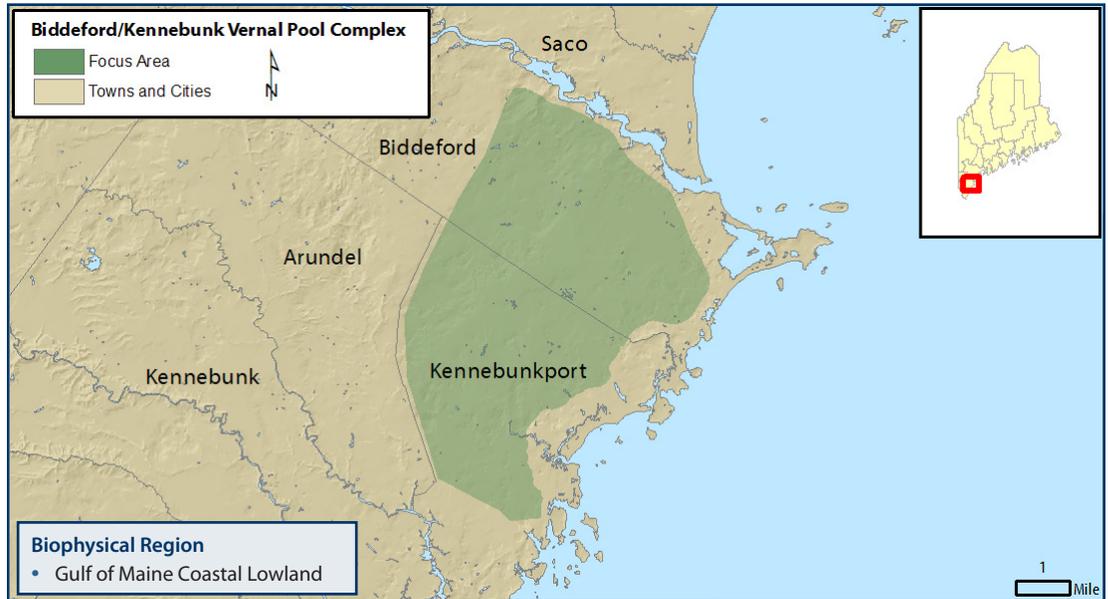


Biddeford/Kennebunkport Vernal Pool Complex



WHY IS THIS AREA SIGNIFICANT?

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area includes thousands of acres of undeveloped forest and wetlands in Biddeford and Kennebunkport. The biological significance of this area is primarily a result of the high concentration of pocket swamps and vernal pools in an undeveloped landscape, an increasingly rare occurrence in Maine. The swamps and vernal pools provide habitat to rare species, most notably to Blanding's and spotted turtles, both species found primarily in the southern most part of the state where increasing development is contributing to fragmentation and loss of habitat.

OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to permanently protect remaining undeveloped areas and significant features.
- » Encourage towns to improve approaches to development that may impact focus area functions, including approaches to limit roads and habitat fragmentation.
- » Encourage enhanced riparian buffers and best management practices for forestry, vegetation clearing, and soil disturbance activities near wetlands and other significant features.

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

Rare Animals

- Saltmarsh Sharp-tailed Sparrow
- Spotted Turtle
- Blanding's Turtle
- Wood Turtle
- Eastern Ribbon Snake

Rare Plants

- Small Reed-grass
- Button Sedge

Rare and Exemplary Natural Communities

- Salt-hay Saltmarsh

Significant Wildlife Habitats

- Inland Waterfowl and Wading Bird Habitat
- Deer Wintering Area
- Significant Vernal Pool

Public Access Opportunities

- » Kennebunk Greenbelt
- » Rachel Carson NWR, USFWS



Vernal Pool, Maine Department of Inland Fisheries and Wildlife

FOCUS AREA OVERVIEW

The Biddeford/Kennebunkport Focus Area covers 16,000 acres and includes thousands of acres of undeveloped forest and wetlands located in eastern Biddeford and northern Kennebunkport. The biological significance of this area is due to the high concentration of pocket swamps and vernal pools. The area is underlain by glacial till including moraine formations and by glacio-marine deposits including clay, both of which impede drainage and help create this unusual high density of swamps, vernal pools, and small streams. Concentrations of pocket swamps and vernal pools in undeveloped landscapes are becoming increasingly rare in Maine.

Although the focus area is bisected by a number of roads, it is likely that the interior of each of the remaining unfragmented forested blocks has never been cleared for farming due to the poor quality of the soils. The forest through much of the area is dominated by oak and pine, and the wetlands are largely dominated by red maple. Timber harvesting has probably been the primary historical use of these lands.

CHARACTERISTIC SPECIES

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 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, grey tree frogs, and other common amphibians, as well as by several rare species. The amphibians and aquatic invertebrates that are dependent on these ponds for survival are an important food resource for 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 on the pool bottom.

The vernal pools, wetlands and uplands in this focus area support the state Threatened **spotted turtle** (*Clemmys guttata*) and the state Endangered **Blanding's turtle** (*Emys blandingii*). Spotted and Blanding's turtles are generally found only in the southern most part of the state where increasing development contributes to loss of habitat, habitat fragmentation, and loss of individuals at road crossings. Spotted and Blanding's turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools in large, intact forested landscapes.

They also use small streams, shrub swamps, and wet meadows. 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 critical for basking, aestivating (a period of late summer inactivity), nesting, and as travel corridors between wetlands.

Spotted and Blanding's turtles have evolved relatively long adult life spans to offset the long time it takes to reach reproductive maturity and to offset high levels of nest mortality. Because of this unusual life history, spotted and Blanding's turtle populations are at low densities, and thus populations are extremely vulnerable to any human sources of adult mortality. Road mortality and collecting for pets, for example, can be 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 (i.e., domestic cats, and raccoons), pollution, filling of small wetlands, and blocking upland travel corridors – also limit populations. Spotted and Blanding's turtles are strictly protected from take (collecting, killing or possession) by the Maine Endangered Species Act.

Vernal pools and pocket swamps are sometimes habitat for rare plant species in the southern most part of the state; however there has only been limited rare plant inventory within this focus area. Two rare plants, **small reed grass** (*Calamagrostis cinnoides*) and **button sedge** (*Carex bullata*), have been documented from specific locations within the focus area.

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area also supports **Deer Wintering Areas** including those mapped along portions of the upper Batson River, Little River, north of Lord's Pond, the Round Swamps area, and the largest that extends northwest from Tattle Corner and includes the upper watershed of Dungeon Brook. High to moderate value



Spotted Turtle, Maine Department of Inland Fisheries and Wildlife

Ecological Services of the Focus Area

- Retains sediments and nutrients
- Stores and conveys floodwaters
- Contributes to regional biodiversity by providing high quality habitat for rare species
- Protects water quality

Economic Contributions of the Focus Area

- Provides recreational opportunities such as hunting, fishing, hiking, and wildlife watching
- Recharges groundwater
- Provides forest products

Inland Waterfowl and Wading Bird Habitats have been mapped along portions of the Batson River and Bush Brook as well. Both Deer Wintering Areas and Inland Waterfowl and Wading Bird Habitats are Significant Wildlife Habitat identified under the Natural Resources Protection Act.

CONSERVATION CONSIDERATIONS

- » Further fragmentation of the large forested blocks that make up this site will gradually lead to a decline in habitat suitability for certain area-sensitive species, and will increase road mortality for rare turtles.
- » Coastal towns in southern Maine have experienced rapid growth in the last decade, and many upland areas near the coast are under increasing threat. Unmanaged growth and sprawl can contribute to habitat fragmentation, introduction of invasive plant populations, and water quality degradation through pollution from storm water runoff and private sewage systems.
- » Inappropriate off road vehicle (ORV) use can degrade wetlands and directly contribute to reptile and amphibian mortality. Existing roads and 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.
- » Avoid road improvement projects (e.g. paving, widening) that may lead to increased traffic volume and speed within ¼ mile of known turtle wetlands. Water crossing structure repair, maintenance and installation projects should follow guidelines for aquatic species passage in order to avoid further fragmentation of aquatic and riparian habitats.
- » No activities should be permitted that could lead to the loss

or degradation of wetlands, regardless of size, including filling, dredging, sedimentation, or changing hydrology unless the activity is reviewed by MDIFW.

- » A minimum 250-foot forested buffer zone should be maintained around wetlands hosting known rare animal locations.
- » Impervious surfaces, yards, buildings and roads should comprise no more than 20% of the landscape within ¼ mile of rare animal wetlands. Natural forest habitat should dominate the landscape around these wetlands. Intensive developments, including subdivisions and service centers, that concentrate human populations within ¼ mile of turtle wetlands should be avoided.
- » Towns should strive to maintain important habitat areas identified by MDIFW in low density, rural settings by identifying these habitat areas in comprehensive plans and zoning accordingly.
- » Low-intensity cutting (single tree or small group selection, firewood harvest) within riparian buffers is compatible as long as operators avoid wetlands. Winter harvests are recommended to minimize impacts to turtles, amphibian prey, and wetland condition. Close adherence to Best Management Practices for forestry activities near vernal pools (available from Maine Audubon Society at 207-781-6180 ext. 222) will generally ensure the protection of all major wetland habitats.
- » 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>.
- » 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.



Blanding's Turtle, Maine Department of Inland Fisheries and Wildlife

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Saltmarsh Sharp-tailed Sparrow	<i>Ammodramus caudacutus</i>	SC	S3B	G4
	Spotted Turtle	<i>Clemmys guttata</i>	T	S3	G5
	Blanding's Turtle	<i>Emys blandingii</i>	E	S2	G4
	Wood Turtle	<i>Glyptemys insculpta</i>	SC	S4	G4
	Eastern or Northern Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
Plants	Small Reed-grass	<i>Calamagrostis cinnoides</i>	SC	S3	G5
	Button Sedge	<i>Carex bullata</i>	SC	S2	G5
Natural Communities	Salt-hay Saltmarsh	<i>Spartina saltmarsh</i>		S3	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.