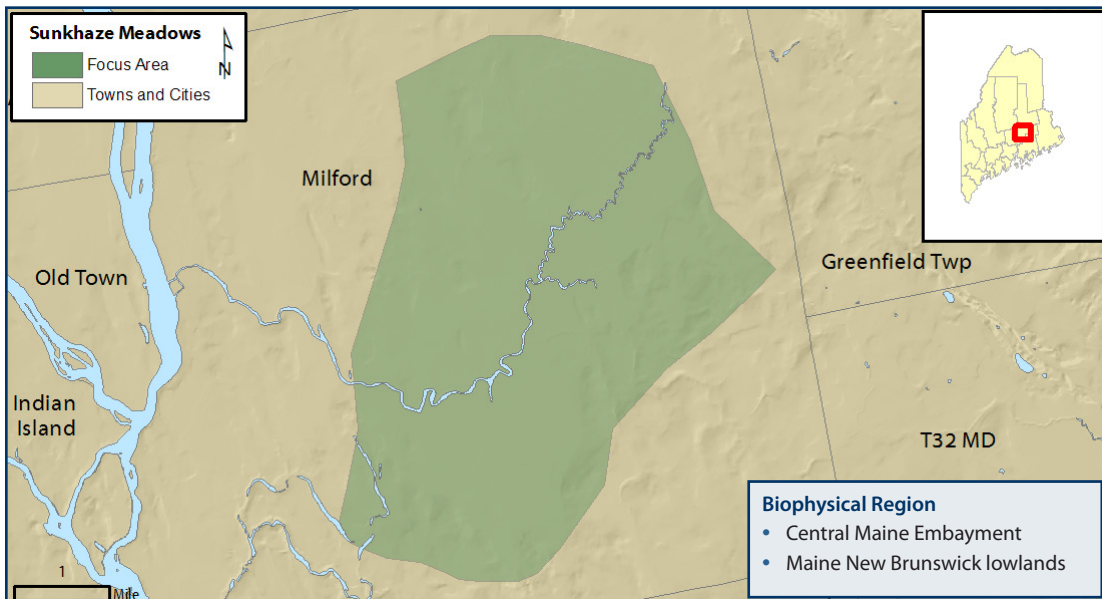
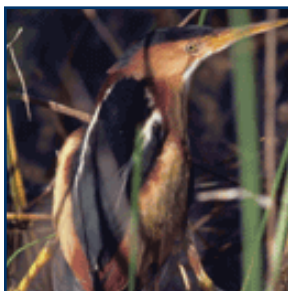


**Sunkhaze Meadows**



**WHY IS THIS AREA SIGNIFICANT?**

The Sunkhaze Meadows Focus Area is an ecologically diverse and pristine wetland complex, and it includes the second largest peatland in Maine. The complex is unique in Maine for the numerous large raised bogs that are separated from each other by extensive areas of streamside meadows. Over 90% of the Focus Area is a National Wildlife Refuge, created in 1988 and managed by the staff of Maine Coastal Islands National Wildlife Refuge.

**OPPORTUNITIES FOR CONSERVATION**

- » Educate recreational users about the ecological and economic benefits provided by the Focus Area.
- » Encourage best management practices for forestry, vegetation management, trail maintenance, and other soil disturbance activities near significant features to maintain ecological functions and values, habitat connectivity for wildlife, hydrologic processes, and watershed protection.
- » Maintain intact forested buffers along water bodies and wetlands to protect water quality and provide valuable riparian habitat for wildlife.
- » Maintain natural hydrologic regime by avoiding drainage or impoundment of the wetlands, streams, or water bodies.
- » Protect sensitive natural features through careful management planning on conserved lands.

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).

**Rare Animals**

- Bald Eagles
- Black Tern
- Least Bittern
- Wood Turtle
- Sedge Wren
- Yellow Rail

**Rare Plants**

- Bog Bedstraw
- Showy Lady's-slipper

**Rare and Exemplary Natural Communities**

- Domed Bog
- Silver Maple Floodplain Forest
- Unpatterned Fen Ecosystem
- Northern White Cedar Woodland Fen

**Significant Wildlife Habitats**

- Inland Wading Bird and Waterfowl Habitat
- Deer Wintering Area

**Public Access Opportunities**

- Sunkhaze National Wildlife Refuge

*Photo credits, top to bottom: Jonathan Mays, Maine Department of Inland Fisheries and Wildlife, Jeremiah Hayden, Paul Cyr, Maine Natural Areas Program*



Sunkhaze Meadows, The Nature Conservancy

### FOCUS AREA OVERVIEW

The Sunkhaze Meadows Focus Area includes a large multi-unit peatland and several areas of forested wetlands along associated drainages. The floodplain receives overflow from both Sunkhaze Stream and the Penobscot River. The large multi-unit peatland is mapped as an Unpatterned Fen Ecosystem, with areas of Domed Bog Ecosystem and an extensive Open Cedar Fen. A Silver Maple Floodplain Forest is restricted to a relatively narrow band along Sunkhaze Stream. The majority of the Focus Area is wetland; much of this wetland provides Inland Waterfowl and Wading Bird Habitat, and a Deer Wintering Area occurs in upland portions. The Sunkhaze Meadow Focus Area supports several rare plants and animals.

### RARE AND EXEMPLARY NATURAL COMMUNITIES

One of the largest features of Sunkhaze Meadows is a nearly 6,000 acre exemplary **Unpatterned Fen Ecosystem**. This extensive wetland is diverse and includes sedge meadows, acidic fens, dwarf shrub bogs, peatland lagg, forested bog, shrub swamp, and a red maple swamp. Unpatterned fens are characterized by ground water from the adjacent uplands that moves through the area, bringing nutrients to the plants that grow there.

A nearly 2,000 acre exemplary **Domed Bog Ecosystem** within the Focus Area consists of five raised units with some concentric patterning. Peat accumulates in the center of these ecosystems and maintains a perched (or raised) water table. Vegetation zonation is common, with more nutrient-demanding vegetation around the perimeter of the ecosystem and low-nutrient vegetation on the more raised interior portions. This ecosystem is primarily a mix of dwarf shrub bog and sweetgale mixed shrub fen, with lesser amounts of black spruce bog woodland, red maple woodland swamp, tussock sedge meadow, and mixed tall sedge fen.

An extensive **Open Cedar Fen**, nearly 400 acres in size, is also within the Focus Area and is dominated by a canopy of northern white cedar, with a dense mix of rough-leaved alder, winterberry, black ash, and occasional gray birch and red maple. A large population of the rare Showy Lady's-slipper is in this open cedar fen. A narrow **Silver Maple Floodplain Forest** occurs along Sunkhaze Stream.

### CHARACTERISTIC SPECIES

The peatlands and associated meadows here support several rare plants and animals. **Showy Lady's-slippers** (*Cypripedium reginae*) grow in three areas of the Focus Area, with the largest

population in the Open Cedar Fen. In 2002, five plants were transplanted into interior areas from the Stud Mill Road, where they were threatened by expanded road construction. (Generally, it is not recommended to transplant Lady's-slippers, because they have unique symbiotic relationships with fungi, but in cases where they would otherwise be destroyed, transplantation may be warranted). The rare **Bog Bedstraw** (*Galium labradoricum*) grows in another section of the Domed Bog.

The 4,300+ acre **Inland Waterfowl and Wading Bird Habitat** supports populations of **bald eagle, black tern, least bittern, sedge wren, and yellow rail**, as well as the uncommon **wood turtle**.

The **black tern** (*Chlidonias niger*) is the only North American tern that breeds primarily in inland, freshwater wetlands, 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 wetlands, fields, and water bodies. Black terns are present in Maine only for the brief (2-3 month) breeding season, and spend 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.

The **sedge wren** (*Cistothorus platensis*) is another bird listed as Endangered in Maine. This primarily Midwestern species nests at only a handful of sites in Maine, which is its northeastern range limit. These birds breed in small habitat patches of freshwater meadows dominated by grasses and sedges, and in the grassy, upland borders of freshwater marshes. They are dependent on water level at their nest sites and prefer little to no standing water, so the yearly amount of rainfall may determine if a nest site is suitable in a given year, and the birds may abandon the area if it is too wet. Nesting in the northeast begins in June and can occur through late summer. Territories may be as large as half an acre and have several nests made of a hollow ball of grasses woven together with an opening on the side. Sedge wrens are primarily ground feeders and insect eaters. Fall migration begins in September or October.

**Bald eagles** (*Haliaeetus leucocephalus*) were nearly extirpated because of widespread use of environmental contaminants that caused eggshell thinning and impaired reproductive success. With bans on the use of these contaminants and habitat protection measures, bald eagles have made a tremendous recovery. In 2009 they were removed from the state Endangered Species list. They remain listed as Special Concern. Bald eagles and their nest sites are protected by the US Fish and Wildlife Service under the Bald and Golden Eagle Protection Act.

There is also a 600+ acre **Deer Wintering Area** within the Sunkhaze Meadows Focus Area. This Focus Area supports a vibrant **brook trout** population and a popular fishery as well.

#### Ecological Services of the Focus Area

- Fisheries habitat
- Floodwater retention
- Sediment/nutrient retention
- Wildlife production
- Contributes to water quality and ecological integrity of Little Buzzy Brook, Buzzy Brook, Baker Brook, Sunkhaze Stream, and the Penobscot River.
- Provides ecological connectivity and high quality habitat, including wintering areas, for waterfowl, wading birds, deer, moose, and other wildlife.
- Supports regional biodiversity by providing habitat for rare plants, animals, and natural communities.

#### Economic Contributions of the Focus Area

- Opportunity for research and education
- Floodwater conveyance
- Groundwater recharge
- Recreation (hunting, hiking, etc.)
- Run-off purification
- Attracts tourism for wildlife observation, paddling, hunting, and angling.
- Provides wildlife habitat for a number of game species that are seasonally important to Maine's rural economy

### CONSERVATION CONSIDERATIONS

- » The Friends of Sunkhaze Meadows NWR is a non-profit volunteer organization dedicated to protecting Sunkhaze Meadows National Wildlife Refuge. The organization also engages in educational activities that highlight the outstanding ecological values of the site.
- » Research, education, and monitoring are appropriate activities for national wildlife refuges.
- » The ecological integrity of peatlands, including all the processes and life forms they support, is dependent on the maintenance of the current hydrology and water quality of these systems. 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. Peatland systems benefit from establishing and/or maintaining vegetative buffers around their perimeter wherever possible. A buffer of 250 feet or more will serve to limit impacts from adjacent development, help prevent erosion, limit coloniza-

- tion of invasive species, and prevent unnecessary impacts from off road vehicle use.
- » 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.
  - » 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.
  - » 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. Eagle nests are protected by the US Fish and Wildlife Service under the Bald and Golden Eagle Protection Act. When planning activities nearby eagle nest sites, contact an US Fish and Wildlife Service biologist for assistance with project planning and permitting.
  - » 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.
  - » This area includes Significant Wildlife Habitat for waterfowl and wading birds. Both public land managers and private landowners should follow best management practices with respect to activities 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. Vegetation removal, soil disturbance and construction activities may require a permit under the Natural Resources Protection Act. Consult with a Maine Department of Inland Fisheries and Wildlife biologist prior to planning any activity that may disturb the forest around an Inland Wading Bird and Waterfowl Habitat.

**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
	Least Bittern	<i>Ixobrychus exilis</i>	E	S2B	G5
	Wood Turtle	<i>Glyptemys insculpta</i>	SC	S4	G4
	Sedge Wren	<i>Cistothorus platensis</i>	E	S1B	G5
	Yellow Rail	<i>Coturnicops noveboracensis</i>	SC	SNA	G4
Plants	Bog Bedstraw	<i>Galium labradoricum</i>	SC	S2	G5
	Showy Lady's-slipper	<i>Cypripedium reginae</i>	T	S3	G4
Natural Communities	Domed Bog	Domed bog ecosystem		S3	GNR
	Silver Maple Floodplain Forest	Silver maple floodplain forest		S3	GNR
	Unpatterned Fen Ecosystem	Unpatterned fen ecosystem		S4	GNR
	Northern white cedar woodland fen	Open Cedar Fen		S4	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.