

## Machias Bay

Cutler, Machiasport, Machias, Whiting, and Marshfield, Maine

### ***Description of Cutler West:***

The Cutler West focus area encompasses two peninsulas that lie west of the town of Cutler. Several peatlands of statewide significance and the Sprague Neck waterfowl habitat are among the most noteworthy ecological features within this focus area.

Kelley Heath is a roughly 225 acre wetland located east of Route 191 and just south of a gated former Navy road. The wetland includes a 125-acre coastal plateau bog surrounded by black spruce flats. The main part of the bog, which was apparently bull-dozed about 30 years ago, is dominated by deer-hair sedge (*Trichophorum cespitosum*) and black crowberry. Other common herbs and shrubs include tussock cotton-grass (*Eriophorum vaginatum*), sheep laurel (*Kalmia angustifolia*), bog laurel (*Kalmia polifolia*), small cranberry (*Vaccinium oxycoccos*), Labrador tea (*Rhododendron groenlandicum*), and black chokeberry (*Photinia melanocarpa*). Vegetation is quite uniform. Other than the removal of the tree and shrub layer, the surface disturbance apparently had a limited long-term affect on the bog's vegetation. The southwest portion of the bog may not have been disturbed, based on the greater abundance of dwarf black spruce, other shrubs, and hummocks and hollows. Overall, this is one of the larger examples of a coastal plateau bog, and it is exhibiting good recovery from past disturbance.



*Kelley Heath*

The North Cutler Heaths consist of three proximal peatlands, ranging from 10 to 29 acres in size. These coastal plateau bogs are located north of the Ridge Road, just east of the former Cutler Navy base. The middle of these three peatlands supports black crowberry and sheep laurel on the raised surface of the bog. Other common herbs include bog laurel, small cranberry, Labrador tea, baked apple-berry (*Rubus chamaemorus*), leatherleaf (*Chamaedaphne calyculata*), and deer-hair sedge. There is a fairly distinct marginal slope, but vegetation zonation is not as clear as some other bogs. Over 50 Dragon's mouth orchids (*Arethusa bulbosa*) are scattered in these bogs. This orchid is not listed as rare in Maine, but it is quite uncommon.

West Cutler Heath is a coastal plateau bog on former Navy property, east of Sprague Neck. Black crowberry, baked apple-berry, and sheep laurel dominate the herb layer in most of the bog. Also common are deer hair sedge, bog laurel, small cranberry, Labrador tea and lowbush blueberry (*Vaccinium angustifolium*). Dragon's mouth orchid is frequent. Two old roadbeds or railroad grades have altered the bog. One, running roughly north-south, appears to have impounded the water on the east side of the bog. The other old roadbed, running roughly east-west, cuts through the middle of the bog; black spruce and larch were clustered along the north side of this raised road, where some organic material may have been pushed when the road was created.

***Description of Larrabee Heath:***

Larrabee Heath is a large (~235 acre), undisturbed, coastal plateau bog with steep marginal slopes on its north and south sides. Habitat zonation is well developed in this confined plateau bog. The Heath occupies an elongated valley and has stream flow confined to its north and south margins, where “marginal streams” (i.e., at the margin of the bog) abut upland slopes. Lateral expansion of the raised plateau has restricted these streams into narrowly meandering laggs (wet depressions). There is significant beaver activity below the confluence of the two streams. The combination of confined marginal streams and beaver ponding is commonly associated with inland raised bog systems, but is rare in coastal bog systems.

At varying distances from the marginal streams the gentle peat slope abruptly rises 3-6 feet. This raised plateau, which is dominated by dwarf shrub heath vegetation, constitutes the predominant vegetation community at Larrabee Heath—occupying approximately half of the wetland acreage. The most abundant shrubs here include sheep laurel (*Kalmia anagustifolia*), leatherleaf (*Chamaedaphne calyculata*), mountain holly (*Nemopanthus mucronata*), and black crowberry



*Color infra-red air photo of Larrabee Heath, 1991*

(*Empetrum nigrum*). Peat moss is ubiquitous with increasing amounts of *Sphagnum fuscum* at higher elevations on the

plateau. Several acres of forested bog dominated by stunted black spruce (*Picea mariana*) are also present.

At the eastern end, beyond the confluence of the two lagg streams, Larrabee Heath is dominated by wet meadows that have been flooded by recent beaver activity. Grasses and sedges, especially bluejoint grass (*Calamagrostis canadensis*) and tussock sedge (*Carex stricta*), dominate the wet stream/pond margins while alder shrubs predominate in areas at greater distances from the stream.

The surrounding upland areas are spruce-fir forests dominated by red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), and paper birch (*Betula papyrifera*) with signs of historic selective cutting and damage from spruce budworm. The age of the surrounding forests is approximately 70 to 100 years. Larrabee Heath and the surrounding uplands may have experienced a fire around the turn of the century.

### ***Characteristic Animals***

Much of the shoreline of the focus area provides high quality habitat for **tidal waterfowl and wading birds**, providing undisturbed nesting habitat and undisturbed, uncontaminated feeding areas necessary to maintain viable waterfowl and wading bird populations. Several areas in Little Machias, Machias, and Holmes Bays are mapped **shorebird areas**, important stop over sites for resting and feeding for migratory shorebirds. Old Man Island, Hog Island, and Double Head Shot Island are **seabird nesting islands**. **Razorbills**, a state Threatened seabird, nests on Old Man Island. The Gulf of Maine is the extreme southern edge of the razorbill's range.

Numerous **bald eagles** nest along the coastline throughout the focus area and **harlequin ducks** (*Histrionicus histrionicus*) winter along the coast in Cutler. Harlequin ducks, a state Threatened species, are small diving sea ducks. About 1000 birds from the Atlantic population winter in Maine, mostly in small flocks on rough coastal waters and exposed rocky shores.

**Horseshoe crabs** (*Limulus polyphemus*) can be found in the protected sandy beach areas, nearshore shallow waters, intertidal flats, and deep bay waters. Horseshoe crabs feed primarily on clams and worms, and in turn are fed upon by shorebirds, crabs, gastropods, many fish species, and sea turtles. Horseshoe crabs are also an important resource for medical research, the pharmaceutical products industry, and as eel and conch bait. Because of their small populations in Maine and their life history characteristics, horseshoe crabs are very vulnerable to depletion from any harvesting activities. **Marine worms**, including commercially harvestable bloodworms and sandworms, and **shellfish** found in the intertidal zone of the Machias Bay Focus area are important both ecologically and economically as well.

Eelgrass (*Zostera marina*) forms extensive underwater meadows in shallow bays and coves, tidal creeks, and estuaries of the Machias Bay Focus Area and support many of the above mentioned species. Eelgrass beds are among the most productive plant communities in the world, and they are ecologically important because they serve as a nursery, habitat, and feeding area for many fish, waterfowl, wading birds, invertebrates, and other wildlife, including commercially valuable fish and shellfish. Eelgrass reduces water pollution by absorbing nutrients, and it dampens wave energy and slows currents, which helps stabilize sediments and buffer shorelines. Because of its important ecological functions, loss of eelgrass beds can result in reduced fish and wildlife populations, degraded water quality, and increased shoreline erosion.

Two of the coastal bog ecosystems of Cutler Heath host the **crowberry blue** – a state rare butterfly that feeds on black crowberry in its larval stage.

***Rare Species and Exemplary Natural Community Table for Machias Bay***

Common Name	Latin Name	S-RANK	G-RANK	State Status
<b><i>Exemplary Natural Communities</i></b>				
Coastal Plateau Bog Ecosystem		S3	GNR	N/A
Maritime Slope Bog		S2	G2G5	N/A
<b><i>Rare Animals</i></b>				
Bald eagle	<i>Haliaeetus leucocephalus</i>	S4B, S4N	G5	T
Crowberry blue	<i>Lycaeides empetri idas</i>	S2	G5	SC
Razorbill	<i>Alca torda</i>	S2B	G5	T
<b><i>Rare Plants</i></b>				
Livid sedge	<i>Carex livida</i> var. <i>radicaulis</i>	S2	G5T5	SC

***Other Habitats Mapped by MDIFW:***

Tidal Waterfowl / Wading Bird Habitat  
 Freshwater Waterfowl / Wading Bird Habitat  
 Bald Eagle Essential Habitat  
 Shorebird Feeding and Roosting Areas  
 Seabird Nesting Islands

***Other Coastal Features:***

Atlantic Salmon Habitat  
 Eelgrass beds  
 Horseshoe crab habitat  
 Harlequin duck wintering habitat  
 Marine Worms  
 Shellfish

If Focus Area is redrawn to include Old Man Island, razorbill and seabird nesting islands should be added to these lists.

***Conservation Considerations:***

- In general, the greatest threats to peatlands include peat mining, cranberry harvesting, timber harvest around the forested perimeters, and development.
- The ecological integrity of peatlands, including all the processes and life forms they support, are 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.
- Continued beaver activity may alter the vegetation of the Larrabee Heath wetland from peatland flora (e.g., ericaceous shrubs, peat mosses) to more minerotrophic vegetation (i.e., plants adapted to mucky shores, such as blue-joint grass.) Monitoring through air photos and field plots would help to clarify the continuing impacts of beavers.
- 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 colonization of invasive species, and prevent unnecessary impacts from off road vehicle use.

- Improperly sized and installed crossing structures such as culverts can block fish and invertebrate passage through stream channels often resulting in aquatic habitat fragmentation. Future management activity should avoid additional impacts to the site's hydrology.
- Invasive plant species such as common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) may pose future threats to this wetland.
- Maintenance of the open grassland habitat may have created favorable habitat for grassland birds. Future management for wildlife could consider maintaining a mowing regime.
- Eelgrass is sensitive to losses due to disease, storms, pollution, nutrient enrichment, dredging, shellfishing, ice damage, propeller damage, sediments, runoff, jet skis, mussel dragging, and inboard and outboard motors. Because of its important ecological functions, loss of eelgrass beds can result in reduced fish and wildlife populations, degraded water quality, and increased shoreline erosion.
- Harlequin Ducks have extremely low reproductive potential compared to other waterfowl, and the North American population is especially susceptible to sources of adult mortality.
- Shoreline development and subsequent habitat degradation are potential threats to Maine small populations of 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.

***Protection Status:***

The U.S. Navy formerly owned roughly 3,000 acres as a communications center. In the fall of 2003, a purchase and sale agreement was made with the Cutler Development Corporation and the Sunset Group LLC to re-develop the base. Re-development will tentatively include residences, commercial buildings. It is not clear whether special protection will be granted to ecologically important areas.

Approximately 80% of the Larrabee Heath coastal plateau bog of lies within a 427-acre parcel owned by The Nature Conservancy.