

Value of Wetlands

Marshfield
Outdoor
Learning
Sanctuary



Wetlands Are Some of Wisconsin's Most Valuable Resources

Wisconsin wetlands provide habitat for more species of plants and animals than any another landscape in Wisconsin! According to the Wisconsin Department of Natural Resources, 40% of all our birds and one third of all our threatened and endangered species depend on wetlands.

Presently, wetlands are protected by law; however, Wisconsin has already lost 53% of its original 10 million acres. Wetlands have high biological productivity and support rare biotic life. The ecological values make Wisconsin's water pure and sustaining for all life.

Wetland communities have soils either saturated or covered by water. Associated with these moist soils are the "water loving" plants that you will find growing in MOLS.

The different plant communities found in the MOLS wetland are as follows: Sedge Meadow, Shrub Carr, Upland Forest, Ponds, and Shoreline Habitat.

As all life benefits from our care for wetlands, we have the responsibility to protect and preserve these lands.

Ecological Value of Wetlands

- Wildlife Habitat
- Water Purification
- Flood Reduction
- Prevention of Soil Erosion
- Fish Nursery
- Replenishment of Ground Water Supplies
- Migratory Bird Habitat
- River Sedimentation Reduction.
- Food Web Support

Recreational Value of Wetlands: Why Wisconsin is such a great place to live!

- Boating
- Bird Watching
- Wildlife Viewing
- Outdoor Photography
- Deer and Waterfowl Hunting
- Fishing
- Hiking
- Camping
- Scenic Landscapes

Outcomes When Wetlands Are Not Protected

- Wildlife Habitat Destruction from Agriculture, Urban, or Industrial Expansion
- Lake and Stream Pollution from Fertilizer Runoff
- Depleted Groundwater Supplies
- Polluted Drinking Water Supplies
- Industrial Pollution
- Uncontrolled Flooding
- Endangered Species
- Introduction of Invasive Species
- Loss of Biodiversity
- Destruction of Tourist Attractions
- Inedible Fish and Fowl

Invasive Species

Marshfield
Outdoor
Learning
Sanctuary



What are they and why are they a problem?

Invasive species are non-native plants or animals that disturb the habitat of native species, forcing them to decline in population or to disappear altogether. Invasives are introduced accidentally or intentionally by humans. They are always considered to be pests and harmful to the ecosystem in some way. Pest control costs and environmental damages can add up to millions of dollars per year.

What can you do?

To prevent the introduction and spread of invasive species keep your outdoor recreation gear clean and do not landscape with invasive plants. Educate yourself and others about problem plants and animals. The UW-Extension, Wisconsin DNR, and Wood County Master Gardeners have educational materials specific to Central Wisconsin. Eradicate plants growing on your land or volunteer to help remove invasive plants from natural areas.

INVASIVE PLANTS of MOLS

Common Buckthorn (*Rhamnus cathartica*) And Glossy Buckthorn (*Rhamnus frangula*)

Buckthorn was imported from Europe in the 1800's for shelter belts and ornamental use. The shrub can become dominant in wooded areas and is now illegal to sell in some states. Buckthorn lowers the forage diversity of the forest. The thorns on Common Buckthorn makes walking through areas with this vegetation difficult.

Description

Common Buckthorn:

Looks like a shrub or small tree and can reach up to 22ft. The 10 in. wide trunk has gray and brown bark with a rough texture. Inner bark is yellow. Twigs often tipped with a thorn. Leaves are glossy green, broadly oval, with jagged toothed margins, and 3-4 pairs of up curved veins. It flowers May through June with clusters of 2 to 6 yellow-green flowers coming from stems near the base of the leaf stalks. These stalks contain small black fruit which ripens August - September. Reproduction is by seed and is scattered by birds.



Glossy Buckthorn:

Glossy Buckthorn is similar to Common Buckthorn except it is thornless; leaves are not toothed; and the underside of the leaf is hairy.

Control

Prescribed burns in early spring are useful in killing seedlings, otherwise hand pulling is the most effective way of removal.

Purple Loosestrife (*Lythrum salicaria*)

Purple Loosestrife is native to Europe, Asia, and northwest Africa. It became established in the estuaries of Northeastern United States in the 1800's. In 1996, the plant was found in all of Canada and the U.S., except Florida. Loosestrife is illegal to sell in the United States.

Purple Loosestrife grows along streams or in marshy areas. It spreads rapidly and quickly degrades wetlands and farm fields by choking out other plants needed by wildlife.

Description

Stems are square and slightly hairy, leaves lance shaped and opposite. It can grow 4-10 ft tall with long spikes of purple flowers. One plant can have 30-50 stems from one rootstock. Tiny seeds develop in capsules less than 1" long. One plant can produce up to 2.7 million seed each year. Seeds are dispersed in water and mud via animals and people.



Control

Mechanical Control: Small infestations can be controlled by removal of plant, roots, and underground stems.

Chemical Control: Herbicides can be applied to individual plants.

Biological Control:

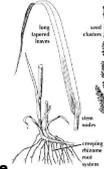
Galerucella pusilla - a leaf-feeding beetle. An MHS Science Class is breeding these beetles for control of these plants in MOLS.
Galerucella calmariensis - a leaf-feeding beetle
Hylobius transversovittatus - a root-mining weevil

Reed Canary Grass (*Phalaris arundinacea*)

Native to temperate regions of US, Europe, Asia. Eurasian variety is considered more aggressive. Introduced for forage and hay into the Northwest. Presently used in Europe for biomass fuel.

Description

Grows 2 - 9 feet tall. Green leaves are up to 10 in. long and ¾ in. wide. Hairless. Base of each leaf is wider than the stalk. Seed head initially green, then golden tan, and then later light tan. Reproduces through seeds and underground stems.



Control

Mechanical Control: Mowing twice yearly before seed set. Small discrete patches may be covered by black plastic for at least one growing season. The bare spot can then be reseeded with native species.

Chemical Control: Small, scattered clones can be controlled by tying the stems together, cut down, then apply glyphosate at 33% active ingredient.

Common St. John's Wort (*Hypericum perforatum*)

The Common St. John's Wort is native to Europe, North Africa, and Asia. It was brought to the US in the 1700's as an ornamental. The plant crowds out native species, invades healthy rangelands, and is poisonous to livestock. It is photochemical and can cause chemical blisters on animals and people. Gloves should always be worn when handling the plant.

Description

Stems grow 1-2.4 feet in height, are reddish, smooth and somewhat two-edged, woody at the base, and branch out towards the top of the plant. Leaves are 1-2 inches long, narrow lance shaped, and spotted. The 5 petal flowers are yellow with small black dots in the center. The spring to summer flowers occur in clusters at the ends of stems with 25-100 flowers per cluster. The red berry is split into 3 sections with numerous dark brown seeds. One plant can produce up to 100,000 seeds per year.



Control

Mechanical Control: Pull the entire plant out of the ground. Repeated pulls are recommended.

Chemical Control: Several herbicides are effective. Repeated sprays are recommended.

Biological Control:

Chrysolina hyperici - a leaf-feeding beetle
Chrysolina quadrigemina - a leaf-feeding beetle
Aplocera plagiata - a moth



White Poplar (*Populus alba*)

Introduced to North America by early settler. Has an extensive root system that is tolerant to lots of water and salt. Reproduces rapidly. Used for landscaping and parks. Some states have banned the sale of this plant.

Description

Medium to tall tree that sometimes gets confused with maple because the leaves are shaped similar to a maple-leaf. The top of the leaf is green, with the underside whitish. The trunk has black diamond shapes engraved on it.



Control

Mechanical Control: Cut down close to the root system.
Chemical Control: several herbicides are effective after repeated use.

Photos for Invasive Species Sign

- Common Buckthorn



- White Poplar



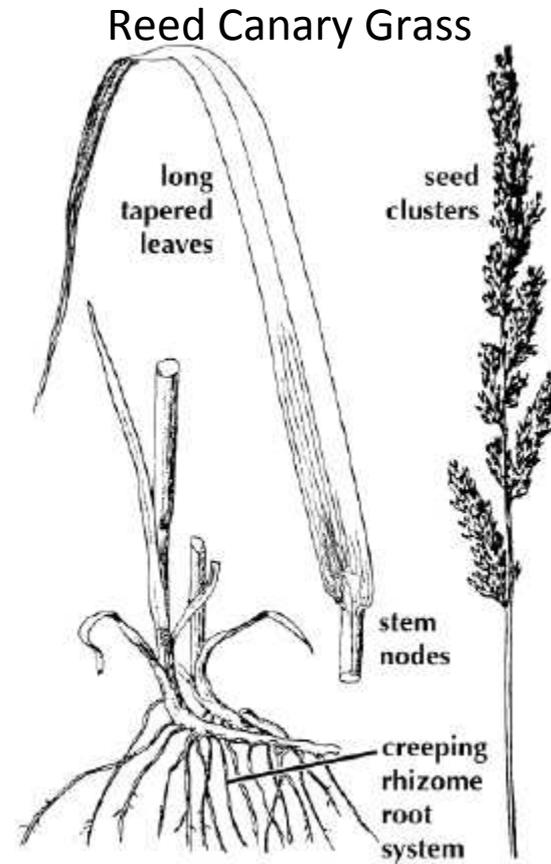
Photos for Invasive Species Sign



Purple Loosestrife



Common St John's Wort



Reed Canary Grass

Sedge Meadow

Marshfield
Outdoor
Learning
Sanctuary



Why All the Lumps and Bumps ?

Do you see all those lumps and bumps. It isn't mounds of soil with plants on top. It is just **PLANTS!** This open wetland community is dominated by Hummock Sedge (*Carex stricta*). Sedge Meadows are found throughout Wisconsin in areas where soil is saturated with water. These meadows can be near streams or lakeshores or in any location where the water table is near the surface of the soil, and often forms a transition zone between open water and upland habitat.

The Hummock Sedge has a large matted root system that creates the tussocks or as we say in Wisconsin—hummocks. This species is responsible for the community's lumpy appearance. If you could look down on the sedge meadow from an airplane you would think the hummocks are evenly spaced. They are! This spacing is created by the growing habit of the sedge plant. Sedges grow only in full sunlight, but the plant has a drooping nature that creates much shade. Where the shade ends and the sunlight begins, another sedge plant will grow. However, this shaded environment provides a place for shade loving plants to grow - creating a diverse biological community.

Sedges Have Edges

Look at the Sedge Meadow. To most people it looks like grass, but if you take a closer look, you will see some differences between grasses and sedges. The most noticeable difference is that sedges have edges. If you compare a grass stem with a sedge stem, you will notice that the sedge stem is triangular and solid, while the grass stem is cylindrical and hollow.

Besides sedges, other vegetation in this meadow includes Bulrush (*Scirpus spp.*) and Rush (*Juncus spp.*). A few flowering plants exist, but most do not bloom until mid-summer when the water logged soils have finally warmed up.

Wildlife in the Sedge Meadow

A sedge meadow provides habitat for a variety of wildlife---insects, amphibians, reptiles, birds, and mammals. Some organisms live here and should be quite noticeable: mosquitoes, flies, ants, spiders, red winged blackbirds, and meadow voles. Other wildlife are just passing through or feeding on the tender shoots of the meadow plants. These organisms may include the Canada Goose, Cottontail rabbit, and the White tailed Deer. Most of the time you may not actually see the wildlife, but you can find evidence such as animal tracks, nibbled plants, or bedding areas.

Take a look around. What wildlife can you find in this lumpy bumpy place?

Fire: Bring It On!

This ecosystem will probably not be here in 20 years. Not because it isn't protected, but because it is **PROTECTED--PROTECTED FROM FIRE.**

Without fire, shrub species such as Red Osier Dogwood (*Cornus sericea*) and Nannyberry (*Viburnum lentago*) become established. After the shrubs, trees such as White Birch (*Betula papyrifera*) and White Ash (*Fraxinus Americana*) move in. Since sedges are not shade tolerant—they can't live here. A Sedge Meadow needs fire to maintain its plant community, and because this meadow is in the city limits, burning either naturally or by a "prescribed burn" will never be allowed.

Historic Uses of a Sedge Meadow

Sedge meadows once covered 459,000 hectares in Wisconsin. Only about 3% or 12,000 hectares are left as sedge meadows were drained and used for urban development or agricultural use such as grazing or "muck" farming. Sedge, however, is not a very nutritious feed for animals, and the use of these meadows for farming only provides a few years of growing. The soil fertility does not last long.

Another historic use of the sedge meadow is for "marsh hay". In the past, farmers used marsh hay as bedding for livestock. Before city inhabitants had refrigerators, they had "ice boxes". The ice was cut from rivers or lakes in the winter and kept frozen through spring, summer and fall by covering the ice with a thick layer of marsh hay.

Shoreline Habitat

Marshfield
Outdoor
Learning
Sanctuary



Shorelines are Protected by Law

One of the Wisconsin Department of Natural Resource mandates is to protect Shoreline Habitat. Any project that occurs, whether to restore or to develop, requires a permit and a plan.

Marshfield Outdoor Learning Sanctuary

In 2009, with this permit and plan, the Marshfield Outdoor Learning Sanctuary dredged 3 ponds. Around these ponds is Shoreline Habitat. This is where land meets water. Ninety per cent of all lake life is born, raised and fed in this area. This diverse habitat supports plants, micro-organisms, insects, amphibians, mammals and birds. The first year after the ponds were dredged, MOLS had a pair of Canada Geese nesting in this ecological community. They successfully hatched six goslings. This sign has a background photograph of the nesting pair.

Importance of Shoreline Habitat

The quality of this habitat is essential to the survival of the wildlife that live here. Shoreline habitat, however, is not just for providing wildlife habitat. It also plays a critical role in protecting water quality, preventing soil erosion, and preserving the quality of aquatic environments.

Let Nature Take Its Course

This is MOLS management objective concerning this Shoreline Habitat, with the exception of removing invasive species such as Purple Loosestrife, and St. John's Wort.

Try to visit this area often to see the changes that come about, because there will be many. Trees will grow and shade the ponds which should cool the water and discourage growth of algae. Also, with more vegetation more runoff and excess nutrients should be trapped and less will enter the ponds. Or maybe...the ponds will fill in with sediment. Whatever happens here will be observed and studied by students from the Marshfield School District for many years to come. This is the function of a learning sanctuary.

Shrub Carr

Marshfield
Outdoor
Learning
Sanctuary



What's a Shrub-Carr?

No, it is not a car with bushes growing on it; it's a carr—from a Scandinavian word for understory. Shrub Carr is a Native Wisconsin Wetland Community.

•Dominant vegetative type is tall deciduous shrubs like Red Osier Dogwood (*Cornus sericea*), Willow (*Salix spp.*), and Nannyberry (*Viburnum lentago*)

•Grassy understory. There is rich diversity of relatively undisturbed ecosystem.

•High value habitat for many birds such as American Goldfinch (*Carduelis tristis*) and American Woodcock (*Scolopax minor*). This is particularly important winter habitat for cottontail rabbit (*Sylvilagus floridanus*) and white-tailed deer (*Odocoileus virginianus*).

History

At the turn of the century there was little Shrub-Carr habitat in Wisconsin. Wetlands were being drained and marsh hay was regularly mowed for animal bedding and ice storage. Now, however, this community type is expanding its range because these activities have decreased dramatically.

Controlling wildfires is another important reason this community is expanding. This habitat is an intermediate stage between marsh or sedge meadow and upland forest. Without fire, shrub species can become established. In some parts of Wisconsin, Shrub-Carr covers extensive areas and is sometimes targeted for elimination.

How to Manage

Water flow needs to be maintained
Invasive plants need to be controlled.

Help! The Aliens Are Invading!

Take a look at this plant community. Does it look as if it is all one species? Invasive plants are a problem here, especially Glossy Buckthorn (*Rhamnus frangula*) and Common Buckthorn (*Rhamnus cathartica*). Both of these out-compete native species for space and nutrients. Another non-native, Reed Canary Grass (*Phalaris arundinacea*), invades the understory. When the buckthorn increases the canopy cover, the understory diversity greatly decreases.

MOLS is trying to control these invasive plants through mechanical, chemical and biological means. You can make a difference by volunteering your time to help with this effort. Check the MOLS Webpage on the School District Website. You will find names, phone numbers, and planned activities.

Got Wood?

Marshfield
Outdoor
Learning
Sanctuary



Look at This Forest.

Do you see any standing or downed dead wood? You should, it is everywhere.

Most people view the dead wood as something to be cleaned up and burned, but it is **TEEMING** with life.

According to leading ecologists, ¹

Dead Wood Is the Richest Habitat in a Healthy Forest!

Why is it such a rich habitat?
Dead wood provides habitat for...

- Birds
- Reptiles
- Amphibians (shhh...One of the best place to find them.)
- Small Mammals
- Millions of Insects
- Moss
- Fungi
- Lichens
- Bacteria
- Plant seedlings
- and
- Slime molds Eeek!!--

THAT'S A LOT OF WILDLIFE!

What Makes It So "Rich"?

A wildlife habitat requires 3 things:

1. SHELTER

Hollowed out trees/logs are used as nesting cavities for birds and squirrels. Decayed environments such as under bark provide excellent insect habitat.

Dead wood also provides a sheltered environment for young seedlings to grow. In fact some trees require it.

2. FOOD

Dead/decaying wood is food for fungi and a menagerie of insects: bark beetles, ants, grubs, millipedes, and wood lice, just to name a few.

These insects attract other wildlife that feed on them, especially birds, This contributes to the diversity of the ecosystem.

3. WATER

Dead wood acts like a sponge: all those insect tunnels and decayed wood provide a moist environment for its inhabitants.

Other Important Functions of Dead Wood

- Plays a role in soil formation through decomposition of dead wood by insects and fungi. This recycles nutrients into the soil.
- Acts as a barrier to land erosion, stabilizing the soil.
- Even in lakes, deadwood provides habitat for algae, fish, and aquatic invertebrates.

As you explore this sanctuary, find the deadwood, look for the wildlife, and then leave the sanctuary as you found the area so it can continue to be the

RICHEST OF ALL THE HABITATS.