

INVASIVE SPECIES



2021 CALENDAR

Minnesota Invasive Species Advisory Council

Advisory Council

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

- Promotes communication and cooperation among organizations involved in invasive species issues.
- Coordinates outreach on invasive species.
- Supports statewide and multi-state conferences related to invasive species issues.
- Supports trainings and field visits related to invasive species.
- Recognizes outstanding and noteworthy work related to invasive species and encourages such work through the Carol Mortensen Award.
- Advocates for research and management for the species and pathways deemed greatest risk.

The Council includes these members: 1854 Treaty Authority, Carver County Water Management Organization, Fond du Lac Band of Lake Superior Chippewa, Hennepin County, Lake County Soil and Water Conservation District, Leech Lake Band of Ojibwe, Meeker County, Minneapolis Park and Recreation Board, MN Association of County Agricultural Inspectors, MN Board of Water and Soil Resources, MN Department of Agriculture, MN Department of Natural Resources, MN Department of Transportation, MN Nursery and Landscape Association, National Park Service, St. Croix River Association, 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 MN, University of MN Sea Grant Program and Wildlife Forever.

MISAC Mission Statement

To provide leadership to prevent the spread and reduce the harmful impacts of aquatic and terrestrial invasive species to Minnesota landscapes, economies, and the citizens of the State of Minnesota by promoting invasive species awareness, prevention, and management through research, education, and regulation in cooperation with local, state, tribal, and federal partners.



Invasive Species Threats

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

In addition to harming our natural resources, invasive pests can pose serious economic threats to major Minnesota industries such as agriculture, tourism and forestry. Some estimates peg the economic damage of invasive pests in the U.S. 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 how they can take action in the challenge to reduce invasive species spread and harm.

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This information can be made available in alternative formats such as large print, braille or audio tape by emailing info.dnr@state.mn.us or by calling 651-296-6157.

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Information Sources

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

MISAC
www.mninvases.org

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

Minnesota Department of Agriculture
www.mda.state.mn.us

Minnesota Department of Natural Resources
www.mndnr.gov/invasives

University of Minnesota Sea Grant Program
www.seagrants.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

Find contact information for four agencies with invasive species responsibilities in Minnesota 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.

Report Invasive Species

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

- “Arrest the Pest” at: 888-545-6684. Please call to report suspicious pest species arriving on plants or articles from foreign countries or other states. Get the latest updates on invasive species such as gypsy moth, soybean rust, sudden oak death, Asian longhorned beetle, emerald ash borer, bark beetles, and other destructive insect, plant and disease pest species at: www.mda.state.mn.us/plants-insects/arrest-pest
- Minnesota Department of Natural Resources (DNR) Invasive Species Program at: 651-259-5100 or 888-646-6367 to report invasive aquatic plants or wild animals such as Eurasian watermilfoil, zebra mussels, invasive carp, round goby, nonnative deer and mute swans.
- EDDMapS Midwest website or Great Lakes Early Detection Network app at: www.eddmaps.org/midwest
- Or, as specified for individual species in this calendar.

MISAC Members





Purple loosestrife flowers

Damaged stalks

PURPLE LOOSESTRIFE BIOCONTROL

Biocontrol definition:

Biocontrol uses natural enemies from a pest's native range to control the pest in the place it was introduced. For plants, natural enemies may be insects that feed on the plant and decrease seed set. Biocontrol agents are extensively studied and screened before permitted for release in the United States.



An adult leaf-eating beetle on a purple loosestrife plant.

Target:

The wetland plant purple loosestrife (*Lythrum salicaria*) is an invasive species in Minnesota that is controlled by biocontrol insects.

Biocontrol species:

Three non-native insect species function as biological control agents of purple loosestrife in Minnesota: two leaf-eating beetles (*Galerucella californiensis* and *Galerucella pusilla*) and a root boring weevil (*Hylobius transversovittatus*).

Origin:

Both purple loosestrife and its biocontrol insect species are native to Europe. The insects were extensively studied under quarantine before being released in the United States.

Impacts:

Purple loosestrife no longer dominates wetland communities, but instead, it has become a controlled component of the plant community. Biocontrol success has reduced the volume of herbicide used to control purple loosestrife from hundreds of gallons to only a few gallons per year throughout Minnesota.

Status:

Resource managers have grown and released beetles on purple loosestrife sites since 1992. Leaf-eating beetles are now harvested from sites in Minnesota and transported to new sites where purple loosestrife biocontrol is needed. Natural reproduction and dispersal has also allowed beetles to spread statewide. Biocontrol is most effective where purple loosestrife is widespread and dense, and less effective on sites where only a few plants are present.

Where to look:

Adult leaf-eating beetles are present on purple loosestrife plants for short periods of time twice each summer. The first hatch usually occurs in May and a second hatch typically begins in July.

Further information:

www.dnr.state.mn.us/invasives/aquaticplants/purpleloosestrife/biocontrol.html

JANUARY

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



OAK WILT

Bretziella fagacearum

Keys to ID

- Oak wilt is difficult to diagnose on white and bur oaks. Confirm oak wilt by submitting samples to the University of Minnesota's Plant Disease Clinic <https://pdc.umn.edu/>
- Red oaks: After initial leaf wilt in the outer canopy, red oaks often lose 90 percent or more of their leaves in two months or less.
- White oaks (including bur oaks): Initial wilt starts at the ends of branches. Wilting branches often rapidly lose most of their leaves in two months or less.



Species:

A fungal pathogen that kills the water conducting cells in oaks.

Origin:

Genetic analysis of collections of the fungus, plus rare resistance among native oaks, indicate it is not native to the United States. The origin of the fungus remains a mystery.

Impacts:

Oak wilt is one of Minnesota’s top tree killers. In yards or forests where oaks dominate, it can be devastating.

Status:

In early 2020, oak wilt was present in 27 counties. Those counties range from the Iowa border north to Kanabec, Mille Lacs, Morrison, Pine, and Stearns counties.

Where to look:

Late summer is a common time for infected oaks to show symptoms of oak wilt, namely rapid and heavy leaf loss.

Regulatory classification:

Oak wilt is not regulated. The DNR tracks where the disease has spread.

Means of spread:

Oak wilt moves from oak to oak through connected roots and by sap beetles that move infectious spores from infected wood to fresh wounds. Oak wilt also moves longer distances when people transport infected logs or firewood.

How can people help?

- Avoid pruning or wounding oaks from April through July.
- Leave dead oaks in place for one year or more after death.
- Report oak wilt in counties not known to have it using EDDMapS.org.

Further information:

www.dnr.state.mn.us/treecare/forest_health/index.html

FEBRUARY

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



TENCH

Tinca tinca

Keys to ID

- Up to 25 inches long.
- Body is dark olive to pale golden tan above with a white to bronze belly below.
- Reddish-orange eye.
- Single whisker (barbel) at each corner of the mouth.
- Fins are dark and rounded, with no spines.

Species:

A large, bottom-feeding minnow species.

Origin:

Tench are native to most of Europe and parts of western Asia.

Impacts:

Impacts are under study. Tench eat snails and insect larvae. Tench may affect native species by competing with native minnows for food. Tench stir up sediments and may negatively impact water quality.

Status:

As of April 2020, tench have not been documented in Minnesota, but are found in 38 states. Tench were discovered in Lake Ontario in October 2018.

Where to look:

Tench are generally found in slow-moving rivers and lakes with abundant vegetation. They can survive low oxygen conditions with little water.

Regulatory classification (agency):

Tench is an unlisted nonnative species (DNR) and therefore illegal to release into a free-living state.

Means of spread:

Tench were purposely introduced to North America as a food source in the late 1800's. Since then, other purposeful and accidental introductions have resulted in tench spread. Once tench are introduced, they can move into suitable habitats through connected waterways.

How can people help?

- Never buy or use tench as bait or as live food.
- Don't put any live fish into Minnesota waters.
- Report any sightings of tench to EDDMapS.org or the DNR.

Further information:

- nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=652
- www.invadingspecies.com/tench/

MARCH

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
Daylight Savings Time Begins			St. Patrick's Day			Spring Equinox
21	22	23	24	25	26	27
28	29	30	31	1	2	3



MOUNTAIN BIKING PATHWAY

APRIL

Impacts:

While you're out shredding trails you might be picking up unwanted guests – invasive plants. It's nearly impossible to not get a little mud on your bike after a day of riding. This mud can hold tiny seeds of invasive plants, like garlic mustard, which can devastate a forest.

Mountain biking hubs like the Twin Cities and Duluth have invasive plants not found on trails in the rest of the state. Don't be the biker who brings a new invasive species to your favorite trail.

How can you help?

- Protecting the trail starts at home; make sure your bike and gear is clear of mud and vegetation before leaving the house.
- Once at the trailhead, don't ride off trail or on trails that are muddy; it is bad for the trails and increases the risk that your bike will pick up invasive seeds.
- After each ride, check your bike and gear for mud, burs, seeds, branches or any other vegetation. If you find anything, clean it off before going home. A clean bike is not only good for ecosystems, it also prevents bike maintenance problems.
- Learn how to identify invasive species and report them on EDDMapS.org.

Further information:

- www.dnr.state.mn.us/invasives/terrestrial/biking.html
- www.playcleango.org



**STOP INVASIVE SPECIES
IN YOUR TRACKS.**

PlayCleanGo.org

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



V. georgianus



C. chinensis



A handful of *V. georgianus* mystery snails.

MYSTERY SNAILS

Cipangopaludina chinensis,
Viviparus georgianus

Keys to ID

C. chinensis

- Brown to olive colored shell.
- Operculum (“trapdoor” covering shell opening) present in live snails.
- Up to 3 inches tall.
- Three rows of fine hairs following the spiral of the shell.

V. georgianus

- Light brown shell with darker brown bands following the spiral of the shell.
- Operculum present in live snails.
- Up to 1.5 inches tall.

Species:

Two species of mystery snails are found in Minnesota. Both species live their entire lives in aquatic environments.

Origin:

C. chinensis is native to parts of Asia and *V. georgianus* is native to the southeastern United States.

Impacts:

Mystery snails reproduce in large numbers and die-offs can cause fouling of beaches and shoreland with empty shells. *V. georgianus* can invade bass nests causing mortality of largemouth bass embryos.

Status:

Mystery snails have been found throughout much of central and northern Minnesota.

Where to look:

Look for shells washed up on shore or in shallow waters.

Regulatory classification (agency):

Both species are regulated invasive species (DNR).

Means of spread:

Mystery snails can be spread by illegal dumping of home aquariums as well as through the movement of water-related equipment (boats, docks, lifts, etc.). Young mystery snails can be very small and may be hidden in mud or debris attached to equipment, ropes, and hunting, fishing, and SCUBA gear.

How can people help?

- Report any new infestations using EDDMapS.org or to the DNR.
- Never dump aquariums or release aquarium pets into lakes or rivers. Rehome or humanely dispose of them.
- Clean and dry water equipment before using in a different water body.

Further information:

- <http://www.seagrant.umn.edu/ais/mysterysnail>
- www.dnr.state.mn.us/invasives/aquaticanimals/chinese-mystery-snail
- www.dnr.state.mn.us/invasives/aquaticanimals/banded-mystery-snail

MAY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	1 Arbor Month in MN Begins
2	3	4	5 Cinco de Mayo	6	7	8
9 Mother's Day	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31 Memorial Day					



KNOTWEED SUCCESS

by the Duluth CISMA

JUNE

What is it?

The Duluth Cooperative Invasive Species Management Area (CISMA; a CWMA, Cooperative Weed Management Area, is similar) is a partnership of public and private organizations and individuals with a common goal of working on invasive species issues. The Duluth CISMA has over 30 partners and covers south St. Louis County.

Duluth CISMA goals

Duluth CISMA's mission is to "help citizens and communities protect our public and private lands from the damages caused by invasive species." Partner collaboration maximizes messaging, strengthens the ability to manage sites efficiently, and encourages prevention of invasive species introduction. Since it began in 2017, Duluth CISMA has been providing region-specific best management practices and increasing awareness of invasive species, especially amongst recreationists and homeowners.

Success story

The Duluth CISMA is leading the focus on how to address the over 500 knotweed locations in the Duluth area. In partnership with the City of Duluth and the Minnesota Department of Agriculture, Duluth CISMA hosted knotweed workshops attended by many residents. In addition, Duluth CISMA collaborates with the City of Duluth on strategic knotweed management on city property.

What's next?

Duluth CISMA would like to continue building momentum to help prevent and manage invasive species in the region.

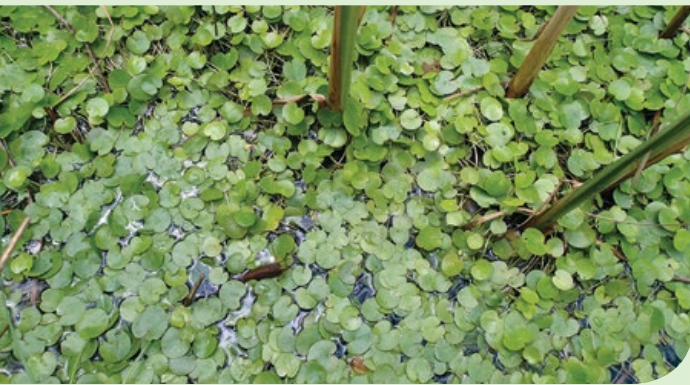
How can people be involved?

Attend a CISMA or CWMA meeting or workshop near you!

Further information:

- bwsr.state.mn.us/cooperative-weed-management-area-program
- [Facebook.com/DuluthCISMA/](https://www.facebook.com/DuluthCISMA/)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	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
Father's Day Summer Solstice						
27	28	29	30	1	2	3



EUROPEAN FROGBIT

Hydrocharis morsus-ranae

Keys to ID

- Free-floating, rarely rooted, aquatic plant that resembles a small water lily.
- Leaves are heart shaped, smooth, leathery, 1-2 inches wide.
- Flowers have three white petals with a yellow center.



European frogbit monitoring in Kent County, Michigan.

Species:

European frogbit is a free-floating aquatic plant.

Origin:

Native to Europe and northern Asia, it escaped cultivation in Ontario in 1932 and is now found in Maine, Michigan, New York, Ohio, Pennsylvania, Vermont, and Washington.

Impacts:

Dense mats of interlocking plants and dangling roots choke waterways, interfering with swimming, boating, fishing, and waterfowl hunting. It displaces native aquatic plants and depletes dissolved oxygen levels, impacting fish and aquatic life.

Status:

It has not been found in Minnesota.

Where to look:

Open marshes, shallow ponds, ditches, and protected shorelines of lakes and rivers. Often, it colonizes among dense emergent vegetation.

Regulatory classification (agency):

It is a prohibited invasive species (DNR).

Means of spread:

European frogbit can escape water gardens and spread through accidental transport by boaters on watercraft, trailers, and equipment. It also spreads when dormant buds called “turions” detach, sink in the fall and float back to the water’s surface in the spring to sprout allowing spread to connecting waters.

How can people help?

- Dispose of unwanted aquatic plants in sealed plastic bags in the trash.
- Remove aquatic plants from recreational watercraft, trailers, and equipment before and after transport to other waters.
- Report sightings to the Minnesota Department of Natural Resources or EDDMapS.org.

Further information:

- www.seagrant.umn.edu/exotics/frogbit_card.pdf
- dnr.wi.gov/topic/Invasives/fact/EuropeanFrogbit.html

JULY

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



JUMPING WORMS

Amyntas and
Metaphire species

Keys to ID

- Soil that looks like coffee grounds.
- Very active, move like snakes, and secrete yellow mucus when agitated.
- When disturbed, its tail can break off and continue to flail.
- The ring (clitellum) on adults is close to the head, milky pink in color, encircles the whole body evenly, and is barely raised above the skin.



Gardens and mulched areas are places to look for jumping worms.

Species:

A type of earthworm that is highly active when disturbed.

Origin:

Native to East Asia. Minnesota has no native earthworms.

Impacts:

Jumping worms can dramatically change soils by eating the leaf litter layer and impacting soil chemistry, soil organisms, and plant communities. Invaded soil gets a texture similar to coffee grounds. Homeowners may see garden plants killed and may have difficulty growing plants. Forests can't support the same plant and animal species they did before earthworms.

Status:

Jumping worms have been found in yards in Rochester and the Twin Cities metro area.

Where to look:

They prefer flowerbeds, mulch, compost piles, logs and other shady, moist areas. They live within the top couple inches of soil.

Regulatory classification:

Jumping worms are an unlisted nonnative species (DNR).

Means of spread:

- Earthworms and their cocoons (egg cases) spread in soil, potted landscape plants, sod, mulch (including bark mulch or woodchips), and compost.
- Other earthworm species purchased for composting or fishing bait may be contaminated with jumping worms.

How can people help?

- Don't buy jumping worms.
- Clean soil from gear and equipment before moving them.
- Inspect soil, potted landscape plants, sod, mulch, and compost and do not move material with jumping worms.
- Report suspected jumping worms to EDDMapS.org.
- Dispose of unwanted bait worms in the trash.

Further information:

www.dnr.state.mn.us/invasives/terrestrialanimals/jumping-worm

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	1	2	3	4



Remove plants from decoys.



Inspect your boat and clean off aquatic plants, animals, and mud.

WATERFOWL HUNTING PATHWAY

SEPTEMBER

Species:

Aquatic invasive species (AIS) can be moved to new lakes on waterfowl hunting equipment. They can attach to gear, be hidden in mud, or cling to plants. Examples include faucet snails (*Bithynia tentaculata*) and the nonnative subspecies of *Phragmites australis*.

Impacts:

- Faucet snails can carry a parasite that has killed thousands of diving ducks and coots in Minnesota.
- The nonnative subspecies of *Phragmites australis*, a wetland plant, can overtake habitat and outcompete native plants.

Regulatory classification (agency):

- Faucet snails are a prohibited invasive species (DNR) and are illegal to possess, transport, or introduce.
- The nonnative subspecies of *Phragmites australis* is a noxious weed (MDA), so it is illegal to sell or transport the plant or propagating parts (seeds or roots).

How can people help?

- Clean aquatic plants, animals, and mud from boats, motors, trailers, waders or hip boots, decoy lines, hunting dogs, pushpoles, ATVs, and anchors (elliptical and bulb-shaped anchors reduce snagging aquatic plants).
- Cut cattails or other plants above the waterline for blinds or camouflage, in accordance with regulations. Use only dead stems – do not transport seeds, flowers, or roots.
- Drain all water from boats and equipment, and leave drain plugs out when transporting.
- Dry everything for at least five days before hunting in other waters.
- Check that gear is clean before going back out to hunt.

Further information:

- A short video about AIS prevention for waterfowl hunters: youtu.be/bVYC5Td_AcA

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



WINGED BURNING BUSH

Euonymus alatus

Keys to ID

- Leaves are simple, opposite, and finely toothed, 1-3 inches long and taper to a point.
- Young branches develop corky “wings” giving this shrub a distinctive appearance.
- Fruits mature into red capsules that eventually split open exposing bright orange to red berries.
- Fall color ranges from bright red to pink.



Winged burning bush in a forest understory.

Species:

A woody shrub that reaches 10 feet tall.

Origin:

Native to Asia, including far eastern Russia, central China, Korea, and Japan.

Impacts:

Winged burning bush is very shade tolerant and forms a dense canopy. Because it is a prolific seed producer, seedlings carpet the forest floor and suppress native plant diversity in the understory.

Status:

Winged burning bush has been widely planted as a landscape plant and has recently been documented spreading in Minnesota. The bright fall foliage, along with its shade tolerance and low maintenance, contributed to its popularity as a landscape plant.

Where to look:

Winged burning bush grows well in many conditions, including forests and open areas. It has been documented spreading in parks and natural areas in the Twin Cities metro area and southeastern Minnesota.

Regulatory classification (agency):

It is a specially regulated plant (MDA) which states that production of winged burning bush and all cultivars will be phased out by the nursery industry by 2023. Starting January 1, 2023, it will become a restricted noxious weed (MDA) and will be prohibited from sale or importation.

Means of spread:

It has been planted as a landscape plant. The plants reproduce by seeds which are spread by wildlife to new areas.

How can people help?

- Do not plant winged burning bush or any of its cultivars.
- If you see winged burning bush in places where it hasn't been planted, report those locations on EDDMapS.org.

Further information:

www.mda.state.mn.us/winged-burning-bush

OCTOBER

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



AMPHIBIAN DISEASES

Native amphibians, such as this wood frog, are at risk due to new diseases.

What is it?

Over the past few decades, emerging infectious diseases have caused catastrophic global declines in amphibian populations. Multiple factors have contributed to mass die-offs, including stressors such as climate change, inadvertent transport of pathogens on footwear or gear, and disease spread from captive animals such as from biological supply companies, the pet trade, and bait industries.

Why do we care?

Two diseases have been associated with amphibian die-offs in Minnesota:

- Ranaviruses have been linked to many amphibian, reptile, and fish die-offs in the United States. Die-offs are often in mid to late-summer. Ranaviruses impact frogs, salamanders and toads.
- *Bd* (*Batrachochytrium dendrobatidis*) is a form of chytrid fungus that can impact all species of amphibians, primarily frogs and toads. The American bullfrog is known to act as a carrier of the disease potentially exposing more vulnerable species.

What are symptoms?

Amphibians infected with Ranavirus may be unable to remain upright and may swim on their sides. Symptoms include skin abnormalities such as swollen areas, ulcerations, and reddened skin.

Bd disrupts critical skin functions. Symptoms include weakness, reddened skin, and excessive skin sloughing.

How can people help?

- Report amphibian die-offs to info.dnr@state.mn.us. Note: large die-offs of frogs observed after ice-out are not uncommon due to harsh winters and/or low levels of dissolved oxygen.
- Do not release captive amphibians, reptiles, or fish into the environment.
- Clean boots and field gear.

Further information:

- www.dnr.state.mn.us/reptiles_amphibians/disease
- amphibiaweb.org/declines/diseases.html

NOVEMBER

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



HabitattitudeTM
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS



www.Habitattitude.net



HOLIDAY GREENERY PATHWAY

Minnesota Department of Agriculture staff inspect Christmas trees for invasive species.

Species:

Insects and diseases can hitchhike on trees and holiday greenery. Pests include gypsy moth (*Lymantria dispar*), elongate hemlock scale (*Fiorinia externa*), and the disease boxwood blight (*Calonectria pseudonaviculata*).

Origin:

Native to Europe and Asia

Impacts:

Elongate hemlock scale causes needle drop. Boxwood blight spreads fast, killing nearly all boxwood plants affected. Gypsy moth caterpillars defoliate trees and can impact forests and related industries. Once established, all are difficult and costly to control.

Status:

Elongate hemlock scale and gypsy moth have been found in Minnesota but are not considered established pests. Lake and Cook Counties are under a gypsy moth quarantine. Boxwood blight has never been found in Minnesota.

Where to look:

Gypsy moth egg masses and elongate hemlock scale insects could be found on any type of greenery, such as Christmas trees and wreaths. Boxwood blight could be in holiday greenery containing diseased boxwood leaves.

Regulatory classification (agency):

Gypsy moth is federally regulated (USDA). Other holiday greenery pests are regulated by state quarantines (MDA).

Means of spread:

- Improper disposal of holiday greenery and trees.
- Moving firewood and wood products.

How can people help?

- Do not toss trees and greenery into backyard woods or your compost pile.
- Use a city or county organized tree and greenery pick-up or drop-off.
- If applicable, burn the greens but always check with local ordinances first.

Further information:

- www.mda.state.mn.us/holiday-greenery-best-management-practices

DECEMBER

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



For more information about invasive species in Minnesota

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 Program
888-545-6684

