

Aquatic Plants Recover and Water Clarity Improves in Portions of the Upper Mississippi River



Photo courtesy of USFWS

Over the past two decades, aquatic plants have made a remarkable recovery in the Upper Impounded Reach of the Mississippi River. Long-term monitoring reveals dramatic increases in the amount and diversity of plants. Low water years, improvements to water clarity, and fewer common carp likely contributed to increased plant growth in this reach of the river. The Illinois River and lower reaches of the Upper Mississippi River remain mostly unvegetated in aquatic areas due to a lack of suitable habitat or conditions.

Why are aquatic plants important?

Aquatic plants can improve water quality and are important food and habitat for fish, wildlife, and other aquatic organisms. The Upper Mississippi and Illinois Rivers provide important resting and feeding areas for millions of birds during their migrations. At least 25 aquatic plant species (like wild celery) provide vital energy for waterbirds such as canvasback ducks.

Ongoing restoration and research

The Upper Mississippi River Restoration (UMRR) program continues to prioritize restoration of aquatic plants where they have remained scarce. Recent UMRR studies have improved our understanding of where aquatic plants can grow and where plant restoration is likely to succeed. Successful restoration requires understanding and modifying the variety of river conditions that affect the distribution of aquatic plants.

Aquatic plants are adapted to diverse conditions

Water depth, clarity, and velocity are three main factors which determine the success of aquatic plant species. These factors affect where three types of plants can be found:



EMERGENT PLANTS

such as wild rice occupy shallow areas and are rooted in the bottom of the river, but their leaves and stems extend outside of the water.

Photo courtesy of Alicia Carhart



FLOATING PLANTS

can either be rooted to the bottom of the river with floating leaves such as water lilies or can be free floating, like duckweed and algae.

Photo courtesy of Andrew Stephenson



SUBMERSED PLANTS

such as wild celery grow completely underneath the water to depths where light can reach.

Photo courtesy of Eric Lund

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This fact sheet is a summary of the long-term changes observed from 21 years of monitoring aquatic plants (1998–2019) and two decades of land cover data reported in the [Ecological Status and Trends of the Upper Mississippi and Illinois Rivers](#).



- ◆ Long Term Resource Monitoring (LTRM) stations
- Dark blue indicates long-term study areas within each floodplain reach

In Pools 4, 8, and 13 of the Upper Mississippi River:

- ▶ **Native aquatic plant** diversity and abundance increased. There were more types of both submersed and emergent aquatic plants covering more area. This is likely due to increased water clarity and a decrease in common carp, and years with slower moving water.
- ▶ **Free-floating plants** like duckweeds and filamentous algae have remained mostly scarce but have been problematic in certain backwaters. Excess levels of nitrogen and phosphorus can cause these plants to overgrow and form dense mats that decrease oxygen in the water, threatening fish and other aquatic organisms.
- ▶ **Water clarity** improved over 25 years of monitoring and the trend was associated with more aquatic plants. However, over the last 6 years, water clarity and plants have declined in Pool 13.

In the Illinois River and lower reaches of the Upper Mississippi River:

- ▶ **Native submersed aquatic plants** remain scarce. In some areas, this is likely due to poor water clarity and large changes in water levels during the growing season.
- ▶ **Native emergent plants** are generally scarce, but increased in some areas of the Open River and Illinois River Reaches. In Pool 26, water levels were managed to expand the areas in which these plants could grow.
- ▶ **Water clarity** remains low within the Lower Impounded, Illinois River, and Open River Reaches.

Aquatic plants need light to survive and grow

Rooted plants slow water down and reduce waves. This limits sediment movement and allows more sediment to deposit on the riverbed, making the water clearer. Clearer water allows light to penetrate further, helping plants to grow in deeper water. Low water years with slower moving water and expanded shallow areas also benefit some plants by improving growing conditions for newly established plants.

Water clarity sustains plants and plants sustain water clarity

