



# Invasive Species Calendar

Minnesota Invasive Species Advisory Council

# Invasive Species

## Threats to Minnesota

Invasive species are non-native plants, animals, and pathogens that cause environmental damage, economic loss, or harm to human health. These pests displace native species, harm habitats, and degrade natural, managed, and agricultural landscapes.

Minnesota is presently battling a number of invasive pests including Eurasian earthworms, flowering rush, and rusty crayfish shown in this calendar. There are also many new invasive species that could arrive and cause problems. The list of potential invaders includes hydrilla and thousand cankers disease.

In addition to harming the recreational value of our natural resources, invasive pests pose serious economic threats to major Minnesota industries such as agriculture, tourism, and forestry. Nationwide, some estimates peg the economic damage of invasive pests at more than \$100 billion a year.

Public awareness and action are the keys to preventing the spread of invasive species. Please use the information in this calendar to help inform Minnesotans about the invasive species problem and what they can do to take action in the challenge to reduce invasive species spread and harm.

## Information Sources

The Minnesota Invasive Species Advisory Council (MISAC) website provides more information about invasive species in Minnesota. This website is a gateway to invasive species information including many invasive species profiles, contact information for invasive species experts in Minnesota, and links to other related websites.

MISAC website      [www.mda.state.mn.us/misac](http://www.mda.state.mn.us/misac)

The following websites of MISAC members also have information about invasive species.

DNR	<a href="http://www.mndnr.gov/invasives">www.mndnr.gov/invasives</a>
MDA	<a href="http://www.mda.state.mn.us/plants">www.mda.state.mn.us/plants</a>
Minnesota Sea Grant	<a href="http://www.seagrant.umn.edu/ais">www.seagrant.umn.edu/ais</a>
National Invasive Species Information Center (USDA)	<a href="http://www.invasivespeciesinfo.gov">www.invasivespeciesinfo.gov</a>
USDA-APHIS	<a href="http://www.aphis.usda.gov">www.aphis.usda.gov</a>
USDA-Forest Service	<a href="http://www.fs.fed.us/invasivespecies">www.fs.fed.us/invasivespecies</a>
U.S. Fish and Wildlife Service	<a href="http://www.fws.gov/midwest/fisheries/topic-ans.htm">www.fws.gov/midwest/fisheries/topic-ans.htm</a>

Included on the back of this calendar is contact information for six agencies with invasive species responsibilities in Minnesota. These agencies, as well as other MISAC members, can provide informational products such as brochures, species identification cards, and videos about invasive species.

# Minnesota Invasive Species Advisory Council

This calendar was produced and distributed by the Minnesota Invasive Species Advisory Council (MISAC). MISAC is a statewide entity formed to help:

- facilitate statewide coordination and cooperation on invasive species—including the review of information concerning the current status, management, and spread of terrestrial and aquatic invasive insect, plant, animal, and pathogen species into and within Minnesota;
- work cooperatively to prevent new introductions, identify and locate invasive species;
- contain established introductions; to manage invasions and take other actions in order to minimize invasive species impacts within Minnesota; and
- address these and other existing needs by maximizing available resources.

MISAC's co-chairs, from the Minnesota departments of Agriculture and Natural Resources, represent the state agencies that are responsible for coordinating the management of invasive species in the state. The Council also includes these members: Bailey Nurseries, Leech Lake Band of Ojibwe, Minneapolis Park and Recreation Board, Minnesota Association of County Agricultural Inspectors, Minnesota Board of Water and Soil Resources, Minnesota Crop Improvement Association, Minnesota Department of Transportation, Minnesota Forestry Association, Minnesota Golf Course Superintendents' Association, Minnesota Native Plant Society, Minnesota Nursery and Landscape Association, Minnesota Shade Tree Advisory Committee, The Nature Conservancy, Superior National Forest, USDA-Animal and Plant Health Inspection Service, USDA-Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. Forest Service, University of Minnesota-College of Food, Agricultural and Natural Resource Sciences, University of Minnesota Sea Grant Program.

# Help Report Locations of Invasive Species

One of the keys for a rapid response to invasive species is the early identification of new occurrences. Please help report occurrences of invasive species in Minnesota at the following:

- MISAC website at: [www.mda.state.mn.us/misac](http://www.mda.state.mn.us/misac) and click on "Reporting Invasive Species".
- "Arrest the Pest" Hotline at: (651) 201-MOTH (metro) or 1-888-545-MOTH (toll free). Please call the hotline to report suspicious pest species arriving on plants or articles from foreign countries or other states and for the latest updates on invasive species such as the gypsy moth, soybean rust, sudden oak death, Asian longhorned beetle, emerald ash borer, bark beetles, and other destructive insect, plant, and disease pest species.
- DNR Invasive Species Program at: (651) 259-5100 (metro) or 1-888-MINNDNR (elsewhere) to report invasive aquatic plants or wild animals such as Eurasian watermilfoil, zebra mussels, Asian carp, round goby, non-native deer, and mute swans.
- Or as specified for individual species in the invasive species calendar.

**MINNESOTA INVASIVE SPECIES REPORTING FORM**

Observation Date: \_\_\_\_\_ Association: \_\_\_\_\_

Observer's Name: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Email: \_\_\_\_\_

**Species and Location Information**

Common Name: \_\_\_\_\_ Scientific (if known): \_\_\_\_\_

Locality Name (lake or twosp): \_\_\_\_\_ County: \_\_\_\_\_

Site Address (if any): \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_

Property Ownership (i.e. Private, county, state, federal, etc.): \_\_\_\_\_

If known, provide one or both of the following location methods:

Legal Description: Twp \_\_\_\_\_ Range \_\_\_\_\_ Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_ 14 1/4 Sec \_\_\_\_\_

Coordinate (Lat/Easting) \_\_\_\_\_



# Eurasian Swine

*Sus scrofa scrofa*



MN DNR

**Keys to ID:** It is often difficult to distinguish wild pigs from domestic swine based on appearance alone. Young boars are generally red-brown with black longitudinal "watermelon" stripes that begin to disappear and the red changes to brown and finally to black as the animal ages. Both the male feral hog and wild boar have continuously growing tusks.

Eurasian Swine;  
European Wild Boar  
*Sus scrofa scrofa*

# January

**Species:** This species is a large, mainly woodland-dwelling mammal that feeds on roots, nuts, insects, and some carrion.

**Origin:** Native to Europe and Asia, they were first introduced to parts of North America in the 1500s.

**Impacts:** Eurasian and feral domestic swine pose a threat of being an uncontrollable carrier host for serious diseases such as swine brucellosis and pseudorabies. They cause damage to wildlife habitat and crops through their "rooting".

**Status:** No Eurasian swine are known to have established in the state. Feral, or free roaming populations of domestic swine, have been reported in Minnesota and western Wisconsin. Minnesota is one of the few states without wild Eurasian and feral swine populations.

**Where to look:** They are found mainly in areas with mixed wooded and agricultural lands, and near riparian areas.

**Regulatory classification (agency):** They are a *restricted species* (MDA) and a *prohibited invasive species* (DNR). They may not be released into the wild.

**Means of spread:** Wild swine are spread by illegal introduction or release for hunting and escapes from captive herds.

**How can people help?**

- Do not release animals into the wild.
- Report observations of Eurasian or feral swine in the wild.
- Hunters should shoot wild swine they see while hunting.

**Further information:** Visit the United States Department of Agriculture website at [www.usda.gov](http://www.usda.gov).

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 <small>New Year's Day</small>
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17 <small>Martin Luther King, Jr. Birthday</small>	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

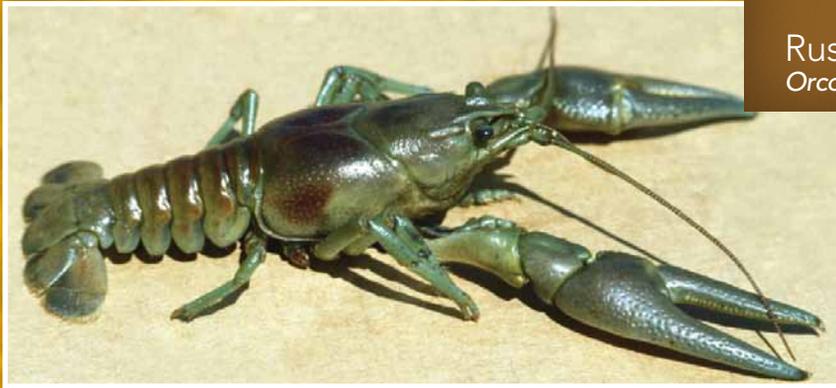
# Aquarium Pathway

Rusty Crayfish  
*Orconectes rusticus*

Goldfish  
*Carassius auratus*

Pacu  
*Clossoma* or *Piaractus* sp.

Hydrilla  
*Hydrilla verticillata*



MN Sea Grant



MN Sea Grant



MNDNR



Chris Evans, River to River, CWMA, Bugwood.org



MNDNR

**Keys to ID:** *Rusty crayfish:* Carapace usually marked by a pair of dark, rust-colored spots; claws have distinct gap when closed. *Goldfish:* Body is gold to olive green with white or black patches and large scales. *Pacu:* Body is narrow and dark grey; black on upper back; small mouth with blunt teeth. *Hydrilla:* Stringy, rooted submerged aquatic plant; distinctly visible leaves with saw-toothed edges.

# Aquarium Pathway

# February

**Species:** These are examples of species released from aquaria and as discarded live study specimens.

**Origin:** They are native to the Ohio River basin in the United States, Asia, South America, and Africa, respectively.

**Impacts:** Rusty crayfish displace native crayfish, hybridize with them, and graze on and eliminate aquatic plants. The feeding activity of goldfish suspends bottom sediments, muddying the water and causing plants to decline and water to warm. While not established in Minnesota, pacu represent a tropical species that could transmit diseases to native fish. Hydrilla forms mats that impede swimming boating, waterfowl hunting, and fishing.

**Status:** Rusty crayfish are known to infest the Snake and St. Croix rivers, along with many lakes in central and northern areas. Goldfish are often found in lakes and rivers in urban areas. While many aquarium species are established in southern states, pacu and hydrilla are not established in Minnesota.

**Where to look:** They live in lakes, rivers, and wetlands.

**Regulatory classification (agency):** Rusty crayfish and goldfish are *regulated invasive species* (DNR). Hydrilla is a *prohibited invasive species* (DNR).

**Means of spread:** Plants, fish, crayfish, snails, and turtles used in aquaria may end up in natural waters when released into the environment. Hydrilla can be also spread by boaters and rusty crayfish can be spread when unwanted leftover bait is released from bait buckets into lakes and rivers.

**How can people help?**

- Buy plants and animals compatible with your aquarium and lifestyle.
- Contact a retailer for possible returns.
- Give or trade with another aquarist, school, environmental learning center, aquarium or zoo.
- Seal aquatic plants in plastic bags and dispose in the trash.
- Contact a veterinarian or pet retailer for guidance on humane disposal of animals.

**Further information:**

Visit: [www.mndnr.gov/habitattitude](http://www.mndnr.gov/habitattitude)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 <i>Groundhog Day</i>	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21 <i>Presidents' Day</i>	22	23	24	25	26
27	28 <i>National Invasive Weed Awareness Week Feb. 28-Mar. 4</i>					



# Zebra Mussels

*Dreissena polymorpha*



**Keys to ID:** Adult zebra mussels are 1/4 to 1-1/2 inches long. They have D-shaped shells with alternating black to brownish colored stripes.

# Zebra Mussels

*Dreissena polymorpha*

**Species:** Zebra mussels are small barnacle-like aquatic animals.

**Origin:** Native to Eastern Europe/Western Russia, they first arrived in the Great Lakes about 1988 in the ballast discharge water of foreign ships.

**Impacts:** Zebra mussels can kill native mussels, clog water intakes for both industry and lakeshore residents, cause cuts and scrapes, and may foul beaches.

**Status:** They are established in Minnesota and were first found in the Duluth/Superior Harbor in 1989.

**Where to look:** Zebra mussels attach to hard surfaces using sticky (byssal) threads. Examine boat hulls, swimming platforms, docks, rocks, and other hard surfaces along the shoreline of lakes, rivers, and streams.

**Regulatory classification (agency):** This is a *prohibited invasive species* in Minnesota (DNR).

**Means of spread:** They can spread by attaching to boat hulls, aquatic plants, fishing equipment, nets, boat lifts, or in infested water.

**How can people help?**

- Remove visible zebra mussels and aquatic plants, and drain water before transporting boats and equipment from one waterbody to another.
- Report new infestations.

**Further information:** Contact the DNR Invasive Species Program or the University of Minnesota Sea Grant Program, Aquatic Invasive Species Information Center.

# March

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13 <small>Daylight Saving Time Begins</small>	14	15	16	17	18	19
20 <small>Spring Begins</small>	21	22	23	24	25	26
27	28	29	30	31		

# Garlic Mustard

*Alliaria petiolata*



**Keys to ID:** Its leaves are round, scallop-edged, and dark green. The leaves and stems smell like onion or garlic when crushed.

# Garlic Mustard

*Alliaria petiolata*

**Species:** Garlic mustard is a terrestrial, biennial plant.

**Origin:** It is native to Europe.

**Impacts:** Garlic mustard invades high-quality woodlands as well as upland and floodplain forests. The invaded sites undergo a decline of native herbaceous cover within 10 years. Garlic mustard alters habitat for native insects and wildlife.

**Status:** It was first recorded in 1933 and now is found in central and southeastern Minnesota and is spreading to new locations in northern Minnesota.

**Where to look:** It grows in the forest understory or along forest edges, but also is able to invade undisturbed forest habitats.

**Regulatory classification (agency):**

Garlic mustard is a *prohibited noxious weed* in Minnesota (MDA and counties).

**Means of spread:** Seeds can be transported by humans on boots and clothing, by mowing, and by automobiles. Birds, rodents, and whitetail deer are likely to disperse seed in woodland habitats.

**How can people help?**

- Hand pull small populations.
- Clean your boots and equipment after visiting areas with garlic mustard.

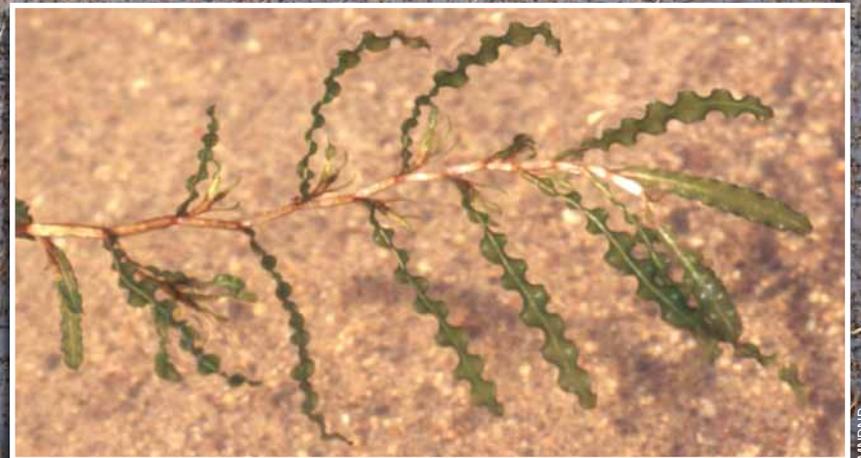
**Management information:** Contact DNR for management information.

# April

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22 <i>Earth Day</i>	23
24 <i>Easter</i>	25	26	27	28	29 <i>Arbor Day</i>	30

# Curly-leaf pondweed

*Potamogeton crispus*



Peter Dziuk

**Keys to ID:** Leaves have undulating and finely serrated edges

MINDNR

# Curly-leaf Pondweed

*Potamogeton crispus*

# May

**Species:** Curly-leaf pondweed is a rooted submersed aquatic plant.

**Origin:** It is native to Eurasia, Africa, and Australia and was first noticed in Minnesota about 1910.

**Impacts:** It forms dense mats on the water surface in late spring and early summer, causing problems for water recreation. Mid-summer die-off causes rafts of dying plants on shore and may be followed by algal blooms. Curly-leaf pondweed is a severe threat to natural resources and their use.

**Status:** Curly-leaf pondweed is established in Minnesota.

**Where to look:** It is found in the littoral zone of lakes and ponds.

**Regulatory classification (agency):** It is a *prohibited invasive species* (DNR).

**Means of spread:** Curly-leaf pondweed often is incidentally transported on water recreation equipment.

**How can people help?** Remove all aquatic plants before transporting boats and equipment from one waterbody to another.

**Further information:** Contact DNR Fisheries or DNR Invasive Species Program.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8 <i>Mother's Day</i>	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30 <i>Memorial Day Observed</i>	31				

# White and Yellow Sweetclover

*Melilotus alba*, *Melilotus officinalis*



Images: Peter Dziuk

**Keys to ID:** Plants are 1½ to 5 ft. tall; leaves are alternate and pinnately trifoliate; yellow or white flowers are racemes from leaflet axils; bloom from May to September. White sweetclover is usually taller and blooms later than yellow sweetclover.

# White and Yellow Sweetclover

*Melilotus alba, Melilotus officinalis*



**Species:** Sweetclover is a white or yellow blooming biennial forb.

**Origin:** Native to Europe and Asia, sweetclovers were brought to North America in the late 1600s for forage and honey production. These legumes were also valued as soil-builders.

**Impacts:**

- Moldy hay with sweetclover can be toxic to livestock.
- Attracts grasshoppers.
- Outcompetes and displaces native prairie species by overtopping and shading.

**Status:** Abundant throughout the U.S. and Canada, yellow and white sweetclovers are found in most Minnesota counties.

**Where to look:** Yellow or white sweetclover can be found on abandoned fields, roadsides, forests after wildfires, disturbed lands, and open habitats such as prairies, savannas, and dunes.

**Regulatory classification:** Sweetclover is not regulated in Minnesota.

**Means of spread:** Sweetclovers spread by seed, planting, and grazing. Fire stimulates germination.

**How can people help?** Avoid planting it.

**Management information:** Hand-pulling is effective on small populations when soil is moist. Other tools include mowing before flowering and/or spraying emergent seedlings with 1,3-D amine or mecamine.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14 <i>Flag Day</i>	15	16	17	18
19 <i>Father's Day</i>	20	21 <i>Summer Begins</i>	22	23	24	25
26	27	28	29	30		

# Flowering Rush

*Butomus umbellatus*



Peter Dziuk

MNDNR

**Keys to ID:** Emergent form has three-angled fleshy leaves that may produce an umbel-shaped cluster of pink flowers on a round stem. Submersed form has limp, ribbon-like leaves.

# Flowering Rush

*Butomus umbellatus*



**Species:** Flowering rush is a perennial aquatic plant that grows in both emergent and submersed forms.

**Origin:** It is native to Europe and Asia and was first noted in Minnesota in 1968.

**Impacts:** Dense stands of flowering rush may impede water recreational activities. Impacts to native vegetation are often observational or anecdotal in nature and have not been substantiated by scientific studies.

**Status:** Flowering rush is established in 15 lakes and rivers in Minnesota.

**Where to look:** It is found on shore, near shore, and littoral zones of lakes and rivers.

**Regulatory classification (agency):** It is a *prohibited invasive species* (DNR).

**Means of spread:** The plant spreads primarily vegetatively from thick rhizomes and small tubers that break off, and from small bulblets that form in the inflorescence.

**How can people help?**

- Identify new locations and remove all aquatic plants before transporting boats and equipment from one waterbody to another.
- Don't buy or plant it.

**Further information:** Contact DNR Fisheries or DNR Invasive Species Program.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 <i>Independence Day</i>	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

# Black Locust

*Robinia pseudoacacia*



Images: Peter Dziuk

**Keys to ID:** Mature trees have dark, deeply furrowed bark. Branches usually have spines. Leaves are dark green and compound with 7-19 leaflets. White pea-like flowers appear in May to June.

# Black Locust

*Robinia pseudoacacia*

**Species:** Black locust is a fast-growing deciduous tree that can reach 40-100 ft. at maturity.

**Origin:** Native to the lower slopes of the Appalachian and Ozark mountains, the tree was moved westward in the 1930s for use as windbreaks and to make fence posts. It was also valued for erosion control.

**Impacts:**

- Displaces forests, especially oak and pine.
- Creates monotypical stands with little or no ground cover diversity.
- Reduces wildlife habitat mast and other foods.
- Produces seeds, leaves, and bark toxic to humans and livestock.
- Threatens dry grasslands and savannas.

**Status:** It is distributed throughout the Northeast and Midwest. It is also found in Texas and the West Coast.

**Where to look:** It is found along roadways, in suburban backyards, forest edges, and riparian bottoms and ravines.

**Regulatory classification:** Black locust is not regulated in Minnesota.

**Means of spread:** It spreads via root sprouts and seeds, creating dense clones.

**How can people help?**

- Remove black locust from your property to stop the spread through neighborhoods.
- Report sightings in natural areas.

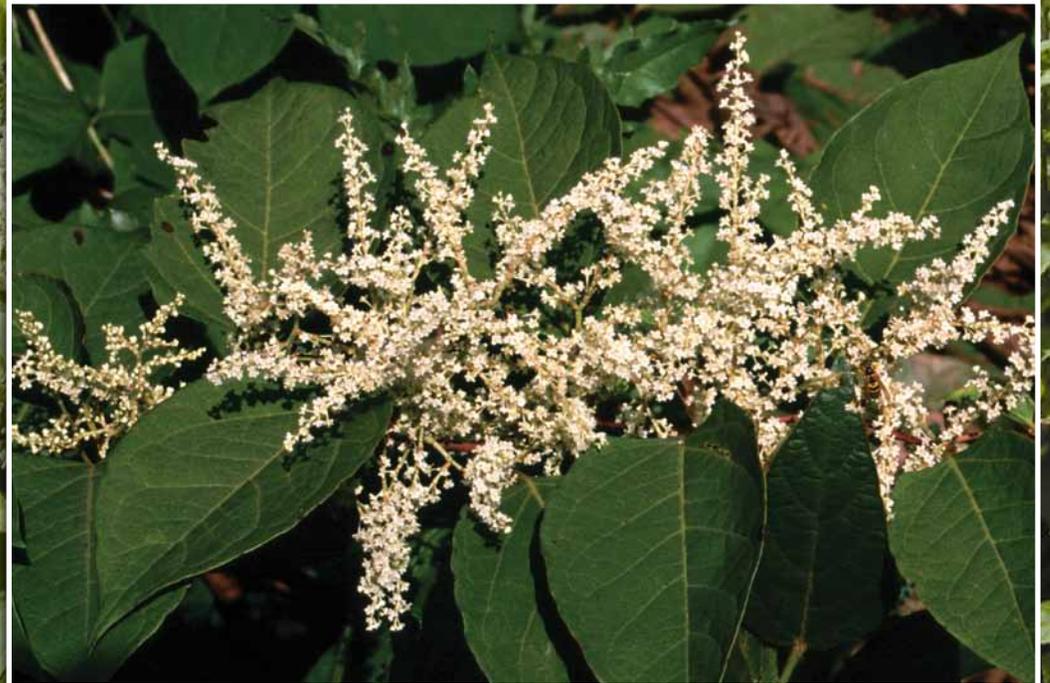
**Management information:** Repeated cuttings with application of full strength glyphosate to fresh stump may be necessary. Monitor to check for potential resprouts. Bulldozing is a tool that can be used for already-disturbed lands.

# August

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

# Japanese Knotweed

*Polygonum cuspidatum*



Images: Peter Dziuk

**Keys to ID:** Japanese knotweed grows in tall (up to 10 feet), dense thickets with arching branches. Stems are reddish brown, semi-woody, hollow and have enlarged nodes. Leaves are alternate, simple, broadly oval with a pointed tip and straight base. They are about 6 inches long and 3-4 inches wide. Panicles of small white flowers develop from the leaf axils; flowers bloom in late summer. Giant knotweed looks similar, but is larger and has heart-shaped leaves.

# Japanese Knotweed

*Polygonum cuspidatum*

**Species:** Japanese knotweed is a shrub-like, herbaceous perennial plant. This species is related to invasive giant knotweed (*P. sachalinense*) and hybrids.

**Origin:** Native to Asia, it was intentionally introduced into Minnesota as an ornamental and for erosion control.

**Impacts:** Japanese knotweed forms tall, dense thickets that shade out and displace native vegetation, degrade habitat for fish and wildlife; can alter waterways, and facilitate erosion and flooding. Knotweed growth through pavement cracks and along paved surface edges can result in damaged pavement.

**Status:** It escaped cultivation and is found in isolated populations in several Minnesota counties.

**Where to look:** It can be found in sunny areas along roadsides and in riparian areas such as river banks. Some homeowners have Japanese knotweed in their landscapes.

**Regulatory classification:** Japanese knotweed is not regulated in Minnesota.

**Means of spread:** Once established, rhizomes allow Japanese knotweed to spread quickly and aggressively, although seed is sometimes produced. New colonies can form from very small rhizome or root fragments that are moved by natural means such as waterways as well as by human activities such as construction that move soil.

**How can people help?**

- Don't plant as an ornamental.
- Remove plants from your property.

**Management information:** The most effective treatments involve both cutting and herbicide application. Treatments may need to be repeated for many years to eradicate a population. For management recommendations, visit.

[www.mda.state.mn.us/en/plants/badplants/knotweed.aspx](http://www.mda.state.mn.us/en/plants/badplants/knotweed.aspx)

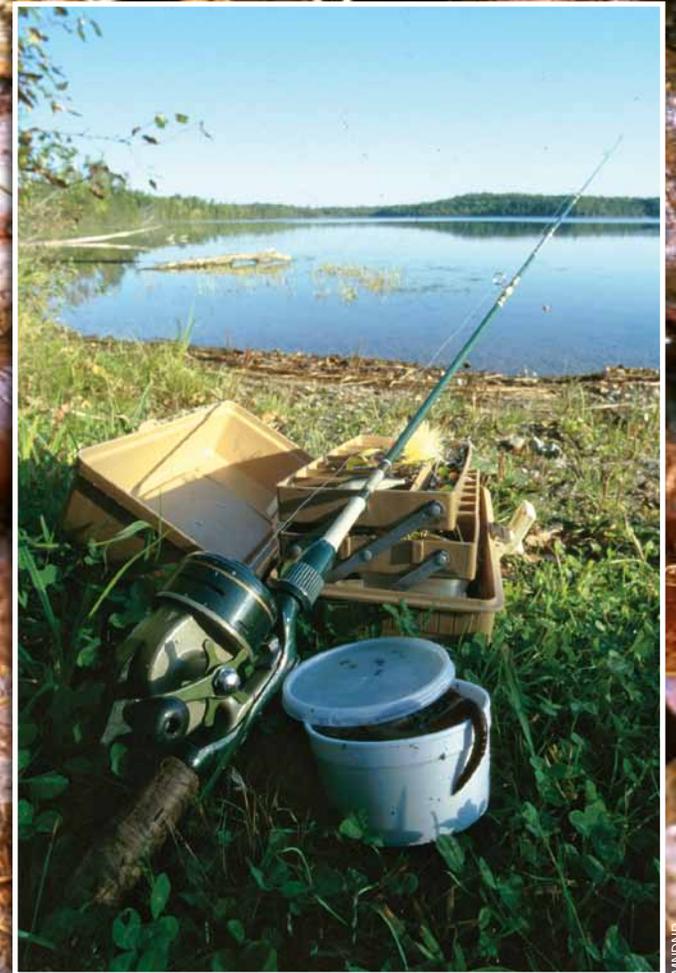
[www.mndnr.gov/invasives/terrestrialplants/herbaceous/japaneseknotweed.html](http://www.mndnr.gov/invasives/terrestrialplants/herbaceous/japaneseknotweed.html)

[www.invasive.org/gist/moredocs/polsp01.pdf](http://www.invasive.org/gist/moredocs/polsp01.pdf)

# September

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5 <i>Labor Day</i>	6	7	8	9	10
11 <i>Grandparents' Day</i>	12	13	14	15	16	17
18	19	20	21	22	23 <i>Fall Begins</i>	24
25	26	27	28	29	30	

# Eurasian Earthworms



Steve Mortensen

**Keys to ID:** Visit [www.nrri.umn.edu/worms](http://www.nrri.umn.edu/worms) for identification information.

MINDNR

# Eurasian Earthworms

# October

**Species:** All terrestrial earthworms, such as angleworms and night crawlers, are non-native in Minnesota.

**Origin:** Native to Europe and Asia, they probably first arrived in soils, either used for ship's ballast or with potted plants brought from Europe.

**Impacts:** Earthworms consume the leaf litter of forests, causing tree seedlings, ferns, wildflowers, and potentially water quality to decline.

**Status:** Fifteen non-native earthworm species are established in many areas of the state.

**Where to look:** They are found in the soil of natural and managed landscapes.

**Regulatory classification (agency):** They are an *unlisted non-native species (DNR)*.

**Means of spread:** Earthworms or their egg cases are moved primarily through human activities such as dumping bait, community composting, recreation, road construction, and in plant material.

**How can people help?**

- Place unwanted bait in the trash—it's illegal to release most non-native species into the wild (Minn. Stat. 84D.06).
- Be cautious when moving plant material to forest areas.

**Management information:** There are no methods to control earthworm populations in natural habitats; preventing new infestations is the best protection.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10 <i>Columbus Day</i>	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31 <i>Halloween</i>					

# Thousand Cankers Disease

*Pityophthorus juglandis* and *Geosmithia morbida*



Whitney Granshaw, Colorado State University, Bugwood.org



Whitney Granshaw, Colorado State University, Bugwood.org

Curtis Utley, Colorado State University-Extension, Bugwood.org

**Keys to ID:** Symptoms are yellowing and wilting foliage followed by branch dieback, along with numerous small cankers under the outer bark on the bole and branches. Look for signs of minute bark beetles, including pinhole-size exit holes and tunneling under the bark.

# Thousand Cankers Disease

*Pityophthorus juglandis* and *Geosmithia morbida*

# November

**Species:** This is a disease caused by an insect/fungus complex, specifically of the walnut twig beetle (*Pityophthorus juglandis*) and the fungus *Geosmithia morbida*.

**Origin:** The walnut twig beetle is native to southwestern North America. Its original host is the Arizona walnut tree.

**Impacts:** Thousand cankers disease causes mortality in eastern black walnut trees by girdling and killing the branches and trunk. The insect introduces the fungus while it feeds and tunnels. The fungus kills the bark and phloem, causing a canker. With thousands of beetle attacks, the cankers coalesce.

**Status:** It is found in several western states and was reported within the native range of eastern black walnut in eastern Tennessee in July 2010. The disease has not been found in Minnesota.

**Where to look:** In Minnesota, eastern black walnut trees grow as far north as Hibbing.

**Regulatory classification:** Thousand cankers disease is not regulated in Minnesota.

**Means of spread:** It spreads via the same pathways as other tree pests—in timber, firewood, wood packaging material, and nursery stock—usually through commerce.

**How can people help?**

- Move only kiln-dried and debarked walnut and butternut material.
- Call MDA to get the latest information on the disease.
- Look for walnut trees declining for no obvious reason.
- Contact MDA if you find such a tree or stand.

**Further/Management information:**

Contact the MDA, DNR or U.S. Forest Service.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6 <small>Daylight Saving Time Ends</small>	7	8	9	10	11 <small>Veterans' Day</small>	12
13	14	15	16	17	18	19
20	21	22	23	24 <small>Thanksgiving Day</small>	25	26
27	28	29	30			

# Red-eared Slider Turtle

*Trachemys scripta elegans*



**Keys to ID:** Distinctive red streak or bar behind each eye. Skin color is green or olive with yellow, white, or greenish stripes on head, limbs, and tail. Underside of the shell is yellow with dark smudges.

Jeff LeClere

# Red-eared Slider Turtle

*Trachemys scripta elegans*

**Species:** The red-eared slider is a turtle in the Emydidae family.

**Origin:** The red-eared slider is native to the southern United States and northern Mexico.

**Impacts:** Introduced populations compete with native turtles for food, nesting, and basking resources, can influence genetic diversity, and can spread potentially harmful diseases to other turtles.

**Status:** It has been introduced to at least 23 U.S. states, Asia, France, Australia, Germany, United Kingdom, Africa, New Zealand, Israel, and Trinidad. The red-eared slider is known to have established in Minnesota.

**Where to look:** This semi-aquatic freshwater species may be observed basking on logs or other structures in ponds, lakes, and rivers. Individuals may also be trapped, seined, or caught on hook and line.

**Regulatory classification (agency):** This is an *unlisted non-native species* (DNR). It is illegal to release red-eared sliders in Minnesota.

**Means of spread:** This species is overwhelmingly popular in the pet trade and captives are released or escape into bodies of water.

**How can people help?**

- Do not release captive turtles under any circumstance.
- Do not purchase or accept these turtles unless they can be properly cared for their entire lives, which may be more than fifty years.
- Help alleviate the buildup of unwanted turtles by fostering or adopting.
- Report sightings to the DNR, MDA, or MISAC.

**Further information:** Contact the DNR Nongame Wildlife Program.

# December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21 <i>Hanukkah</i>	22 <i>Winter Begins</i>	23	24
25 <i>Christmas Day</i>	26	27	28	29	30	31

For information about  
invasive species in  
Minnesota, contact:

### **Aquatic Plants and Animals**

Minnesota Department of Natural Resources-  
Invasive Species Program  
(651) 259-5100

University of Minnesota-Sea Grant Aquatic  
Invasive Species Information Center  
(218) 726-8712

U.S. Fish and Wildlife Service  
(612) 713-5114

### **Terrestrial Plants and Insects**

Minnesota Department of Agriculture-  
Invasive Species Exclusion Unit  
(651) 201-6328

Minnesota Department of Natural Resources-  
Division of Forestry  
(651) 259-5300

USDA-Animal and Plant Health Inspection  
Service  
(612) 725-1722

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**Eurasian Swine; European Wild Boar**



**Aquarium Pathway**



**Zebra Mussels**



**Garlic Mustard**



**Curly-leaf Pondweed**



**Sweetclovers**



**Flowering Rush**



**Black Locust**



**Japanese Knotweed**



**Eurasian Earthworms**



**Thousand Cankers Disease**



**Red-eared Slider Turtle**