Merrymeeting Bay

Bath, Bowdoinham, Dresden, Richmond, Topsham, Woolwich

Description:

Merrymeeting Bay has long been recognized as a habitat of special significance for both wildlife and rare plants. **Bald eagles** nest in several locations around the Bay -- most notably Swan Island -- and the Bay supports numerous eagles during the winter. Over 50 species of freshwater fish use the Bay, as well as ten species of anadromous fish, including the rare **Atlantic salmon (*Salmo salar*)**, **shortnosed sturgeon *(Acipenser brevirostrum)*** and **Atlantic sturgeon (*Acipenser oxyrinchus*).** At least one rare mussel species inhabits the Bay, and one of the Bay's small tributaries is the state's only known location for the **redfin pickerel (*Esox americanus*).**

Merrymeeting Bay's freshwater tidal marshes support some of the best habitat for certain rare plant species anywhere in the northeast. Several "hot spots" around the Bay have been previously identified, including Abadagasset Point, Bald Head/Centers Point, Butler Cove, the Eastern River, and Lily Cove, among others. The primary intent of MNAP's 1998 surveys was to inventory areas that had NOT previously been surveyed – in a sense testing a theory that at least some rare plants occur anywhere in the Bay where appropriate habitat exists. Thus, the brief descriptions below pertain to areas that had not been previously surveyed. A secondary aim of 1998 rare plant work was to visit two important rare plant sites that had not been visited in over ten years: Butler Cove and the Bowdoinham Wildlife Management Area at the mouth of the Cathance River.

Cathance River Mouth, Merrymeeting Bay *MNAP file photo*

Cathance River, Topsham

Like many other areas of Merrymeeting Bay, the **freshwater tidal marshes** along the Cathance are dominated by wild rice (*Zizania aquatica*), with lesser amounts of pickerelweed (*Pontederia cordata*), water parsnip (*Sium sauve*), soft-stem bulrush (*Schoenoplectus tabernaemontanii*) and river bulrush (*Bolboschoenus fluviatilis*). Perhaps the most notable feature of this stretch of river is the abundance of the globally rare **Eaton's bur marigold (*Bidens eatonii*)**. There are 1,000+ individuals of this rare plant in one 300-meter stretch of the riverbank; this is the largest population observed anywhere in Merrymeeting Bay. Also present in this stretch are the rare **estuary bur marigold (*Bidens hyperborea*)**, **spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*), Parker's pipewort (*Eriocaulon parkeri*),** and **Long's bittercress (*Cardamine longii*)**.

In summary, at least one or two rare plant species were found wherever we stopped, and the entire stretch appears to provide excellent habitat for these species. Except for the cluster of houses at the head of tide and one house that abuts the river from Fisher Road, the upper Cathance River is well-buffered and intact. No purple loosestrife (*Lythrum salicaria*) was observed along this entire river stretch.

MNAP staff found a dead specimen of the rare **tidewater mucket mussel (*Leptodea ochracea*)** in a sand bar at the mouth of the Cathance River. No live specimens were found.

Chop's Creek

A ~100-acre **freshwater tidal marsh** occurs for much of the length of Chop's Creek, dominated by American bulrush (*Schoenoplectus pungens*) at the southern end, and wild rice (*Zizania aquatica*) further upstream, with pickerelweed (*Pontederia cordata*) and bull-head lily (*Nuphar variegatum*) nearer the low tide line throughout the creek. Partway up the creek, an old stone causeway (apparently an old road) creates a narrow tidal constriction. The frequency of rare plants and quality of habitat at Chop's Creek are outstanding. The fringing marshes on the west side of the creek, not far upriver from Chop's Point, contain some of the Creek's best habitat for rare plants. A small cove a few hundred meters north of Chop's Point supports **Parker's pipewort (*Eriocaulon parkeri*), water pimpernel (*Samolus valerandi*), pygmyweed (*Crassula aquatica*), estuary bur-marigold (*Bidens hyperborea*), Eaton's bur-marigold (*Bidens eatonii*), mudwort (*Limosella australis*),** and thousands of **spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*)** plants. Except for pygmyweed, each of these other species were also found scattered further up the creek.

In addition, Chop's Creek supports a greater abundance of submerged aquatic vegetation than any other area visited in Merrymeeting Bay. Dominant species are tapegrass (*Valisneria americana)* and pondweeds (*Potamogeton perfoliatus,* among others), but several other species are present. The adjoining uplands are intact and forested, and there are no houses immediately adjacent to the creek.

Eastern River

Sections of the Eastern River shore vary from abrupt banks with overhanging trees to low oxbows and meanders with extensive mudflats of **freshwater tidal marsh** vegetation. These tidal sections are dominated by wild rice (*Zizania aquatica*), soft-stem bulrush (*Schoenoplectus tabernaemontanii*), and American bulrush (*Schoenoplectus pungens*). There are also broad sections of soft, relatively open mud flat exposed at low tide. **Estuary bur-marigold *(Bidens hyperborea*)** was found at nearly every location surveyed. **Spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*)**, **Parker's pipewort *(Eriocaulon parkeri*)**, and **Eaton's bur-marigold (*Bidens eatonii*)** were found sporadically.

The Eastern River appeared to be much siltier than other tributaries of Merrymeeting Bay. This may be due to one or more of the following factors: bedrock geology (portions of the Eastern River are underlain by sandstone and pelite -- more erodible rock than the rest of

Merrymeeting Bay), surficial geology (the upper Eastern River is mapped as alluvium, while other tributaries of the Bay are mapped as glacial marine sediments), and land use (there are comparatively more farms adjacent to the Eastern River than the Cathance or Abadagasset, and some of these farms are immediately adjacent to the river with no buffer).

Lines Island

The southeast side of Lines Island contains a 20-acre **freshwater tidal marsh** that supports some of the larger populations of rare plants in Merrymeeting Bay. Some but not all of the rare plants also occur in three other small tidal marshes. These marshes are dominated by wild rice and contain softer mud that support hundreds of **spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*)** along with a handful of **Parker's pipewort** (***Eriocaulon parkeri*)** and **estuary bur-marigold** (***Bidens hyperborea*)**. **Water pimpernel (*Samolus valerandi*)** occurs sporadically where the base of the rocky upland meets the mud flats. Purple loosestrife (*Lythrum salicaria*) is present but relatively infrequent along the upper edge of the marsh.

The interior of the island is an unremarkable, mid to late successional oak/pine forest, with evidence of a former farm (stone walls, apple trees, old brick structures) on the southwest side, and a standing but abandoned old camp at the southern tip. One interesting feature is a small natural shagbark hickory (*Carya ovata*) stand that occurs along the southeastern side of the island.

In part because of its importance to **bald eagles (*Haliaeetus leucocephalus*)**, nearly all of Lines Island was recently protected as a wildlife refuge and is now owned by the Maine Department of Inland Fisheries and Wildlife.

Abadagasset Point to Pork Point

The cove on the north side of Abadagasset Point is a broad, extensive (~ 200 acres) tidal flat with roughly zonal bands of vegetation. The north side of the ledgy Abagadasset Point supports small but viable populations of **Parker's pipewort (*Eriocaulon parkeri*)**, **mudwort (*Limosella australis*), water pimpernel (*Samolus valerandi* ssp. *parviflorus*),** and **Eaton's bur-marigold (*Bidens eatonii*)**. From the Point all the way up the cove's tidal flats, there are scattered but infrequent plants of **estuary bur-marigold (*Bidens hyperborea*)**, **Parker's pipewort (*Eriocaulon parkeri*), mudwort (*Limosella australis*),** and **spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa).*** The shoreline is bordered by agricultural and residential lands, but there is a 10-meter wide forested buffer. In addition, ATV tracks have been observed in the upper sandy flats.

Swan Island

The west side of Swan Island supports a fringing freshwater tidal marsh ranging from a few meters in width to over 50 meters. The variable substrate (soft and firm mud, sand/gravel, cobble, and ledge) along this shoreline provides suitable habitat for seven rare plant species found elsewhere in the Bay. Wild rice (*Zizania palustris* -- the smaller of the two wild rice species), dominates much of the marsh, and other typical associates are frequent, such as waterworts (*Elatine* spp.), three-square bulrush (*Schoenoplectus pungens*) and false pimpernel (*Lindernia dubia*). Some of the wild rice may have originated from historic seeding efforts by MDIFW.

There is no development on the west side of the island, and the entire shoreline is undisturbed. Visitation to the island is limited by MDIFW, so the tidal marshes see very little boat traffic. Based on the appearance of the Kennebec River shoreline in Richmond, it is likely that some or all of the rare plants found on Swan Island occur on that shore as well.

Rare Species/Natural Community Summary Table for Merrymeeting Bay:

Common Name	Latin Name	EO-Ranks	S-Rank	G-Rank
Exemplary Natural Communities				
Mixed Hardwood-Conifer Forest		n/a	S5	not ranked
Hardwood Floodplain Forest		n/a	S3	not ranked
Northern White Cedar Swamp		n/a	S4	not ranked
Freshwater Tidal Marsh		n/a	S2	not ranked
Rare Plants				
Eaton's bur-marigold	*Bidens eatonii*	T	S2	G2
Estuary bur-marigold	*Bidens hyperborea*	SC	S3	G4
Parker's pipewort	*Eriocaulon parkeri*	SC	S3	G3
Long's bittercress	*Cardamine longii*	T	S2	G3Q
Pygmyweed	*Crassula aquatica*	SC	S2	G5
Eastern lileaopsis	*Lilaeopsis chinensis*	T	S2	G5
Mudwort	*Limosella australis*	SC	S3	G4G5
Estuary monkey-flower	*Mimulus ringens* v. *colpophilus*	SC	S2	G5T2Q
Cow lily	*Nuphar advena*	SC	S2	G???
Threadfood	*Podostemum ceratophyllum*	SC	S2	G5
Spongy arrow-head	*Sagittaria calycina*	SC	S3	G5T4
Stiff arrow-head	*Sagittaria rigida*	T	S1S2	G5
Water pimpernel	*Samolus valerandi*	SC	S2	G5T5
Horned pondweed	*Zannichellia palustris*	SC	S2	G5
Rare Animals				
Short-nose sturgeon	*Acipenser brevirostrum*	not listed	S3	G3
Atlantic sturgeon	*Acipenser oxyrinchus*	not listed	S3	G3
Spotted turtle	*Clemmys guttata*	T	S3	G5
Red-fin pickerel	*Esox americanus*	not listed	S?	G5
Bald eagle	*Haliaeetus leucocephalus*	T	S4B/S4N	G4
Tidewater mucket	*Leptodea ochracea*	T	S2	G4
Atlantic salmon	*Salmo salar*	not listed	S3	G5
Ribbon snake	*Thamnophis sauritus*	SC	S3	G5

Other Resources Mapped by MDIFW:

Most of Merrymeeting Bay is mapped as a Coastal Wading Bird and Waterfowl Habitat. Deer Wintering Areas and Inland Wading Bird and Waterfowl Habitats have been identified adjacent to the Bay.

Conservation Considerations:

- Because Merrymeeting Bay drains nearly one third of Maine, the potential for water quality degradation is high. Both the Androsgoggin and Kennebec Rivers have major industries upriver. Although these industries are much cleaner than they were a few decades ago, contamination remains in the Bay's fine-grained sediments. Accordingly, eagle eggs from Merrymeeting Bay have been found to contain some of the highest levels of PCBs ever

recorded (Hayden 1998). Mitigating past and future contamination from the entire watershed will be a continuing challenge.

- Although much of the Bay's shoreline remains undeveloped, the towns surrounding it are experiencing moderate to rapid growth (Krohn 1997). Increased shoreline development may result in habitat fragmentation, water quality degradation, and increased recreational use.

- Invasive species such as purple loosestrife (*Lythrum salicaria*) occur sparsely along the Bay's shoreline. Except for a few disturbed locations such as boat launches and bridges, these non-native plants appear to be kept in check by native species and/or the annual scouring of tidal ice. More systematic monitoring may be helpful to detect any problem areas.

- Within the last five years, the use of personal watercraft has increased dramatically, including illegal use in some of the smaller creeks. Personal watercraft may have negative impacts waterfowl and on sensitive shoreline vegetation.

Protection Status:

Swan Island (~1,500 acres), Lines Island (~ 150 acres), and the Green Point Farm (278 acres) are owned and managed by the Department of Inland Fisheries and Wildlife. MDIFW also manages the 435 acre Bowdoinham Wildlife Management Area at the mouth of the Cathance River and the 180 acre Muddy River parcel at the mouth of the Muddy River. A local land trust, the Friends of Merrymeeting Bay, has obtained conservation easements on several shoreline parcels. Merrymeeting Bay has been identified as a high priority for the North American Waterfowl Management Plan.