

Lacustrine Mud Flat

Overview: Abundance, Environmental Setting, Ecological Processes

Lacustrine Mud Flat is an initial stage in a process known as lake-fill succession. This natural community type is meant to cover aquatic sites—usually shallow lakes or shallow lake embayments—characterized by poorly consolidated sediments composed of remains of planktonic plants and animals, among other materials. Eventually these create a firmer substrate capable of supporting vascular plants, for which the assemblages may be termed marshes, wet meadows, or even inland beaches. Recent work on lake flora in parts of northern Wisconsin yielded some interesting plant records of high conservation significance in these habitats, and as a result we are developing a natural community type to better accommodate environmental characteristics of Lacustrine Mud Flat.

Some authors, e.g., Crum (1988), refer to the substrate material as a “false-bottom.” Biologists familiar with the challenges and unpleasant aspects of working in and around this stuff give it less polite names. “Loon droppings” is the euphemistic descriptor sometimes applied—with little fondness—when referencing this substance. Initially unvegetated, the substrate may eventually reach the point where it is solid enough to allow a sparse growth of vascular plants to take root. As the vegetation increases in density, it will eventually develop the characteristics of other herbaceous wetland communities, such as marsh or wet meadow.

Community Description: Composition and Structure

As this natural community was only recently added to the Wisconsin Natural Heritage Working List, few data are available on the community itself or on the lakes that support it.

Vegetation is typically very sparse on newly exposed surfaces, but over time the density will increase and may even appear lush. Among the common plants associated with the waterbodies supporting this feature are water lilies (*Nuphar* spp., *Nymphaea* spp.) and pondweeds (*Potamogeton* spp.). The terrestrial forms of some aquatic macrophytes may occur on recent exposures of bare mud. In addition to some pondweeds, examples include water star-grass (*Heteranthera dubia*), smartweeds (*Polygonum* spp.), and beggar-ticks (*Bidens* spp.). Graminoids, often of small stature, representing genera such as *Carex*, *Cyperus*, *Dichanthelium*, *Eleocharis*, *Scirpus*, and *Schoenoplectus*, occur as scattered individuals or sometimes in dense beds. Sundews (*Drosera* spp.) may colonize saturated areas devoid of competing vegetation.

Field surveys conducted in north central Wisconsin in the Northern Highland Ecological Landscape revealed the Lacustrine Mud Flats support a number of rare and otherwise notable plant species, including water-thread pondweed (*P.*



A diverse assemblage of herbs has colonized exposed bottom sediments of this shallow, soft, seepage lake. Northern Highland-American Legion State Forest, Oneida County, Northern Highland Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

diversifolius), algae-leaved pondweed (*Potamogeton confervoides*, listed as algae-like pondweed by the Wisconsin State Herbarium), Robbins’ spike-rush (*Eleocharis robbinsii*), hidden-fruited bladderwort (*Utricularia geminiscapa*), eastern purple bladderwort (*U. purpurea*), and northeastern bladderwort (*U. resupinata*).

Data on animals are lacking, but various macroinvertebrates, including odonates and whatever they are feeding on, amphibians, and reptiles are invariably present and sometimes abundant. Black Terns (*Chlidonias niger*) hunt over these sites, and shorebirds, especially spring and fall migrants, forage on the mud flats.

Conservation and Management Considerations

Maintenance of water quality and site hydrology, especially keeping water level fluctuations within the natural range of variability, is one of the key considerations. More data are sorely needed as we cannot say much about the distribution or abundance of Lacustrine Mud Flat at this time, let alone offer many comments on composition and significance of plant and animal assemblages. For an excellent depiction of the difficulties encountered in working “in” the false bottom habitats of Lacustrine Mud Flats, see Figure 2.22 in Crum (1988).

Additional Information

For information on related vegetation types, see the natural community descriptions of Riverine Mud Flat/Beach, Inland Beach, and the marshes (Emergent, Floating-leaved, Submergent, and Wild Rice). In the Aquatic Features section, see the Shallow, Soft, Seepage Lake and Soft Bog descriptions, and in “Selected Habitats,” see the Impoundment description. The National Vegetation Classification type most closely resembling Wisconsin’s Lacustrine Mud Flat community is Lake Mud Flat CEG002313 (Faber-Langendoen 2001).

FROM: Epstein, E.E.. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 in *The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

For a list of terms used, please visit the [Glossary](#).

For a reference list, please see the [Literature Cited](#).