

OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to secure permanent conservation status for remaining unprotected significant features in the focus area.
- » Minimize harvesting in the forested buffers surrounding the exemplary ecosystems to maintain forest structure and composition in the buffer zones.
- » Work with landowners to encourage sustainable forest management practices in and around the focus area.
- » If recreational use is causing impacts, work to enforce legal restrictions on motorized use in the wetlands.

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

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Rare Animals

- Bald Eagle
- Black Tern
- Atlantic Salmon

Rare Plants

- Water Stargrass

Rare and Exemplary Natural Communities

- Black Spruce Bog
- Blueberry Barren
- Dwarf Shrub Bog
- Early Successional Forest
- Hemlock Forest
- Red and White Pine Forest
- Tall Sedge Fen
- Unpatterned Fen Ecosystem
- White Pine Forest

Significant Wildlife Habitats

- Inland Wading Bird and Waterfowl Habitat
- Deer Wintering Area

Public Access Opportunities

- Duck Lake, MBPL
- Third Machias Lake, MBPL
- Fourth Machias Lake, MBPL
- Gassabias Lake Boat Launch

FOCUS AREA OVERVIEW

The Fourth Machias Lake Focus Area is a 12,000 acre landscape of forest, lakes, ponds, streams, and wetlands located west of Grand Lake Stream in interior eastern Maine. Over 80% of the area is protected in public ownership or as privately owned conservation land.

This focus area includes ten exemplary natural communities and ecosystems, three of which are rare in Maine. Of special note is one of the largest unpatterned fen ecosystems in the state, found along Fourth Machias Lake. This peatland ecosystem includes a diverse mosaic of intergrading natural community types which provide excellent habitat for a variety of fish and wildlife species, including the state Endangered black tern.

Fourth Machias Lake Focus Area also includes a portion of the state-owned Duck Lake public land unit and an adjoining area of land owned by the Downeast Lakes Land Trust (DLLT), as well as some smaller areas of private land. Much of the Focus Area is contained within areas that are managed primarily for their ecological values, including the DLLT's Farm Cove Community Forest Ecological Reserve and the Duck Lake State Ecological Reserve. State Ecological Reserves are state-owned lands set aside from active management in order to protect and monitor Maine's natural ecosystems.

Many of the important natural features found in this focus area are clustered around Fourth Machias Lake. This lake has been selected by The Nature Conservancy as one of its 'portfolio lakes' -- high value waters that best represent the ecosystems, natural communities, and species characteristic of the region. Fifth Lake Stream, which flows into the lake, and Fourth Lake Stream, the lake's outlet, both support important spawning and rearing habitat for Atlantic salmon.

Nearly half of the focus area consists of open water or wetland. The 1900 acre unpatterned fen ecosystem that surrounds Fourth Machias Lake is one of the largest in the state. Within this ecosystem, and surrounding Dead Stream, is a large area of breeding habitat for the State Endangered black tern, as well as an exceptionally large (1700 acre) Inland Waterfowl/Wading Bird Habitat. All told, the focus area contains over 5300 acres of designated Significant Wildlife Habitat for wading birds and waterfowl.

The focus area encompasses the whole of Gassabias Lake and the surrounding shoreland habitat, as well as an exemplary black spruce bog on the eastern end of the lake. There is an



Fourth Machias Lake, Andy Cutko

active bald eagle nest site on an island in the lake. Within the shoreland forest surrounding Gassabias Lake is a small knoll that supports a mature red and white pine forest (an uncommon forest type in the state). West of the lake is an exemplary dwarf shrub bog community associated with Gassabias Stream.

The focus area includes several eskers, long winding ridges of sand and gravel that were formed by flowing glacial melt waters. In other parts of the state, eskers have been extensively mined for sand and gravel. These geological features tend to support distinctive vegetation. Here they support exemplary red and white pine forest and a small exemplary hemlock forest. Reflecting the sandy and gravelly, nutrient-poor soils typical of this part of Maine, this area generally has a history of frequent fire. As a result, the current landscape supports an ar-

ray of unusual fire-adapted and early successional (i.e., young) plant communities, including early successional forest, pine forests, and blueberry barrens. In contrast, one white pine stand found to the east of Gassabias Lake displays characteristics of old growth forest, including large, old trees (up to 275 years old) and no evidence of timber harvesting.

RARE AND EXEMPLARY NATURAL COMMUNITIES

The **unpatterned fen ecosystem** is a complex of different wetland types that can include open, shrubby, and wooded communities. This is a peatland system that occurs in environments with surface or groundwater flow, as opposed to closed basins. This ecosystem can include both bog and fen communities, but the more diverse fen vegetation is dominant. The very large exemplary unpatterned fen ecosystem found around Fourth Machias Lake comprises a diverse mosaic of intergrading community types, including tall sedge fen, sedge-heath fen, sweetgale fen, and dwarf shrub bog.

Naturally occurring **blueberry barrens** are rare communities dominated by dwarf shrubs, with sparse pine or spruce trees in the overstory. Lowbush blueberry is the dominant shrub species, but other heath shrubs such as sheep laurel may be common. Common herbs include bracken fern and wintergreen. This community typically occurs on sandy, acidic sites with a history of frequent fire. There is evidence that the blueberry barrens in this focus area originated after fire. Most sites in Maine where this community might naturally occur are now under intensive management for commercial blueberry production. Pesticide use has dramatically changed the composition of the managed blueberry barrens. Both natural and managed blueberry barrens provide some of the best habitat in the northeast for the upland sandpiper and other ground-nesting species like the short-eared owl and Savannah sparrow.

Early successional forest is a community type that arises following fire or other disturbance, typically on poor, dry soils. Dominated by aspens, birches, and red maple, this community can occur as a closed forest or open woodland, depending on the intensity of fire and recovery period. The shrub layer is variable but often includes shadbush or gray birch. Lowbush blueberry, black huckleberry, and bracken fern are common in the groundstory. A wide variety of wildlife uses early successional forest habitat. These communities will naturally transition to other forest types over time. The example found here, an open woodland with a dense understory of saplings, apparently originated following a fire about a century ago.

The **red and white pine forest** is a coniferous forest dominated by red pine. White pine, red spruce, and northern white cedar are the other important canopy tree species. The understory is typically sparse, with scattered heath shrubs, bracken fern, and wintergreen. This community frequently occurs on sites with a history of fire. Red pine, in particular, is well suited to fire, and white pine typically replaces red pine

Ecological Services of the Focus Area

- Wetlands purify and regulate the flow of water entering area lakes, ponds, and streams.
- Provides high quality habitat for waterfowl, wading birds, moose, and other wildlife.
- Contributes to water quality and ecological integrity of the Machias River, an important fishery and recreational resource.
- Provides an important component of regional biodiversity.

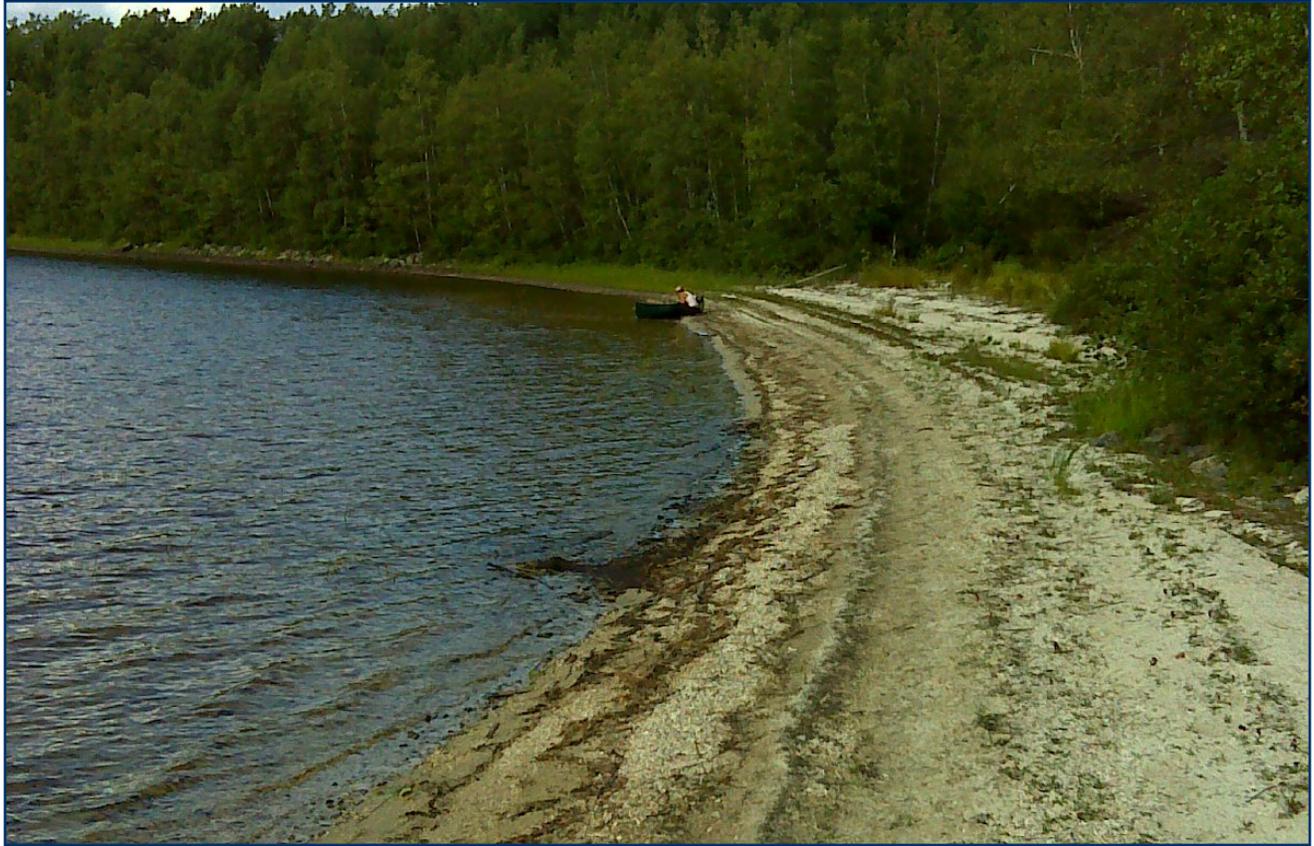
Economic Contributions of the Focus Area

- Attracts tourism for wildlife observation, paddling, hunting, and angling.
- Includes fisheries and wildlife habitat that support fish and game species important to Maine's rural economy.
- Provides scenic vistas that contribute to Maine's natural character.
- Contributes to recreational value of the Downeast region.
- Provides opportunities for research and education.

in the extended absence of fire. Two exemplary stands of red and white pine forest occur in the focus area. A large stand runs along a narrow esker (deposit of glacial sand) just south of Fourth Machias Lake. This stand appears to have generated following a large, severe fire that burned across the southern portion of the Focus Area in 1934. A smaller example to the east of Gassabias Lake is dominated by older (150 to 200 year old) red pines. Natural forests dominated by red pine are rare in Maine, though the species is occasionally planted. As a result, these exemplary communities make an important contribution to local and regional biodiversity.

CHARACTERISTIC SPECIES

Bald eagles (*Haliaeetus leucocephalus*) nest along sea coasts, inland lakes and major rivers. Breeding habitat includes large trees, primarily old white pines, in close proximity (less than one mile) to water where food is abundant and human disturbance is minimal. Bald eagles, once abundant in Maine, were nearly extirpated throughout their range because of widespread use of environmental contaminants. Due to a wide variety of efforts, including designation of Essential Habitat to protect bald eagle nest sites through provisions of the Maine Endangered Species Act, bald eagles have now made a dramatic recovery. As a result, the species was removed from Maine's Threatened species list in 2009 and is now consid-



Fourth Machias Lake, Andy Cutko

ered a Species of Special Concern. Active nest sites no longer receive regulatory protection as Essential Habitat. The State is working to secure long-term protection for bald eagle nesting habitat through a variety of strategies, including agreements with private landowners. They continue to be protected by the USFWS under the Bald and Golden Eagle Protection Act.

The **black tern** (*Chlidonias niger*) is the only North American tern that breeds primarily in inland, freshwater marshes, rather than along the seacoast. In Maine, these birds nest in large marshy areas associated with lakes, impoundments, and slow-moving streams. They feed on small fish and insects found in nearby marshes, fields, and water bodies. Black terns are present in Maine only for the brief (2-3 month) breeding season, spending the rest of the year in coastal areas of Central and South America. This species is listed as Endangered in Maine and is a candidate for the federal endangered species list. The current breeding population in Maine is less than 100 pairs and may be declining. Likely threats to the species include fluctuating water levels and nest predation.

CONSERVATION CONSIDERATIONS

» Though most of the highest value natural features occur on conservation land, a substantial portion of the exemplary

unpatterned fen system and black tern habitat to the east of Fourth Machias Lake extends onto private land. Unprotected areas of the fen and surrounding upland buffers would be a high priority for conservation if opportunities should arise to work with willing landowners.

- » The integrity of wetlands and the processes and life forms they support are dependent on the maintenance of the current hydrology of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, water impoundment, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution. Improperly sized culverts and other stream crossing structures can impede movement of fish and aquatic invertebrates effectively fragmenting local aquatic ecosystems and ultimately leading to local extirpation of some species. Future management should maintain or restore the sites natural hydrology.
- » Natural communities occurring on the upland edges of the core wetland complexes are vital to the ecological health of the wetlands. These buffers also provide valuable riparian habitat for many wildlife species. Maintaining the structure and function of these natural communities is a primary

- conservation goal.
- » An adequate buffer should be retained between timber harvest areas and the wetlands. Because different species can have different buffering requirements, better protection will be afforded to the collective wetland plants and animals when larger buffers are used. Any timber harvesting within and adjacent to wetlands should be implemented with strict adherence to state or local Shoreland Zoning guidelines and Maine Forest Service Best Management Practices.
 - » The bald eagle nest sites on Gassabias and Third Machias Lakes are important habitat features that should be protected with buffers from incompatible activities such as timber harvesting during the nesting season.
 - » Other threats facing the bald eagle population, including habitat loss, environmental contamination, diminished water quality, and human-caused deaths and injuries can be mitigated through conservation of the Focus Area as a whole. Healthy lakes and wetlands with intact forested buffers provide valuable habitat for bald eagles, as well as a diverse array of other wildlife.
 - » Appropriate management of black tern breeding habitat is vital to the conservation of this Endangered species.
 - » In general, preserving the natural communities and other sensitive features within the Focus Area will be best achieved by working to conserve the integrity of the larger natural systems in which these features occur. Conserving the larger systems will help ensure that both common and rare natural features will persist on the landscape in this part of the state.
- » If recreational use is impacting natural features, work to enforce legal restrictions on motorized use in the wetlands.
 - » 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>.
 - » This area includes Significant Wildlife Habitat. Land managers should follow best management practices in and around wetlands, shoreland areas, and Significant Wildlife Habitat. Vegetation removal, soil disturbance and construction activities may require a permit under the Natural Resources Protection Act. Contact MDIFW for more information.
 - » Research and education are actively encouraged on all state Ecological Reserves. The state has developed a long term ecological monitoring program for Reserves and seeks opportunities to promote research efforts that complement its monitoring program.

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

| | Common Name | Scientific Name | State Status* | State Rarity Rank | Global Rarity Rank |
|---------------------|---------------------------|---------------------------------------|---------------|-------------------|--------------------|
| Animals | Bald Eagle | <i>Haliaeetus leucocephalus</i> | SC | S4B,S4N | G5 |
| | Black Tern | <i>Chlidonias niger</i> | E | S2B | G4 |
| Plants | Water Stargrass | <i>Zosterella dubia</i> | SC | S3 | G5 |
| | | | | | |
| Natural Communities | Black Spruce Bog | Spruce - larch wooded bog | | S4 | G3G5 |
| | Blueberry Barren | Blueberry - lichen barren | | S2 | GNR |
| | Dwarf Shrub Bog | Sheep laurel dwarf shrub bog | | S4 | G5 |
| | Early Successional Forest | Aspen - birch woodland/forest complex | | S5 | G5 |
| | Hemlock Forest | Hemlock forest | | S4 | G4G5 |
| | Red and White Pine Forest | Red pine - white pine forest | | S3 | G3G4 |
| | Tall Sedge Fen | Mixed tall sedge fen | | S4 | G4G5 |
| | Unpatterned Fen Ecosystem | Unpatterned fen ecosystem | | S4 | GNR |
| | White Pine Forest | White pine - mixed conifer forest | | S4 | G5 |

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.