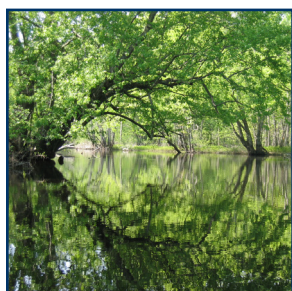
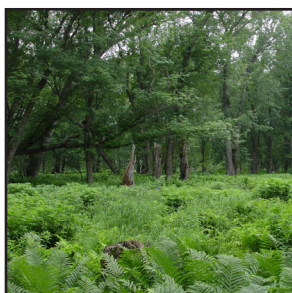


St. Georges River and Associated Ponds



WHY IS THIS AREA SIGNIFICANT?

Along with nearby ponds, a 15 mile stretch of the St. George River, from Appleton to Warren, supports an assemblage of rare plants, invertebrates, and natural communities that is found nowhere else in central or coastal Maine. The River meanders from its headwaters above Quantabacook Lake southward through Searsmont, Appleton, Union, and Warren. An outstanding unpatterned fen ecosystem abuts the northeast end of Quantabacook Lake, but the highest concentration of uncommon species and habitats extends from Sennebec Pond in Union and Appleton southward to South Pond in Warren.

OPPORTUNITIES FOR CONSERVATION

- » Educate recreational users about the ecological and economic benefits provided by the focus area.
- » Encourage best management practices for forestry, vegetation clearing, and soil disturbance activities near significant features.
- » Encourage landowners to maintain enhanced riparian buffers.
- » Work with willing landowners to permanently protect undeveloped areas and significant features.
- » Encourage town planners to improve approaches to development that may impact focus area functions.

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

Public Access Opportunities

- Appleton Preserve, GRLT
- St. George River Access, MDIFW

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Rare Plants

- Bottlebrush Grass
- Horned Pondweed
- Mudwort
- Pale Green Orchis
- Spongy Arrow-head
- Spotted Pondweed
- Swamp White Oak
- Wild Garlic
- Wild Leek

Rare Animals

- Bald Eagle
- Brook Floater
- Tidewater Mucket
- Yellow Lampmussel

Rare and Exemplary Natural Communities

- Silver Maple Floodplain Forest
- Upper Floodplain Hardwood Forest

Significant Wildlife Habitats

- Tidal Wading Bird and Waterfowl Habitat
- Inland Wading Bird and Waterfowl Habitat
- Deer Wintering Area



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FOCUS AREA OVERVIEW

The St. George River and Associated Ponds Focus Area supports outstanding plant communities that include a hardwood floodplain forest south of the aptly-named White Oak Pond. This floodplain forest contains both a high floodplain type, dominated by red oak, and a low floodplain type. Unlike most other low floodplain forests in Maine, which are characterized by silver maple, this low floodplain forest contains an abundance of the rare **swamp white oak** (*Quercus bicolor*), a tree at its northeastern range limit in coastal Maine. Also scattered in the swamp are several bur oak trees – also uncommon in Maine.

The New England bluet (*Enallagma laterale*) an uncommon damselfly endemic to New England, was found in emergent vegetation along the shorelines of North Pond, South Pond, and Seven Tree Pond. Two uncommon dragonflies, the Halloween pennant (*Celeftemis eponina*) and the ocellated darner (*Boyeria grafiana*), have also been observed along the North Pond lakeshore and the St. George River in Warren, respectively.

The St. George River and its associated ponds, particularly the stretch from Appleton to Warren, support some of Maine's best

populations of our two state-Threatened freshwater mussel species - the **tidewater mucket** (*Leptodea ochracea*) and **yellow lampmussel** (*Lampsilis cariosa*). These two mussels are known only from the St. George, lower Kennebec, and Penobscot River watersheds in Maine. Both are also rare and declining throughout their range, and conservation of important sites in Maine may hold regional significance as well. To date, one or both of these species have been documented in nearly all of the St. George River ponds, as well as in the main stem itself. Especially good populations are known to occur at South Pond, Seven Tree Pond, Sennebec Pond, Round Pond, Sidensparker Pond, and the main stem in Appleton. One or both species have also been documented from North Pond, Crawford Pond, Quantibacook Lake, and the main stem in Warren - though species abundance at these sites is currently unknown. Outside of the general focus area, Chickawaukee Pond on the Rockland/Rockport border also supports a very good population of both listed species.

A third rare freshwater mussel species, the **brook floater** (*Alasmidonta varicosa*), is also found in good numbers in the flowing waters of the St. George River main stem. This species is currently listed of Special Concern in Maine, is very uncommon

and rarely found in abundance at any site. It is also declining throughout its range, and Maine may hold some of the last best populations of this species.

Over 1600 acres of **Inland Wading Bird and Waterfowl Habitat** and 600 acres of **Deer Wintering Area**. These Significant Wildlife Habitats provide undisturbed nesting, breeding and feeding sites for numerous species of wading birds and waterfowl and provide important refuges for wintering deer from cold temperatures and deep snow during Maine's long winters.

Twenty-two kilometers of spawning and rearing habitat for **Atlantic salmon** (*Salmo salar*) have been mapped in the St. George River. The river corridor also provides habitat for a very rich diversity of rare plant species, including **wild garlic** (*Allium canadense*), a species usually found in rich wooded bottomlands (hardwood floodplain forests), in alluvial soils near streams, and **mudwort** (*Limosella australis*), an aquatic species that grows in mid to lower intertidal zone where it is completely submerged at high tide.

RARE AND EXEMPLARY NATURAL COMMUNITIES

Silver Maple Floodplain Forests are dominated by silver maple (>60% cover). Associates include red maple and American elm (up to 30% cover) or, in a few locations, bur oak (up to 25% cover). Widely spaced trees, many with multiple trunks, give a park like feeling. The understory is open and shrubs are sparse. Muscledwood may be present and is a good indicator. The lush carpet of herbs changes from spring ephemerals such as trout lilies and bloodroot to dense fern cover in summer. Bryoid cover is minor. Some forests have a berm adjacent to the river channel, and herbaceous species composition here is different from the lower elevation interior of the floodplain.

Although a number of sites have been cleared or pastured in the past, current shoreland regulations provide increased protection to a number of these sites. Exotic plant species such as Japanese knotweed, which may displace those native to our area, also represent a threat to the integrity of these forests and have degraded some Maine examples. Several of the known examples are formally protected from conversion. Northern waterthrush, barred owl, belted kingfisher, bank swallow, and green heron are associates of this community type. In the southern part of the state, the Louisiana waterthrush and yellow-throated vireo are likely associates if the canopy is closed or nearly so. Rare turtles like wood, spotted, and Blanding's turtles may feed on amphibian egg masses present in isolated pools within such forests. The silver-haired bat often roosts in riparian habitats in trees with loose bark.

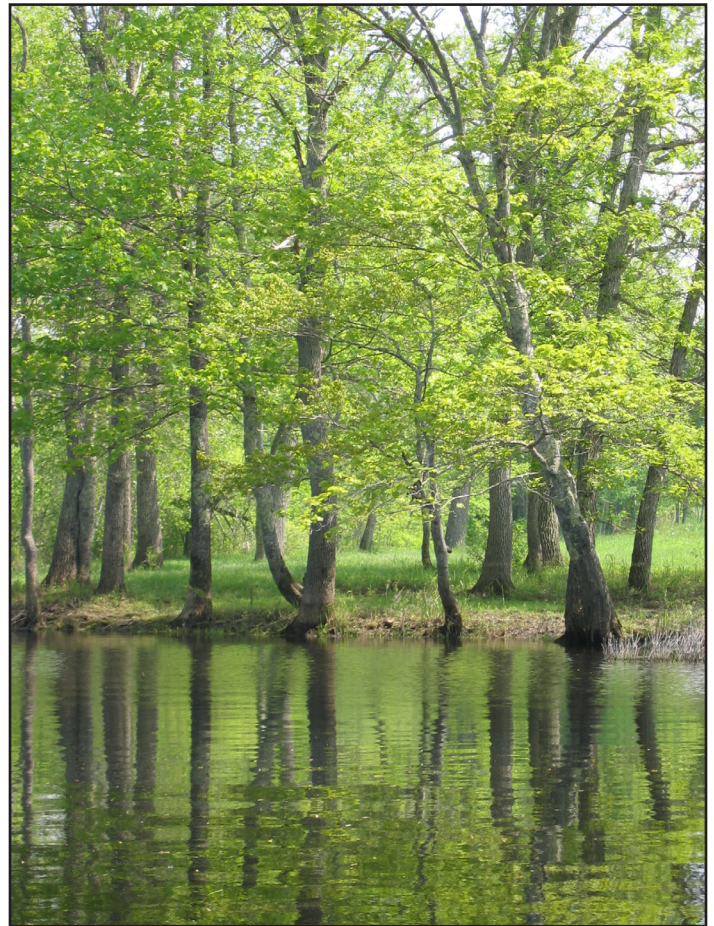
In **Hardwood River Terrace Forests**, an almost complete canopy is dominated by sugar maple, red oak, or yellow birch, with red maple and ash often common and basswood or black cherry occasional. The understory is open and shrubs are sparse. The lush carpet of herbs changes from spring ephemerals such as trout lily and bloodroot to variable cover of mixed

Ecological Services of the Focus Area

- Supports regional biodiversity by providing habitat for rare plants, animals, and natural communities.
- Protects water quality in the St. George River.

Economic Contributions of the Focus Area

- Serves as a valuable recreational resource for local residents.
- Contributes to recreational value of the area, including nearby coastal areas, by protecting water quality, fisheries, and wildlife habitat.



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graminoids and forbs in summer. Bryoid cover is minor.

Virtually all of these forests have been harvested, and many have been converted to agriculture. Non-native plant species such as Japanese knotweed and Asiatic bittersweet, which may displace those native to our area, represent a threat to

the integrity of these forests and have degraded at least some Maine examples.

The northern waterthrush, barred owl, belted kingfisher, bank swallow, scarlet tanager, and green heron are associates of this community type. Wood turtles overwinter in river channels and forage in floodplain forests where they may feed on amphibian egg masses in vernal pools. The silver-haired bat often roosts in riparian habitats in trees with loose bark. Fairy shrimp may also occur in isolated vernal pools.

CONSERVATION CONSIDERATIONS

Much of the land in the St. George watershed is agricultural and residential, and the shorelines of some of the ponds (Sennebec Pond, Seven Tree Pond) are largely developed with homes and camps. In many locations there is little buffer between the river and adjacent yards or fields. Based on the biology and habitat considerations of some of the rare species, the following considerations are relevant:

- » The New England Bluet is restricted to emergent vegetation (chiefly watershield and rushes) along shallow lakeshores, often with coarse substrates of sand and gravel. Individual bluets can move several hundred meters, depending on wind direction and speed. In limited sampling, there appeared to be a relationship between shoreline development and bluet presence, with bluets tending to occur more often along less developed lakeshores. A key land management consideration is the type of lakeshore vegetation; bluets seem attracted to old field vegetation adjacent to lakeshores, while avoiding closely mowed grass. Thus, where development abuts waterways, retention of an un-mowed strip at least several meters wide would be favorable for this species.
- » Freshwater mussels are very sensitive to contaminants and changes in habitat. Maintenance and/or improvement of water quality and habitat integrity via protection of riparian buffers is essential. Any activities that may potentially degrade water quality or alter habitat type (including substrate, flow rate, water levels) should be avoided. Likewise, because larval freshwater mussels require a specific fish host, activities that may result in changes to the fish community or prevent access by fish should be avoided. Another potential threat is introduction of exotic species, such as the zebra mussel, which can out-compete and decimate native mussel populations. The local public should be educated on how to prevent accidental introduction of this invasive species into the St. George River watershed. Finally, an outreach program for freshwater mussel conservation in the St. George River watershed would be extremely beneficial to the conservation of these species.
- » Water quality issues are also important for the two aquatic plant species. Consequently, strict enforcement of shoreland zoning ordinances and Best Management Practices should help to ensure that water quality is maintained.
- » Floodplain forests with swamp white oak are an extremely limited in Maine, and there are only a few mature intact examples. In addition, the rare plants that occur along the St. George River are adapted to partial to full forest canopy and would likely be sensitive to heavy timber harvesting. Some of the floodplain forest west of the St. George River southwest of White Oak Pond has been selectively harvested in the last five years. Other nearby areas support valuable white oak timber stands that may be harvested in the near future. Because of the rarity of this vegetation type in the state, ideally forest harvesting should be avoided.
- » Appropriate conservation strategies include open space tax treatment, conservation easements, and fee ownership.
- » 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.
- » 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



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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 with respect to forestry activities 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 the Maine Department of Inland Fisheries and Wildlife for more information.



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RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Brook Floater	<i>Alasmidonta varicosa</i>	T	S3	G3
	Tidewater Mucket	<i>Leptodea ochracea</i>	T	S2	G3G4
	Yellow Lampmussel	<i>Lampsilis cariosa</i>	T	S2S3	G3G4
Plants	Bottlebrush Grass	<i>Elymus hystrix</i>	SC	S3	G5
	Horned Pondweed	<i>Zannichellia palustris</i>	SC	S2	G5
	Mudwort	<i>Limosella australis</i>	SC	S3	G4G5
	Pale Green Orchis	<i>Platanthera flava var. herbiola</i>	SC	S2	G4T4Q
	Spongy Arrow-head	<i>Sagittaria calycina var. spongiosa</i>	SC	S3	G5T4
	Spotted Pondweed	<i>Potamogeton pulcher</i>	T	S1	G5
	Swamp White Oak	<i>Quercus bicolor</i>	T	S1	G5
Natural Communities	Silver Maple Floodplain Forest	Silver maple floodplain forest		S3	GNR
	Upper Floodplain Hardwood Forest	Hardwood river terrace forest		S3	GNR

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.