Protecting Wetlands along the Great Lakes Shoreline

MICHIGAN STATE UNIVERSITY EXTENSION

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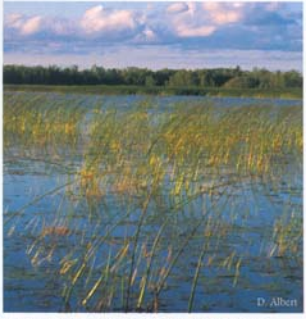
Protecting Wetland

A narrow but ecologically important band of wetlands occurs along large stretches of the Great Lakes shoreline. These wetlands, commonly called **fringing wetlands**, are typically only 100 to 500 yards wide. They are concentrated along the large bays of the Great Lakes, and the largest remaining areas occur on Saginaw Bay, Green Bay and the St. Marys River. Smaller areas occur along all of the Great Lakes.

During normal and high-water periods, these wetlands are often 3 to 4 feet deep along their outer margin, but in extremely low-water conditions, such as those occurring in 1999 and 2000, the entire wetland can be dry. During these periods of low water, landowners often attempt to beautify their shoreline by eliminating the aquatic plants of the wetlands, either by plowing, mowing or applying herbicide. This destruction, especially plowing or applying herbicides, can have lasting negative impact on the wetlands and the many plants and animals that utilize this habitat.



Emergent vegetation flooded at normal water levels.

The entire marsh is dry during a low-water year.

Marsh plowed during 1999 low-water conditions. Plowing eliminates or weakens coastal vegetation, leading to increased erosion of the shoreline.

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Why are these wetlands important?

Trapping sediment along the shoreline.

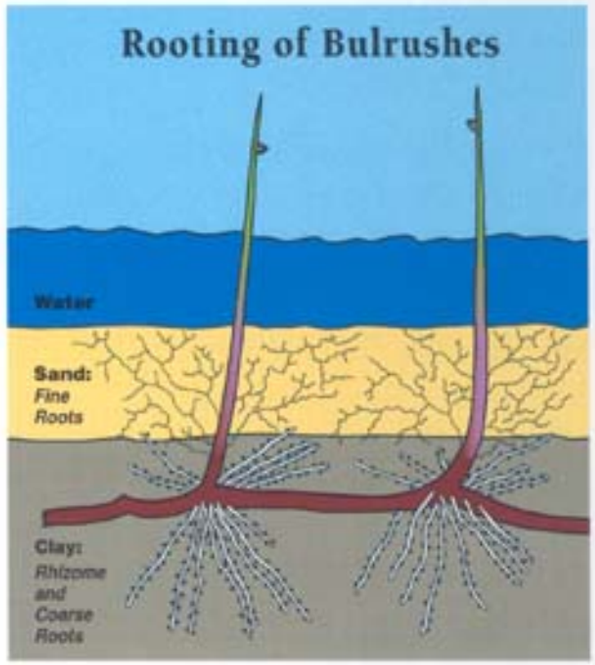
Coastal wetland plants, especially the bulrushes, reduce coastal erosion during high-water conditions.

Dense, fine roots hold the surface sands during storms. Plowing or mowing these plants during low-water conditions can weaken or kill bulrush species, resulting in increased erosion of sand beaches during later high-water periods. The zone being plowed is the zone where wave action will be most severe during high-water periods.

By holding the sand, the shallow bulrush zone next to the beach ridge causes the waves to lose their energy, both because of the shallow water and the turbulence caused by the vegetation. Less energy means less erosion.

D. Albert

Bulrushes growing in dry coastal wetland; dense fine roots bind the surface sand and reduce eroston.



D. Albert

The open bulrush beds are very resistant to wave action, though many stems are broken and die during storms in high-water periods.

Bulrushes produce dense roots; up to 60 feet of horizontal root-like stems (rhizomes) can occupy a square foot of sediment near the upland margins of the wetlands. These rhizomes penetrate the dense underlying clay, and abundant coarse roots penetrate still deeper into the clay. At the surface, a dense mat of fine roots grows through and anchors the overlying sands. Destroying these plants, especially by plowing up the roots, can greatly accelerate erosion during high-water conditions. Bulrush species recover at a

very slow rate, less than 2 feet per year. Therefore, destruction of bulrush beds can result in long-term loss of shoreline protection against erosion; marshes may take hundreds of years to recover.

Exotic plant populations.

Erosion of surface sand exposes subsurface clay, providing conditions for massive colonization by two troublesome exotic species, purple loosestrife and giant bulrush. Both species produce dense vegetation beds along the shoreline. Both have very low value as wildlife food or habitat, and both are very difficult to eradicate. Once they have gained a foothold and are established, both species result in greatly reduced plant diversity and habitat

Purple loosestrife (*Lythrum salicaria*), a beautiful but aggressive exotic plant, often establishes following human disturbances to coastal wetlands.

value. Cat-tails also expand more rapidly on an exposed clay substrate. All three of these species create a tall, dense visual barrier along the lake edge. It is, therefore, important to limit exposure of clay along the shore.

Wildlife and fish habitat.

Many people have a hard time recognizing the dry lakebed with aquatic plants as part of very important coastal wetlands. But when the water levels rise, open bulrush beds provide several values for wildlife and fish.

Fish breed in shallow wetlands, with species such as yellow perch attaching egg masses to bulrushes and

Egg mass of yellow perch among dead bulrush stems.

Yellow perch (*Perca flavescens*).

Waterfowl in coastal wetland. Michigan DNR

other aquatic plants. Another species of game fish, northern pike, spawns in the shallow emergent vegetation. Elimination of these open marshes has resulted in loss of a world famous pike fishery in Sandusky Bay on Lake Erie. Young and larval fish find both food and protection in the shallow marshes.

Dense beds of flowering nodding bur-marigold (*Bidens cernuus*) during low-water year. Waterfowl feed heavily on the seeds of this plant during fall migration.

Waterfowl and muskrat also nest in this protected habitat. In low-water years, abundant seed of soft-stem bulrush, nodding bur-marigold and nodding smartweed produce important food for waterfowl. When the water rises, important

A bed of wild celery (*Vallisneria americana*), an important submergent food plant for waterfowl.

submergent plants for waterfowl, such as wild celery and pond weed, become common.

Many other animals utilize the marsh as well. The rare species include black tern, which nests on storm beaches. Rare Blanding's turtles and eastern fox snakes also spend their lives within these wetlands.

In summary, the dynamic shallow waters and sometimes exposed mud and sand flats along the shoreline provide very important wildlife and fishery habitat, as well as protection from wave action for shoreline landowners. The cycle of rising and falling water levels makes Great Lakes marshes some of the most productive freshwater wetlands in the United States. As much as two-thirds of these wetlands were dry during low-water years such as 1999 and 2000. Plowing and mowing may destroy large parts of these important wetlands, negatively affecting both the diverse wildlife inhabitants and coastal landowners.

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Black tern (*Chlidonias niger*) nesting on storm beach.

J. Harding

Eastern fox snake (*Elaphe vulpina gloydi*).

Michigan Natural Features Inventory

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