

INVASIVE SPECIES



2015

Minnesota Invasive Species
Advisory Council



Information Sources

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

MISAC

www.mda.state.mn.us/misac

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

Minnesota Department of Agriculture

www.mda.state.mn.us/plants

Minnesota Department of Natural Resources

www.mndnr.gov/invasives

Minnesota Sea Grant

www.seagrant.umn.edu/ais

U.S. Department of Agriculture - APHIS

www.aphis.usda.gov

U.S. Department of Agriculture - Forest Service

www.fs.fed.us/invasivespecies

U.S. Department of Agriculture - National Invasive Species

Information Center

www.invasivespeciesinfo.gov

U.S. Fish and Wildlife Service

www.fws.gov/invasives

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

2015 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 such as gypsy moth, yellow iris, and spotted knapweed. There are also many new invasive species that could arrive and cause problems. The list of potential invaders includes killer shrimp and mountain pine beetle.

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 \$130 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.

Cover Photo: MNDNR





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:

- Promote communication and cooperation among organizations involved in invasive species issues.
- Coordinate outreach on invasive species.
- Support statewide and multi-state conferences related to invasive species issues.
- Support trainings and field visits related to invasive species.
- Recognize outstanding and noteworthy work related to invasive species and encourage such work through the Carol Mortensen Award.
- Advocate for research and management for the species and pathways deemed greatest risk.

MISAC's co-chairs from the Minnesota Department of Agriculture and USDA-Forest Service represent the state agencies that are responsible for coordinating the management of invasive species in the state. The Council also includes these members: 1854 Treaty Authority, 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 Nursery and Landscape Association, Minnesota Shade Tree Advisory Committee, National Park Service, Soil and Water Conservation Society - Minnesota Chapter, The Nature Conservancy, Three Rivers Park District, 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, University of Minnesota Sea Grant Program, and Wildlife Forever.

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 and click on "Reporting Invasive Species".
- MDA "Arrest the Pest" at (651) 201-MOTH (metro) or 1-888-545-MOTH (toll free) or Arrest.The.Pest@state.mn.us to report suspicious pest species arriving on plants or articles from foreign countries or other states. Report terrestrial invasive plants, insects, or diseases such as gypsy moth, emerald ash borer, soybean rust, sudden oak death, Japanese hops, and oriental bittersweet.
- DNR Invasive Species Program at (651) 259-5100 (metro) or 1-888-MINNDNR (toll free) to report invasive aquatic plants or wild animals such as Eurasian watermilfoil, zebra mussels, invasive carp, round goby, non-native deer, and mute swans.
- Or, as specified for individual species in this 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 tansp): _____ 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 _____ 14 Sec _____ 14 14 Sec _____

_____ X Coordinate (Lat/Easting) _____





Killer Shrimp

Keys to ID: Killer shrimp are relatively large crustaceans, striped or uniform in color, up to 1-1/5 inches long with large powerful mandibles.

Killer Shrimp:

Dikerogammarus villosus

Species: Aggressive predatory crustaceans.

Origin: They are native to the Ponto-Caspian Region.

Impacts: This species has a potentially high impact on the Great Lakes and inland waters. They feed voraciously on invertebrates, small fish, and fish eggs, but will often shred prey without eating them. Killer shrimp have been identified as one of the top ten most invasive species in Europe and the worst invader of England and Wales.

Status: It has not been found or reported from any Minnesota waters or the Great Lakes.

Where to look: It lives in rocky and gravel bottoms of lakes, rivers, streams, and canals with low currents. Zebra and quagga mussels may help with establishment by providing suitable habitat.

Regulatory classification (agency): Killer shrimp is an unlisted non-native species (DNR). It may not be legally introduced into Minnesota waters.

Means of spread: This species might be unintentionally spread to the Great Lakes in ballast water discharged from foreign ships and subsequently could be spread inland by recreational activities.

How can people help?

- Inspect and remove aquatic plants and animals from boats, trailers, and equipment.
- Drain water from bilges, livewells, and bait buckets before leaving the access.
- Report infestations to the Minnesota Sea Grant Program or the DNR.

JANUARY

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



Plant Pest Quarantines

Photo: David Cappaert, Michigan State University

Emerald ash borer

Female gypsy moths and egg masses on a tire



Photo: Rusty Haskell, University of Florida



Male gypsy moth

Photo: Minnesota Department of Agriculture



Ash trees marked for removal due to emerald ash borer

Photo: MNDNR

Plant Pest Quarantines

What is it? Quarantines are legal restrictions on the movement of specific “regulated articles” to prevent or slow the spread of plant pests. Regulated articles are the most likely way a species might be spread by people. Insect eggs, larvae, or adults can potentially move around the state or the country on or in equipment, household items, firewood, nursery stock, and logs. Firewood is a major pathway of spread for several quarantined tree pests and diseases.

Plant pest quarantines are issued and enforced by state or federal departments of agriculture with proper authority.

Plant pests quarantined by Minnesota are listed at www.nationalplantboard.org.

- Examples include:**
- Emerald Ash Borer (Hennepin, Houston, Olmsted, Ramsey, and Winona counties)
 - ◆ No unprocessed ash materials or any hardwood firewood may be moved out of these counties.
 - Gypsy Moth (Lake and Cook counties)
 - ◆ No logs, nursery stock, Christmas trees, or outdoor household items may be moved out of these counties without MDA approval.

Evidence of success: Invasive species can spread by themselves, but many can be moved farther by people. Quarantines can make a significant difference in how many invasive species are moved by people. State quarantines have slowed the spread of emerald ash borer within Minnesota, and federal quarantines have delayed the arrival of gypsy moth into Minnesota.

- How can people help?**
- Buy and use firewood locally.
 - Follow the advice of the PlayCleanGo campaign.
 - Call “Arrest the Pest” at 1-888-545-6684 to report invasive species in Minnesota.

- Further information:**
- Visit www.mda.state.mn.us/invasives/firewooddont_transport.
 - Visit www.playcleango.org.
 - Visit www.aphis.usda.gov/wps/portal/aphis/ourfocus/planthealth.

FEBRUARY

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

Climate Change



water
hyacinth

Photo: Forest & Kim Starr, Starr Environmental,
Bugwood.org



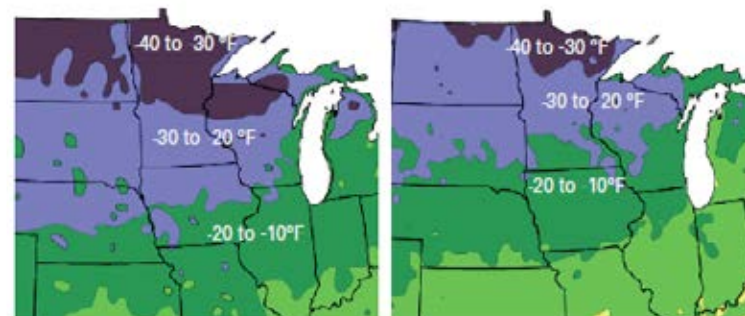
kudzu

Photo: Alan Leslie, University
of Maryland

Changes in Plant Hardiness Zones 1990-2006

1990

2006



Zone
3 4 5 6
© 2006 by The National Arbor Day Foundation

Changes in plant hardiness zones in Minnesota, 1990-2006. Zones defined by average minimum temperatures have shifted north. A new hardiness zone (5) entered Minnesota by 2006 while Zone 3 retreated northward. *Source: Arbor Day Foundation, arborday.org*

Climate Change and Invasive Species

Water Hyacinth *Eichhornia crassipes*
Kudzu *Pueraria lobata*

Impacts: In Minnesota, temperatures are rising, spring is getting wetter, and autumn is getting drier. As a result, ice-out on many lakes is occurring earlier, crops are being planted sooner, and trees and shrubs are leafing out earlier. Concerns about the potential effects of climate change on invasive species also are increasing. In the past, winters in Minnesota may have been cold enough to keep many invasive species from establishing in the state.

Examples of direct effects:

- Shifts in plant and animal ranges
 - Species that currently can't survive outdoors in Minnesota or have limited survival, kudzu or water hyacinth, for example, may become invasive in the state.
 - New ornamental species may be planted in the state, providing food for new insects and pathogens.
- Phenological patterns shift – Species grow and flower sooner
 - Species that start growth early in the season and end growth later in the fall (like buckthorn) may have advantages.
 - Current management regimes may become less effective.
- More generations of insects
 - Many invasive insects such as soybean aphid develop faster as temperatures warm.
 - With longer, warmer growing seasons, insects may have more generations per year.

Example of an indirect effect:

- Native plants and animals that are stressed by climate changes may be more easily attacked by insects or pathogens.

How can people help?

- Prevent the introduction of new invasive species to Minnesota.
- Practice early detection and rapid response for new invasive species.
- Continue to monitor management results and adjust practices as needed.

MARCH

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				

Spring Begins



Mountain Pine Beetle

Keys to ID: Mountain pine beetle is small—less than ¼-inch long—with a hard, black exoskeleton.

Mountain Pine Beetle

Dendroctonus ponderosae

Species: Mountain pine beetle is a species of bark beetle.

Origin: It is native to western North America.

Impacts: This insect is the greatest threat to pines in western North America. During outbreaks, beetles mass attack and kill pines. In Minnesota, jack pine is a known host. The status of red, white, and scots pine are uncertain. Dead trees increase the risk of erosion and wildfire. The insect also transmits several fungi not native to Minnesota.

Status: While not yet established in Minnesota, beetles have been detected by MDA beneath the bark of cut pines from the West.

Where to look: The first signs of bark beetle attack are often pitch tubes along the main stem of pines created as a tree defends itself from initial attacks. Pitch tubes are “popcorn-shaped” masses of resin created as a tree tries to push bark beetles back out their entrance holes. Clusters of pines with red crowns (recently killed) should be investigated. Signs of mountain pine beetle can easily be confused with the effects of other native bark beetles and diseases.

Regulatory classification (agency): Mountain pine beetle is *unregulated*, but currently under review (MDA).

Means of spread: The most likely means of spread would be through the importation of wood or wood products with intact bark from pines recently killed by mountain pine beetle. Adult beetles fly, and because jack pine has a continuous distribution from western North America to Minnesota, natural dispersal into the state is possible.

How can people help?

- Avoid bringing pine that might be infested with mountain pine beetle into Minnesota.
- Work with DNR forest health specialists to determine the cause of pine mortality.

Further Information: Visit www.dnr.state.mn.us/treecare/forest_health/index.

APRIL

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

Stop Aquatic Hitchhikers!



Photo: Wildlife Forever

Photo: MNDNR

Stop Aquatic Hitchhikers! Campaign

What is it? Stop Aquatic Hitchhikers! (SAH!) is a national campaign to increase awareness about aquatic invasive species (AIS) and prevent their movement during recreational activities. AIS can spread when plants, animals, and mud cling to watercraft, motors, trailers, and gear. Others spread in contaminated water and live bait.

The campaign has been active for more than a decade through the support of the U.S. Fish and Wildlife Service in partnership with many organizations- including the DNR, Minnesota Sea Grant, and Wildlife Forever.

Evidence of success: Research shows that most recreationalists exposed to Stop Aquatic Hitchhikers! are willing to take preventive actions. Since 2006, over 1 billion exposures through television, radio, print, and social media have spread the message. Awareness about aquatic invasive species as a problem increased to 96% after viewing SAH! messages. SAH! messages have likely helped to prevent and slow the spread of zebra mussels, Eurasian watermilfoil, and curly-leaf pondweed in Minnesota.

Related regulations: Transport of any aquatic plants, prohibited species, and water is illegal on public roads (DNR). Drain plugs must be out while transporting watercraft.

How can people help?

- *Clean off* aquatic plants, animals, and mud from watercraft, motors, trailers, and gear before leaving the water access. Dispose of unwanted bait, fish parts, and worms in the trash.
- *Drain* water from bilge, ballast tanks, motor, and any water-containing devices.
- *Dry* boat, motor, trailer, livewell, and equipment every time you leave the water.

Further information: Visit www.cleandraindry.org or www.protectyourwaters.net.

MAY



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



Yellow Iris

Keys to ID: Yellow iris grows 3-4 feet high. The broad, sword-shaped leaves are stiff and erect with green to greyish-blue coloration. It typically blooms in May and June. Each stem has several white, cream, or yellow flowers. Fruit capsules are six-angled and egg-shaped. Rhizomes are pink-fleshed. It may be confused with native iris.



Yellow Iris

Iris pseudacorus

Species: Yellow iris is an ornamental plant that is also used for erosion control, sewage treatment, and for dye and fiber.

Origin: It is native to Europe and the British Isles, Western Asia, and North Africa.

Impacts: Yellow iris forms dense stands that outcompete native wetland plants and degrade habitat for wildlife. All parts of the plant are poisonous and can cause skin irritation.

Status: In Minnesota, it has established in Hennepin, Kandiyohi, Lake of the Woods, and St. Louis counties.

Where to look: Look for yellow iris in any wet habitat including wetlands, lakeshores, stream banks, ditches, and roadsides. It can escape from water gardens.

Regulatory classification (agency): It is a regulated invasive species in Minnesota (DNR).

Means of spread: Yellow iris plants may establish in natural waters when planted or discarded there. It spreads vegetatively and by seed. Seeds can disperse long distances over water.

How can people help?

- Learn to identify yellow iris.
- Do not release or plant non-native plants in natural waters.
- Contact the DNR before transplanting aquatic plants.
- Report sightings to Minnesota Sea Grant or the DNR.

Management information:

Physical removal or herbicides such as glyphosphate (Rodeo) are effective, but require a permit (DNR).

Further information: Visit www.seagrants.umn.edu/ais/superior_nonnatives or www.mndnr.gov/invasives.

JUNE

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				

Flag Day

Father's Day
Summer Begins

Giant Hogweed

Keys to ID: Giant hogweed has white, umbrella-shaped flowers up to 2-½ feet across. It can grow as tall as 20 feet with huge leaves up to 5-½ feet across. Stems are green with purple spots and prominent coarse white hairs at the base of the leaf stalks. Cow parsnip is a smaller native look-alike. The leaves are less deeply cut and are between 2-2-½ feet across. The flowers are also white but flat-topped and no larger than 1 foot wide. The stem is usually green, but it can have purple marks that are not spots.



Giant Hogweed

Heracleum mantegazzianum

Species: Giant hogweed is an herbaceous monocarpic perennial (it dies after flowering) in the carrot family.

Origin: It is native to the Caucasus Region of Asia which includes Armenia, Azerbaijan, Georgia, and part of Russia.

Impacts: Giant hogweed is a serious public health hazard and can negatively impact soil dynamics, fisheries, and outcompete native plants. Contact with the sap and exposure to sunlight can produce painful, burning blisters that can leave scars. Sap coming in contact with eyes has resulted in blindness.

Status: Most North American giant hogweed infestations are in the Pacific Northwest and the Northeast. Giant hogweed is not confirmed in Minnesota, but it has been found in north central Wisconsin, the Upper Peninsula of Michigan, and Ontario, Canada.

Where to look: Giant hogweed can be found growing in yards, ditches, along stream banks, in disturbed areas, and open wooded areas. It thrives in sunny locations and is also somewhat shade tolerant.

Regulatory classification (agency): Giant hogweed is a *prohibited noxious weed* on the eradicate list (MDA). All above and below ground parts of the plants must be destroyed. No transportation, propagation, or sale of the plants is allowed. It is also a *federal noxious weed* (USDA APHIS PPQ).

Means of spread: Giant hogweed was originally introduced as a novelty ornamental which escaped cultivation. It spreads by seed that can be moved by wind, water, wildlife, and humans.

How can people help? Report occurrences to MDA at arrest.the.pest@state.mn.us or 1-888-545-6684.

Further information: Visit www.fs.fed.us/database/feis/plants/forb/herman/all.

JULY

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	



Spotted Knapweed Biocontrol



Before.
Bioagents were released at the site in 2006 within the infestation.



Keys to ID: Adult seedhead weevils are brownish grey, 4-5 mm long and have a bulbuous snout.



Adult root weevils are large, 20 mm long, and striking with a mottled grey to tan and white coloration.

After.
Only scattered knapweed plants remained at this site in 2009. Control takes longer at larger sites.

Spotted Knapweed Biocontrol

Species: Three weevil species have been introduced to Minnesota to control spotted knapweed. *Larinus minutus* and *L. obtusus* feed on seedheads and *Cyphocleonus achates* bores in roots.

Origin: The seedhead weevils, root weevils, and spotted knapweed are native to Eurasia.

Impacts: Seedhead weevil larvae reduce spotted knapweed seed production by consuming developing seed. Root weevil larvae develop within the knapweed taproot, consuming resources, and physically damaging the taproot; weakening or killing the spotted knapweed plant. A combination of seedhead and root weevils can reduce large spotted knapweed infestations.

Status: The seedhead weevil *L. minutus* is a strong flier that has become well distributed in Minnesota at low densities throughout contiguous spotted knapweed infested areas. Root weevils are established at numerous sites. They do not fly, so they are collected and moved to new sites.

Where and when to look: Seedhead weevil adults are on the flowers. Their larvae are in the developing seedheads. Root weevils blend with the flower bracts and seedheads. Adult weevils are most active on hot, sunny midsummer days.

Regulatory classification: Knapweed weevils are not regulated within Minnesota. A USDA APHIS PPQ 526 permit is required to move weevils between states. Vendors selling weevils have blanket 526 permits to ship to Minnesota from Montana.

Obtaining bioagents: Contact your county agricultural inspector, MDA's biological control coordinator, or a private vendor for more information.

Management information: Biological control is an effective management tool for large, undisturbed infestations and can be integrated with prescribed fire.

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					



Dock and Lift Pathway



Photo: MNDNR

Zebra mussels attached to the footing of a dock.



Photo: Greg Presall

Dock and Lift Pathway

Species: Zebra and quagga mussels, faucet snails, New Zealand mudsnails, Eurasian watermilfoil, and curly-leaf pondweed are invasive species that can be moved from one waterbody to another on docks and lifts.

Impacts: These animals and plants outcompete and displace native species, threatening Minnesota's waterways. Some of these invasive species interfere with municipal, commercial, and agricultural water supply and distribution. Others can harm swimming, boating, fishing, and other water recreation.

Where to look: Inspect outside and inside parts of docks and lifts using a flashlight. Pay close attention to brackets, foot bases, and tires for attached species.

Regulatory classification (agency): Boat lifts, docks, and swim rafts removed from any waterbody must be dried for 21 days before being placed in another waterbody in Minnesota (DNR). Businesses that install, remove, decontaminate, or rent water-related equipment such as docks and lifts must be trained and permitted by DNR to legally provide services.

Means of spread: Plant fragments get tangled in equipment and transported with docks and lifts. Some invasive animals can attach on the outside or inside of dock and lift structures. Seeds, plant fragments, or small/larval invasive species can be spread in mud on foot bases or other parts of docks and lifts.

How can people help?

- Inspect docks and lifts for invasive species, remove all plants, and dry for 21 days if moving to a new waterbody.
- Check the DNR website to make sure your lake service provider is permitted.
- If you are a lake service provider business, get trained and permitted.

Further information: Lake service provider information: www.mndnr.gov/lsp

SEPTEMBER

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

		1	2	3	4	5
6	7	8	9	10	11	12
13	14 <i>Labor Day</i>	15	16	17	18	19
20 <i>Rosh Hashanah Begins</i>	21	22 <i>Rosh Hashanah Ends</i>	23	24	25	26
27	28	29	30 <i>Fall Begins</i>			
					 <p>STOP AQUATIC HITCHHIKERS!</p>	

Non-native Common Reed



Non-native common reed on left, native on right.

Keys to ID: Invasive species stems are ribbed and visible with the naked eye; stems of native species are smooth. Leaf sheath of invasive is difficult to remove; native is easy to remove or falls off. Flower head of invasive is dense; native is sparse.



Non-native Common Reed

Phragmites australis subsp. *australis*

Species: Non-native common reed (*Phragmites*) is a perennial grass of wetlands. A subspecies is native to Minnesota and another subspecies is non-native and invasive.

Origin: North American populations of non-native common reed are likely from Europe, possibly the United Kingdom, and were probably introduced in the early part of the 1800s at east coast ports.

Impacts: Mixed wetland plant communities are replaced by near monocultures of non-native common reed, resulting in changed ecosystem processes and associated detrimental impacts on native wildlife.

Status: Non-native common reed is becoming abundant in eastern and Great Lakes states. It is present in Minnesota, but not widely distributed.

Where to look: It typically grows in wetlands and other moist soil habitats.

Regulatory classification (agency): In 2013, non-native common reed became regulated as a *restricted noxious weed* in Minnesota (MDA). The importation, propagation, sale, and unlawful transportation of non-native *Phragmites* propagating parts is not allowed in the state. Landowners who have non-native common reed on their land are not required by law to control it.

Means of spread: It spreads through purposeful planting, wind, water, and via movement of construction and maintenance equipment.

How can people help?

- Don't plant non-native comon reed.
- Report infestations using www.eddmaps.org.

Further information:

- Visit www.mda.state.mn.us/plants/badplants/noxiouslist
- Visit www.greatlakesphragmites.net

OCTOBER

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	Columbus Day	20	21	22	23	24
25	26	27	28	29	30	31
						Halloween



Tubenose Goby

Keys to ID: They are up to 5 inches long and usually mottled brown in color. Like the round goby, it has a single scalloped-shaped pelvic fin, but with prominent nostrils on the head and without a black spot on the dorsal fin.



Tubenose Goby

Proterorhinus semilunaris

Species: Tubenose goby is a small, bottom-dwelling fish.

Origin: Native to freshwaters of Eastern Europe and the Black and Caspian Sea region, they spread to the Great Lakes in the ballast water discharge of international commercial ships. In Russia, they are endangered due to loss of habitat.

Impacts: They compete with native fish like sculpins, darters, and northern madtom for habitat and displace them. They eat small midge larvae, clams, other invertebrates, and young fish, but do not eat zebra mussels like its cousin the round goby.

Status: First found in the Duluth Superior Harbor, they have not been found in inland waters.

Where to look: This species can be found in lakes, rivers, ponds, and canals, especially in dense vegetation where they lay eggs. Anglers rarely catch them due to their preference for eating small organisms.

Regulatory classification (agency): Tubenose goby are *prohibited invasive species* (DNR). They are illegal to possess and cannot be legally introduced into Minnesota waters.

Means of spread: Eggs of tubenose goby could spread overland when attached to aquatic plants clinging to recreational equipment, or through the use and disposal of live bait.

How can people help?

- Do not use as live bait.
- Clean off aquatic plants, animals, and mud from boat, motor, and trailer.
- Remove non-bait minnows, crayfish, and plants from bait containers.
- Report new infestations to DNR.

Further information:
Visit www.nas.er.usgs.gov

NOVEMBER

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



Holiday Décor Pathway



Oriental Bittersweet Fruit

Avoid using invasive Oriental bittersweet vines in holiday decorations.

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	22	<i>Hanukkah Begins</i>	23	24	25
26	27	28	29	30	31	
	<i>Winter Begins</i>			<i>Christmas Eve</i>	<i>Christmas Day</i>	
					<i>New Year's Eve</i>	

Holiday Décor Pathway

Species: Oriental bittersweet, gypsy moth, teasel, and multiflora rose are common invasive species that can be moved with holiday décor.

Impacts: Invasive plants moved in holiday décor can outcompete native plants when released into the environment. Invasive insects can defoliate trees and, in severe cases, kill them.

Where to look: Ask dealers if holiday greenery has been inspected or treated prior to sale. Tip a Christmas tree upside down and check the trunk for egg masses. Take care gathering materials for arrangements so invasive species are not included.

Regulatory classification (agency): Uncertified Christmas trees are not allowed in Minnesota from other states/counties quarantined for gypsy moth. Gypsy moth is a *federally regulated pest* and MDA should be notified immediately if it is discovered on holiday greenery. Oriental bittersweet, common, and cutleaf teasel are *prohibited noxious weeds* on the eradicate list (MDA). Multiflora rose is a *restricted noxious weed* (MDA).

Means of spread: Home décor around the holidays can harbor or actually be made from invasive species. Reports over the years have confirmed the presence of invasive pests in our homes and workplaces via holiday greenery and home décor. When products are disposed of after the season is over, seeds and insects can find their way into the local environment and start new infestations.

How can people help?

- Look for suspicious holes, eggs, or insects on any forest product.
- Do not collect and move invasive species for decorative arrangements.
- Send photos or report suspicious products to MDA at arrest.the.pest@state.mn.us or 1-888-545-6684.

For information about invasive species in Minnesota, contact:

Aquatic Plants and Animals

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

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

University of Minnesota Sea Grant Program (218) 726-8712

Terrestrial Plants and Insects

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

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Killer Shrimp



Plant Pest Quarantines



Climate Change



Mountain Pine Beetle



Stop Aquatic Hitchhikers!



Yellow Iris



Giant Hogweed



Spotted Knapweed Biocontrol



Dock and Lift Pathway



Non-native Common Reed



Tubenose Goby



Holiday Décor Pathway