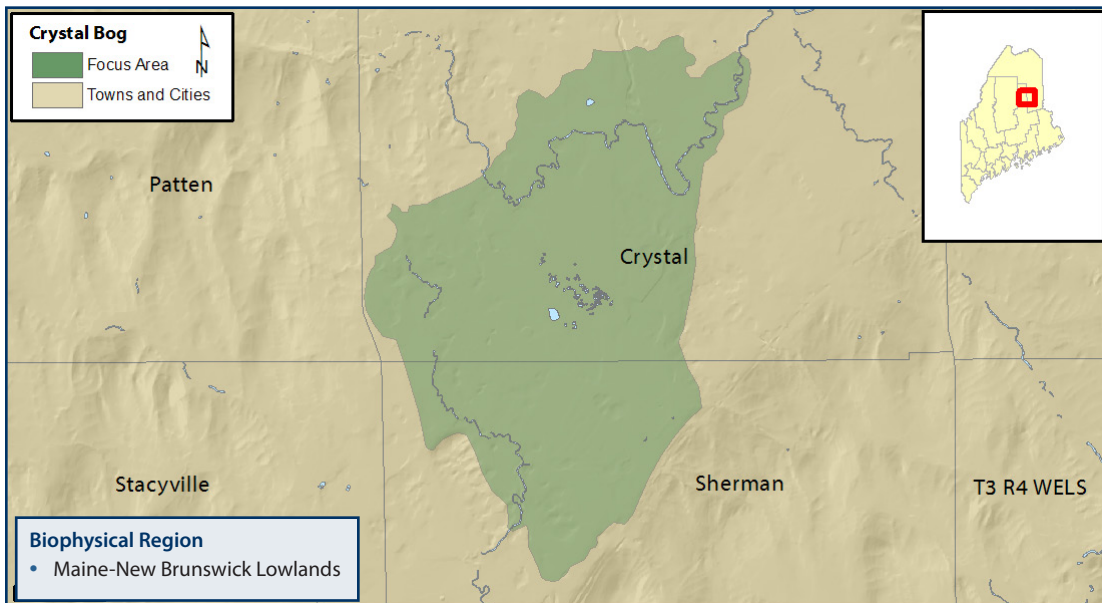
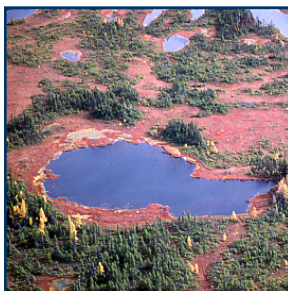


# Crystal Bog



## WHY IS THIS AREA SIGNIFICANT?

The Crystal Bog Focus Area encompasses an extensive suite of wetlands. At the core of the site is 1400 acre Crystal Bog, one of Maine’s best examples of a Domed Bog Ecosystem. In addition to these large wetland features, the site supports one of Maine’s most diverse fens and a large number of rare plants and animals.

## OPPORTUNITIES FOR CONSERVATION

- » Encourage best management practices for forestry, vegetation clearing, and soil disturbance activities near significant features.
- » Encourage town planners to improve approaches to development that may impact focus area functions.
- » Maintain intact forested buffers along water bodies and wetlands to protect water quality and provide valuable riparian habitat for wildlife.
- » Work with landowners to encourage sustainable forest management practices on remaining privately owned forest lands in and around the focus area.
- » Work with willing landowners to permanently protect undeveloped areas and significant features.

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: The Nature Conservancy, The Nature Conservancy, Maine Natural Areas Program, Maine Natural Areas Program, Maine Natural Areas Program*

## Rare Animals

- Creeper
- Clayton’s copper
- Mystery vertigo
- Quebec emerald

## Rare Plants

- Swamp birch
- New England Northern reed grass
- Northern bog sedge
- Livid sedge
- Sparse-flowered sedge
- English sundew
- Slender-leaved sundew
- Moor rush
- Swamp-fly honeysuckle
- Marsh valerian

## Rare and Exemplary

### Natural Communities

- Appalachian - Acadian Basin Swamp Ecosystem
- Domed Bog Ecosystem
- Circumneutral Fen

## Significant Wildlife Habitats

- Inland Waterfowl and Wading Bird

## Public Access Opportunities

- Crystal Bog Preserve, TNC
- Patten-Sherman Multi-Use Trail, MBPL



Crystal Bog, The Nature Conservancy

## FOCUS AREA OVERVIEW

The Crystal Bog Focus Area encompasses an extensive suite of wetlands that are located roughly south of Fish Stream in Crystal and north of the East Branch of Molunkus Stream in Sherman. Much of this low-lying landscape is described as an Appalachian-Acadian Basin Swamp Ecosystem. This type of ecosystem is characterized by a broad wetland basin dominated by forested swamp that is drained by mid-sized streams. At the core of the site is 1400 acre Crystal Bog, one of Maine's best examples of a Domed Bog Ecosystem. In addition to these large wetland features, the site supports one of Maine's most diverse fens and a large number of rare plants and animals.

## RARE AND EXEMPLARY NATURAL COMMUNITIES

The focus area includes two large ecosystems, an **Appalachian-Acadian Basin Swamp Ecosystem** and a **Domed Bog Ecosystem**. The Basin Swamp Ecosystem is comprised of a number of natural community types with cedar swamp and spruce flats being the most common. This example is the largest documented in the state. The Domed Bog Ecosystem is pristine and includes numerous pools interspersed among patches of stunted spruce and heath shrubs. Ecologists have identified at least eight different natural communities within

the two ecosystems, representing incredible plant and animal habitat diversity. The Domed Bog is morphologically very diverse. It has two large lobes joined by a narrower corridor. The larger of the two lobes is well developed with a concentrically patterned convex dome that has numerous secondary pools. The vegetation patterns within this ecosystem show excellent zonation along a nutrient- gradient that is more minerotrophic along the margins and more nutrient-poor at the center. The zonation and patterning has been able to develop in the absence of any significant human disturbance, another feature that adds to the uniqueness of this wetland complex.

The site also includes one of the state's richest **Shrubby Cinquefoil Sedge Circumneutral Fen** communities. Open areas of the fen are dominated by shrubby cinquefoil (*Pentaptylloides floribunda*) and lightly forested areas have young or stunted northern white cedar (*Thuja occidentalis*).

## CHARACTERISTIC SPECIES

Numerous rare plants that require high pH soils to survive grow in this focus area. This site probably has the state's largest population of the rare **swamp birch** (*Betula pumila*). Other rare species include **marsh valerian** (*Valeriana uliginosa*),

**swamp-fly honeysuckle** (*Lonicera oblongifolia*), **moor rush** (*Juncus stygius*), and several species of sedges.

The state endangered **Clayton's copper butterfly** (*Lycaena dorcas claytoni*) has been documented in the Shrubby Cinquefoil Sedge Circumneutral Fen. Clayton's copper is found only in association with its sole larval host plant, shrubby cinquefoil. This uncommon shrub requires circumneutral or alkaline soils and has a scattered distribution throughout Maine. Although not considered rare, there are relatively few cinquefoil stands large enough to support viable Clayton's copper populations. Clayton's copper is currently known from only eleven sites worldwide - nine in Maine centered in and around northeastern Penobscot county and two sites just over the border in New Brunswick. With the majority of the population located in Maine, the state has an important role in conserving this rare species.

The Appalachian-Acadian Basin Swamp Ecosystem includes two drainage systems: the East Branch of Molunkus Stream drains to the south and Fish Stream drains to the north. The **creeper** (*Strophitus undulatus*), a rare mussel species, inhabits Fish Stream. Although widely distributed across the state and throughout its range, the creeper is rarely abundant. Usually fewer than ten individuals are found at a single location, and there is considerable question about the long-term viability of such small populations. Consequently, this species has been listed as special concern in Maine. The creeper prefers clean, flowing water, and thus habitat degradation and pollution have probably affected this species.

The majority of Crystal Bog and its associated tributary streams provide important **Inland Waterfowl and Wading Bird Habitat**. These areas provide undisturbed nesting habitat and undisturbed, uncontaminated feeding areas and are essential for maintaining viable waterfowl and wading bird populations.

### CONSERVATION CONSIDERATIONS

- » The ecological integrity of wetlands including peatland ecosystems and the processes and life forms they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. 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 that can degrade the high quality natural systems that occur here.
- » 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.
- » Peatland systems benefit from establishing and/or maintain-

#### Ecological Services of the Focus Area

- Provides high quality habitat for waterfowl, wading birds, and other wildlife
- Supports regional biodiversity by providing habitat for rare plants, animals, and natural communities.
- Recharges groundwater

#### Economic Contributions of the Focus Area

- Provides a scenic viewshed
- Provides opportunities for research and education

ing 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 colonization of invasive species, and prevent unnecessary impacts from off road vehicle use.

- » This area includes Significant Wildlife Habitat for inland wading birds and waterfowl. 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 MDIFW for more information.
- » Gravel mining in adjacent deposits that include the local groundwater flow may reduce water levels in the fens especially. Drainage ditches along the railroad and culverts under the railroad bed also may have a significant impact on water levels in the fens.
- » 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	Clayton's Copper	<i>Lycaena dorcas claytoni</i>	E	S1	G5T1	
	Quebec Emerald	<i>Somatochlora brevicincta</i>	SC	S2	G4	
	Creeper	<i>Strophitus undulatus</i>	SC	SNR	G5	
	Mystery Vertigo	<i>Vertigo paradoxa</i>	SC	SNR	G3G4Q	
	Swamp Birch	<i>Betula pumila</i>	SC	S2S3	G5	
	New England Northern Reed Grass	<i>Calamagrostis stricta ssp. inexpansa</i>	E	S1	G5T5	
Plants	Northern Bog Sedge	<i>Carex gynocrates</i>	SC	S2	G5	
	Livid Sedge	<i>Carex livida var. radicaulis</i>	SC	S2	G5T5	
	Sparse-flowered Sedge	<i>Carex tenuiflora</i>	SC	S3	G5	
	Showy Lady's-slipper	<i>Cypripedium reginae</i>	T	S3	G4	
	English Sundew	<i>Drosera anglica</i>	E	S1	G5	
	Slender-leaved Sundew	<i>Drosera linearis</i>	E	S1	G4	
	Moor Rush	<i>Juncus stygius ssp. americanus</i>	SC	S2	G5T5	
	Swamp Fly-honeysuckle	<i>Lonicera oblongifolia</i>	SC	S3	G4	
	Prairie White-fringed Orchid	<i>Platanthera leucophaea</i>	E	S1	G3	
	Marsh Valerian	<i>Valeriana uliginosa</i>	SC	S2	G4Q	
	Natural Communities	Appalachian - Acadian Basin Swamp Ecosystem	Appalachian - acadian basin swamp ecosystem		S4	GNR
		Domed Bog	Domed bog ecosystem		S3	GNR
		Circumneutral Fen	Shrubby cinquefoil - sedge circumneutral fen		S2	G2G3

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.