

(*N. microphylla*), floating marsh-marigold (*Caltha natans*), large water-starwort (*Callitriche heterophylla*), water-thread pondweed (*Potamogeton diversifolius*), and Vasey's pondweed (*P. vaseyi*).

While water depth in areas dominated by floating-leaved species usually exceeds that tolerated by most emergent marsh plants (e.g., cat-tails, bulrushes, bur-reeds, and arrow-heads) spatial and temporal overlap may occur. While water depth is a key factor affecting the location of Floating-leaved Marsh, water clarity and hardness also affect composition and stand structure.

Diminutive non-rooted species with very small floating leaves (one to several millimeters long) may form dense colonies locally, especially in calm locations such as river backwaters that are protected from strong winds and currents. This group includes vascular plants such as lesser duckweed (*Lemna minor*) and star duckweed (*L. trisulca*), Carolina mosquito-fern (*Azolla caroliniana*) and Mexican mosquito-fern (*A. mexicana*), northern water-meal (*Wolffia borealis*), Brazilian water-meal (*W. brasiliensis*), and common water-meal (*W. columbiana*), and the aquatic liverwort slender riccia (*Riccia fluitans*). Unlike more robust and rooted floating-leaved aquatic plants, these small species are free-floating.

Beds of floating-leaved aquatic macrophytes provide important foraging, resting, and hiding areas for fish, amphibians, and invertebrates, and these animals are in turn preyed upon by mammals and many birds such as herons, grebes, rails, ducks, and blackbirds. Some birds and mammals are able to use the larger, floating leaves as platforms from which they hunt.

Conservation and Management Considerations

Dredging, filling, and excessive inputs of sediments, nutrients, and contaminants are among the major activities that can negatively impact Floating-leaved Marsh communities. "Weed control" is sometimes practiced to facilitate pleasure boating or other recreational activities. Such solutions are short term and expensive and result in the loss of important habitat for fish, herptiles, macroinvertebrates, and many other aquatic organisms. In situations where water levels are

raised to accommodate recreational uses, there may be a reduction or total loss of beds of aquatic macrophytes, including floating-leaved species, if the waters become too deep or too turbid. Frequent power boat usage can exacerbate the loss of aquatic plants.

Problem invasives include the common carp (*Cyprinus carpio*), whose behavior would cause or contribute to increased turbidity in the water and limit the ability of rooted, floating-leaved vascular plants to thrive.

This assemblage of plants was added to Wisconsin DNR's Natural Heritage Working List (WDNR 2016c) recently based on field inventories that documented the presence of stands of floating-leaved aquatic plants, which may fill extensive portions of shallow basins associated with lakes, large river backwaters, or shallow impoundments. Marshes of mixed structure and composition do occur, and in some of these, the patches of floating-leaved, emergent, and submergent vegetation are intermingled in complex mosaics, horizontally and vertically. For conservation and management purposes, such wetlands are best treated as single entities because teasing apart the often dynamic constituents (communities and some individual species) is impractical for the purposes of delineation, mapping, and tracking over time.

Additional Information

For additional information, see the natural community descriptions for Emergent Marsh, Wild Rice Marsh, American Lotus-lily Marsh, Submergent Marsh, Coastal Plain Marsh, Northern Sedge Meadow, Southern Sedge Meadow, and Interdunal Wetland. The U.S. National Vegetation Classification (US NVC) type most closely corresponding to Floating-leaved Marsh is CEG002386 Water Lily Aquatic Wetland (Faber-Langendoen 2001). Future classification refinements of aquatic macrophyte communities are likely (for example, see CEG002562 and CEG002563 in the US NVC, which tentatively apply to "northern" and "boreal" occurrences of Floating-leaved Marsh). These revisions will include assemblages of aquatic macrophytes dominated by floating-leaved species.

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