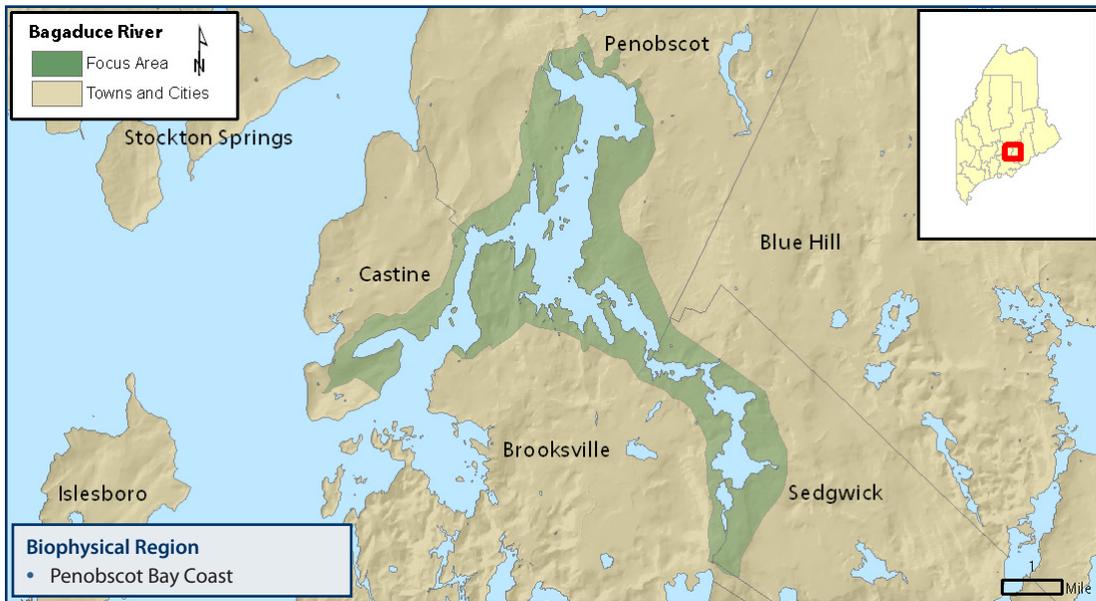


# Bagaduce River



## WHY IS THIS AREA SIGNIFICANT?

The Bagaduce River is one of only a few places in Maine where horseshoe crabs are known to breed. And although the river is only about 12 miles long, it is one of the most productive estuaries in Maine because of its narrow constriction and broad coves. The tidal fluctuations within its protected waterways provide excellent conditions for a productive shellfishery. The intertidal flats beyond the Narrows include more than 1000 acres of habitat for soft-shell clams, marine worms, and other invertebrates. Waterfowl and wading birds flock here for the more than 2700 acres of available habitat, critical for feeding, breeding, and resting during migration.

## OPPORTUNITIES FOR CONSERVATION

- » Encourage landowners to maintain enhanced riparian buffers.
- » Identify and restore tidal restrictions and undersized culverts.
- » Maintain intact forested buffers along water bodies and wetlands to protect water quality and provide valuable riparian habitat for wildlife.
- » Maintain natural hydrology by avoiding drainage or impoundment of wetlands, streams or adjacent water bodies.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: [www.beginningwithhabitat.org/toolbox/about\\_toolbox.html](http://www.beginningwithhabitat.org/toolbox/about_toolbox.html).

*Photo credits, top to bottom: Paul Cyr, Steve Walker, Pete Thayer, Steve Walker, Paul Cyr*

## Rare Animals

Bald Eagle

## Significant Wildlife Habitats

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

## Public Access Opportunities

- » Fort George, MBPL
- » Battery Gosselin SHS, MBPL
- » Frederick Foote Family Natural Area, Hatch Natural Area and Wescotts Island, MCHT



Horseshoe crabs, Pete Thayer

## FOCUS AREA OVERVIEW

The diverse resources found in the mudflats, coves, tidal creeks, and estuaries around the Bagaduce River all provide abundant breeding grounds, feeding areas, and nesting areas for birds, invertebrates, fish, and shellfish. Broad mudflats provide important habitat for marine worms, which are commercially harvestable, and contribute to critical feeding grounds for migratory birds and other species. Tidal waterfowl and wading bird habitat is abundant in the protected coves of the Bagaduce River. Northern Bay, Hatch Cove, Snow Cove, and the river from Tapley Cove to Bagaduce Falls all host significant resources for waterfowl. Migratory shorebirds frequent several areas within the Bagaduce Estuary to feed on their long journeys. The narrow inlets of Hatch Cove and Green Cove include some of the most valued foraging grounds on the Downeast coast, as do the waters around Youngs Island and Battle Island. In fact, almost three thousand acres of tidal and inland waterfowl and wading bird habitats have been identified within the focus area.

Diadromous fish such as American eel and alewives are found within the Bagaduce estuary, and the Bagaduce River is known as one of the few significant horseshoe crab breeding sites in Maine. The protected and slightly warmer waters of Snow Cove are attractive to horseshoe crabs as they breed on the shore of this waterway late each spring.

The unique reversing falls on the Bagaduce River are well known as a thrill for recreationists and a scenic spectacle for visitors who come to see the wildlife such as seals and bald eagles that frequent the area. However the reversing falls also contribute to unique ecological conditions upstream that in turn support abundant wildlife. The falls limit tidal fluctuations upstream, creating more protected conditions ideal for a productive shellfishery. Oysters, clams, and other shellfish and marine invertebrates thrive in the nutrient rich, shallow, sheltered waters. These same conditions also support abundant eelgrass beds in Snow Cove and in Northern Bay (especially from Johnson Point to Gravel Island). The vast underwater meadows provide valuable nursery, shelter, and feeding area for many fish, waterfowl, wading birds, invertebrates, and other wildlife. Black Stream, Snow Brook and Camp Stream provide high value brook trout fisheries.

## CHARACTERISTIC SPECIES

There are a number of **bald eagle** (*Haliaeetus leucocephalus*) nesting locations in the Bagaduce River estuary. The islands in the northern arm of Northern Bay offer excellent nest sites for bald eagles, as do the peninsulas up and downstream of Bagaduce Falls.

The Bagaduce River is one of few significant **horseshoe crab** breeding sites in Maine. Horseshoe crabs occur in protected sandy beach areas, nearshore shallow waters, intertidal flats,

and deep bay waters from the Gulf of Maine to the Gulf of Mexico. Spawning occurs in late spring on protected sandy beaches at high tides of the new and full moon. Males arrive first and await the females who will lay up to 80,000 eggs in a spawning season, less than 10 of which will reach adulthood. Horseshoe crabs feed primarily on clams and worms, and in turn are fed upon by shorebirds (including the State Endangered least tern and the State Endangered and Federally Threatened piping plover), crabs, gastropods, many fish species, and sea turtles. Shoreline development and subsequent habitat degradation is a potential threat to Maine populations. In 2003, taking and possession of horseshoe crabs became prohibited in Maine.

### CONSERVATION CONSIDERATIONS

- » Eagles are extremely sensitive to disturbance during their nesting season. Any activities near their nests or within their nesting territory during this period may cause nest failure or may even cause adults to abandon the nest. In general it is recommended that a 330-foot radius be left undisturbed buffer around an eagle nest during any kind of land-clearing or timber harvest activity. Habitat protection within ¼ mile radius of a nesting site is another significant measure that can help support nesting eagles. Consult with a MDIFW biologist prior to planning any activity that may disturb the forest around an eagle nest. Eagles and their nest are protected by the USFWS under the Bald and Golden Eagle Protection Act.
- » Eelgrass is sensitive to losses due to disease, storms, sediments, ice damage, dredging, shellfishing, propeller damage, pollution, nutrient enrichment, runoff, jet skis, and inboard and outboard motors. In 1931-1932, a wasting disease decimated 90% of the eelgrass in the North Atlantic. Mussel dragging can pose severe and long lasting threats to eelgrass beds; it takes an average of 11 years for eelgrass in dragged areas to grow to 95% cover in undisturbed beds. Eelgrass is a key indicator for assessing nitrogen loading as it will rapidly decline due to shading by algae overgrowth.
- » Excessive and poorly planned shoreline development can have adverse impacts on estuarine habitat through increased nutrient loads, siltation, and loss of a habitat buffer.
- » Seawalls and other shoreline stabilization techniques (e.g. riprap) can disrupt sediment inputs from natural erosion processes resulting in alterations to the sediment structure. This can adversely affect species composition and the productivity of mudflats
- » Shoreline development and subsequent habitat degradation are potential threats to Maine small populations of

### Ecological Services of the Focus Area

- Cleans water running off land prior to discharge into ocean.
- High quality habitat for waterfowl, wading birds, and other wildlife.
- Important component of regional biodiversity.
- Major migratory stopover, feeding, breeding and roosting area for myriad bird species.
- Nursery for juvenile fish and shellfish.
- Nutrient export to marine food webs.

### Economic Contributions of the Focus Area

- Acts as protective buffer for storm surge.
- Contributes to recreational value of the area by protecting water quality, fisheries, and wildlife habitat.
- Provides scenic vistas that raise property values.
- Serves as a valuable recreational resource.
- Supports eelgrass and mudflats and their associated marine resource industries (commercial fish, shellfish, bait worms, etc.)

Horseshoe Crab. Though generally been overlooked as a resource, Horseshoe Crabs in Maine are very vulnerable to depletion from any harvesting activities. In 2003, taking and possession of Horseshoe Crabs became prohibited in Maine.

- » This area includes Significant Wildlife Habitat for waterfowl and wading birds. Both land managers and private landowners should follow best management practices in and around wetlands, shoreland areas, and Significant Wildlife Habitat. Maintaining wide forested buffers along all lakes, rivers, streams, and wetlands will provide valuable riparian habitat for many wildlife species.
- » The integrity of the marsh community is dependent on the maintenance of the tidal hydrology in a natural condition. Channel dredging may cause erosion of adjacent marsh banks and disrupt natural sedimentation patterns in the lower marsh. Partial tidal restriction from culverts causes increased fresh water influence (reduced salinity) in the upper marsh and a subsequent increase of oxygen. Increased oxygen leads to deterioration of the upper marsh through decreases in peat elevation and shifts in plant species.

- » Improperly sized culverts and other stream crossing structures can also 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.
- » Current projections suggest sea level will rise at least 2 feet in the next century due to changing climate and warming temperatures. As sea levels rise, coastal habitats will begin to migrate inland. In areas where this inland migration is blocked by development these habitats will be lost. Conservation of low-lying, undeveloped uplands where coastal marshes, beaches, and other intertidal natural communities can migrate inland with sea level rise should be promoted.
- » 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	Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	S4B,S4N	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.