



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



# INVASIVE 2014 SPECIES

Minnesota Invasive Species Advisory Council



# 2014 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, water hyacinth, and garlic mustard. There are also many new invasive species that could arrive and cause problems. The list of potential invaders includes northern snakehead and annosum root rot.

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.

## Information Sources

The Minnesota Invasive Species Advisory Committee (MISAC) website provides additional 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

[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.

Minnesota Department of Agriculture

[www.mda.state.mn.us/plants](http://www.mda.state.mn.us/plants)

Minnesota Department of Natural Resources

[www.mndnr.gov/invasives](http://www.mndnr.gov/invasives)

Minnesota Sea Grant

[www.seagrant.umn.edu/ais](http://www.seagrant.umn.edu/ais)

U.S. Department of Agriculture - APHIS

[www.aphis.usda.gov](http://www.aphis.usda.gov)

U.S. Department of Agriculture - Forest Service

[www.fs.fed.us/invasivespecies](http://www.fs.fed.us/invasivespecies)

U.S. Department of Agriculture - National Invasive Species Information Center

[www.invasivespeciesinfo.gov](http://www.invasivespeciesinfo.gov)

U.S. Fish and Wildlife Service

[www.fws.gov/invasives](http://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.





# 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 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: 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, and 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".
- MDA "Arrest the Pest" at (651) 201-MOTH (metro) or 1-888-545-MOTH (toll free) or [Arrest.The.Pest@state.mn.us](mailto: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, Asian 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: \_\_\_\_\_ Email: \_\_\_\_\_

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

**Species and Location Information**

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

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

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

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 \_\_\_\_\_ 1/4 1/4 Sec \_\_\_\_\_

or: x Coordinate (Lat/Easting) \_\_\_\_\_



# GYPSY MOTH

## How can people help?

- Burn local or certified firewood.
- Inspect outdoor and recreational equipment for egg masses and clean off anything found.
- If a quarantine is enacted, follow quarantine rules.



Photo: Minnesota Department of Agriculture

Gypsy moth caterpillars (larvae) are active from hatch until pupation, between April and June. Small caterpillars spin a strand of silk to ride the wind and find suitable food.



Gypsy moth adults mate July through September and the female lays her eggs on any solid surface. These egg masses will stay dormant until spring but can start a new infestation if they are moved out of the quarantine.



Photo: Minnesota Department of Agriculture

Minnesota habitat at risk for gypsy moth infestation.

Photo: Minnesota Department of Agriculture



# Gypsy Moth

*Lymantria dispar*

**Species:** A Eurasian moth.  
**Origin:** It is native to Europe and Asia.

**Impacts:** Caterpillars defoliate trees, especially oaks, aspen, and birch, and can kill or weaken them enough to allow other pests and pathogens to infect the tree. For humans, gypsy moth defoliation can affect the aesthetics and values of property, as well as create a nuisance due to the sheer numbers of crawling caterpillars.

**History:** In 1969, a gypsy moth pupa was found in Duluth. The first moth was trapped in 1976. The first "Slow-the-Spread" treatments began on the North Shore in 2006.

**Status:** Covering several eastern counties, the "Slow-the-Spread" program inhibits growing satellite populations by disrupting moth mating. Gypsy moth is also managed in Minnesota through eradication methods that eliminate isolated populations. These two strategies have delayed the establishment of the pest, but populations along the North Shore are reproducing and officials are turning to regulations to help manage them.

**Quarantines:** Quarantines are imposed when pest populations exceed treatment thresholds and there is evidence of a reproducing population. Geographical boundaries are established to reduce or eliminate spread of a pest through human-assisted movement, and delay the effect of gypsy moth on Minnesota's forest resources.

Compliance agreements facilitate trade affected by restrictions by allowing businesses to move logs, nursery stock, Christmas trees, and temporary offices out of the quarantines if they follow rules to reduce the chances of bringing gypsy moth along.

**Means of spread:** Residents and visitors should check their outdoor belongings for egg masses before moving the items.

**Further information:** Visit [www.mda.state.mn.us/gypsymoth](http://www.mda.state.mn.us/gypsymoth) for current information on the progression of the insect in Minnesota.

# 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	20  <i>Martin Luther King, Jr. Birthday</i>	21	22	23	24	25
26	27	28	29	30	31	

# NORTHERN SNAKEHEAD

Photo: John Odenkirk, Department of Game and Inland Fisheries



Photo - King Montgomery



**Keys to ID:** Body brown with dark blotches, flattened head with eyes far forward, near the top of the head. Dorsal and anal fins elongated. It is similar in appearance to native bowfin.

# Northern Snakehead

*Channa argus*

**Species:** Snakehead is an aggressive predatory fish with large teeth whose adult diet is almost all fish. It can grow up to 5 feet long.

**Origin:** China, Russia, and Korea

**Impacts:** Snakehead compete with native species for food and habitat. Juveniles eat zooplankton, insect larvae, crustaceans, and small fish. Adults eat fish, crustaceans, frogs, reptiles, birds, and mammals.

**Status:** Northern snakehead have not been found or reported from any Minnesota waters. They are established in Virginia, Maryland, Pennsylvania, New York, and Arkansas. A single snakehead was found in the Wisconsin River near Janesville, Wisconsin, in 2003. Another was found in Lake Michigan near Chicago, Illinois, in 2004.

**Where to look:** Look in stagnant ponds, swamps and slow streams, under man made structures, or large woody debris. Snakehead tolerate a wide temperature range from 32°F (0°C) to 88°F (31°C), making establishment throughout most of the United States possible.

**Regulatory classification (agency):** They are a *prohibited invasive species* in Minnesota (DNR).

**Means of spread:** Pathways for spread are intentional or unintentional release of live food fish, aquarium release by consumers, and ceremonial (cultural) release.

## How can people help?

- Learn to identify northern snakehead.
- Report sightings, and bring specimen to a local DNR office.
- Do not release fish, other animals, or aquatic plants from one waterbody into another.

**Management information:** Control methods for snakehead are limited and vary with each infestation. Methods include: physical removal, water drawdown, or chemical control.

**Further information:** Contact Minnesota Sea Grant or DNR Invasive Species Specialists at [www.mndnr.gov/invasives](http://www.mndnr.gov/invasives).

# FEBRUARY

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



# DALMATIAN TOADFLAX ERADICATION



▲ Conservation Corps Minnesota (CCM) crew



▼ Working on Dalmatian toadflax eradication



**Keys to ID:** Yellow toadflax is common in Minnesota and looks similar to Dalmatian toadflax. To distinguish the two species, compare the small, narrow, linear yellow toadflax leaves to the thick, waxy, clasping, heart-shaped Dalmatian toadflax leaves. Leaves and stems are a waxy, bluish-green. Leaves are heart-shaped, 1-3 inches long and clasp the stem. ▶

◀ **Keys to ID:** Dalmatian toadflax looks like a large snapdragon with multiple yellow flowers arranged in spikes on the stems.





# Dalmatian Toadflax Eradication Effort

*Linaria dalmatica ssp. dalmatica*

**Species:** Perennial plant.

**Origin:** Native to the Mediterranean region.

**Impacts:** Dalmatian toadflax overtakes grasslands resulting in reduced forage production, biodiversity, and wildlife habitat.

**Status:** A public-private partnership was formed to eradicate Dalmatian toadflax from Minnesota. There is a single documented infestation in Kittson County. The Nature Conservancy, Kittson County, impacted private landowners, Conservation Corps Minnesota, University of Minnesota, and the Minnesota departments of Transportation, Agriculture and Natural Resources with support from the Environment and Natural Resources Trust Fund collaborate on Dalmatian toadflax eradication. The control effort was initiated in 2011 and is anticipated to span at least five years. As a last act before the 2011 government shutdown, transportation crews pulled plants to prevent them from going to seed. This ongoing effort is the first attempt at eradicating an invasive plant species on a state level where the infestation spans multiple landowners.

**Where to look:** Dalmatian toadflax thrives in sunny areas with well-drained, often sandy soils.

**Regulatory classification (agency):** Dalmatian toadflax is a *prohibited noxious weed* on the eradicate list (MDA).

**Means of spread:** Dalmatian toadflax reproduces by lateral roots and seed. Plants are self-compatible so that a single plant can produce viable seed and start an infestation. Seed dispersal can be by wind, water, wildlife, vehicles and equipment, forage, and livestock.

## How can people help?

- Report suspected Dalmatian toadflax plants to the Minnesota Department of Agriculture at [Arrest.The.Pest@state.mn.us](mailto:Arrest.The.Pest@state.mn.us) or 1-888-545-6684.

# MARCH

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



# PARROT'S FEATHER



Photo: Paul Skawinski, Wisconsin Department of Natural Resources

Photo: Paul Skawinski, Wisconsin Department of Natural Resources

Photo: Paul Skawinski, Wisconsin Department of Natural Resources



**Keys to ID:** Floating or rooted plants have feather-like leaves suspended above or below water surface which are whorled around the stem in groupings of four or six leaves. Emergent leaves can grow up to 1 foot above the water surface looking like small fir trees. Flowers are not usually present, but are small and white, appearing on the leaves at a size of about 1/16-inch.



# Parrot's Feather

*Myriophyllum aquaticum*

**Species:** Related to Eurasian watermilfoil, this immersed plant grows to the water's surface.

**Origin:** Native to South America

**Impacts:** It forms dense mats in both shallow and deep water, outcompetes native aquatic plants, depletes dissolved oxygen, impacts fish and aquatic life, and creates breeding habitat for mosquitos.

**Status:** Parrot's feather, water hyacinth, and water lettuce were found in Pool 5 of the Mississippi River near Winona, Minnesota, in 2012. It is distributed in parts of the southern United States and as far north as New York.

**Where to look:** Look in ponds, ditches, lakes, streams, and canals. It thrives in nutrient rich environments and tolerates fluctuations in water temperature and nutrient levels.

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

**Means of spread:** Parrot's feather placed in water gardens and aquariums may establish in natural waters when planted, released, or allowed to escape. It also spreads when plant fragments are transported on boats, trailers, and equipment.

## How can people help?

- Learn to identify parrot's feather.
- Report sightings to a local DNR office.
- Dispose of unwanted aquatic plants in sealed plastic bags in the trash.
- Remove aquatic plants from watercraft, trailers, and equipment before leaving water accesses.
- Do not release plants from aquariums and water gardens into the environment.

**Management information:** Control is difficult. It is resistant to herbicides. Mechanical removal has shown limited success.

**Further information:** Contact Minnesota Sea Grant or DNR Invasive Species Specialists at [www.mndnr.gov/invasives](http://www.mndnr.gov/invasives).

# APRIL

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



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[www.HabitatTitude.net](http://www.HabitatTitude.net)



# WORK.CLEAN.GO.



Photo: Minnesota Department of Natural Resources



Photo: Joseph J. Jager, Bugwood.org



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



Photo: Chris Evans, Illinois Wildlife Action Plan, Bugwood.org



**Keys to ID:** Forms a basal rosette for one or more years and then bolts to a tall (7-ft.+) flowering stalk. Small white flowers are clustered together on terminal heads. Blooms July-September. Leaves on the flowering stalks are large, deeply-lobed, opposite, and wrap around the stem, forming cups that can hold water.

Photo: Minnesota Department of Transportation



# WORK.CLEAN.GO.

## Cutleaf Teasel

*Dipsacus laciniatus*

## Earthworms

**Species:** These are examples of invasive species that can be spread through work activities. Mowing when an invasive plant is in seed can spread the seed along the roadside and to your next site. Earthworm cocoons and weed seeds can be moved by mud attached to boots, equipment, and vehicles.

**Origin:** Cutleaf teasel is native to Europe. Earthworms are native to Eurasia. Minnesota has no native earthworms.

**Impacts:** Teasel and other invasive plants can form dense monocultures that crowd out other species. Earthworms consume the leaf litter in forests, causing tree seedlings, ferns, and wildflowers to decline.

**Status:** Cutleaf teasel is most common in southeastern Minnesota. Fifteen non-native earthworms have established in Minnesota, but many areas of the state are earthworm-free or have only one or two species.

**Where to look:** Inspect your equipment, mowers, and vehicles for mud and attached vegetation.

### Regulatory classification (agency):

Cutleaf teasel is a *prohibited noxious weed* on the eradicate list (MDA). Earthworms are *unlisted invasive species* (DNR).

**Means of spread:** Mud or plant parts attached to equipment and vehicles.

### How can people help?

- Come clean – start work with clean equipment.
- Avoid moving through patches of invasive plants.
- Don't mow invasive plants when they're in seed.
- Plan work to start the day in the area with the least invasives, then move to more infested areas.
- Leave clean – knock off soil, use a leaf blower to blow off mowing equipment, brush off your boots with a boot brush.

**Further information:** Work.Clean.Go.  
[www.playcleango.org/takeaction](http://www.playcleango.org/takeaction).

# MAY

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



STOP INVASIVE SPECIES  
IN YOUR TRACKS.  
THE STATE OF MINNESOTA

# EDIBLE INVASIVE SPECIES

Garlic Mustard



## Garlic Mustard Pesto

3 cups garlic mustard greens, chopped and packed. Pick greens from an unsprayed area and thoroughly wash them.

6 ounces pine nuts or walnuts

1 teaspoon garlic mustard root, sliced

4 tablespoons fresh chives, chopped

6 ounces virgin olive oil

8 cups cooked penne pasta

Salt to taste

4 ounces Parmesan cheese, grated

Add pasta, stir and cook according to the box directions. When the pasta is nearly finished, let it settle to the bottom of the pot and lay the wild garlic mustard leaves into the water only for 10 seconds to wilt. Skim the wilted greens out, drain briefly, and place them in a blender with the garlic and olive oil.

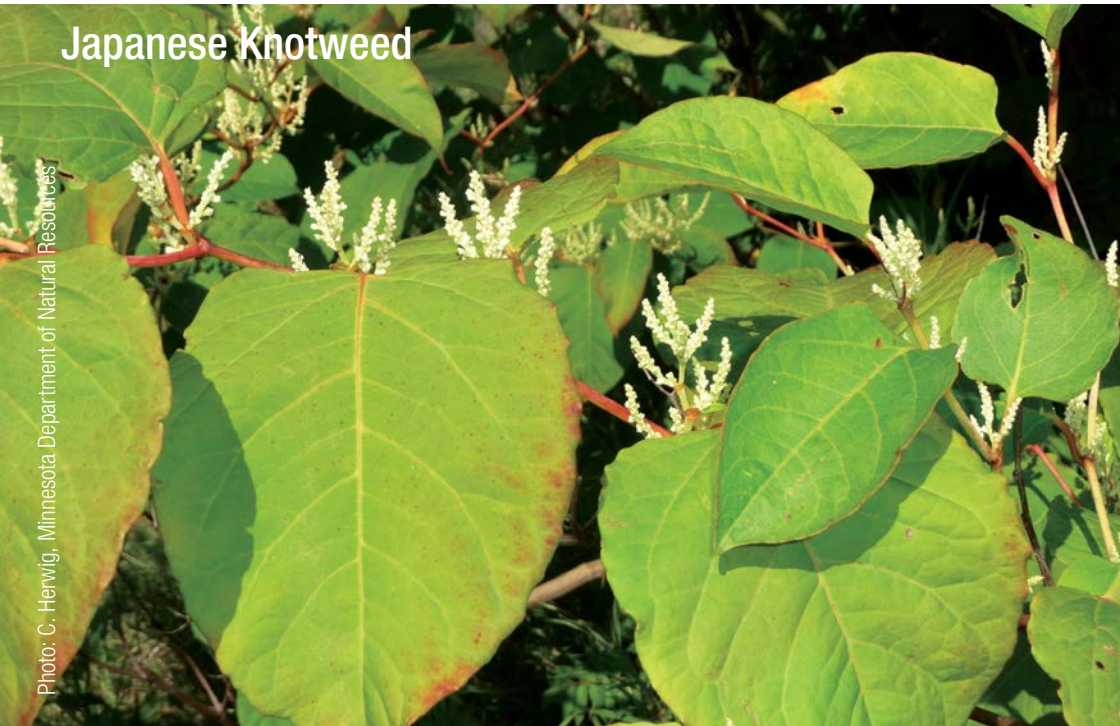
Puree fully, seasoning to taste with salt and pepper.

Drain the pasta well and coat to your liking with the mustard greens puree.

Toss with Parmesan cheese to taste.

*Recipe courtesy of the Kalamazoo Nature Center.*

Japanese Knotweed



## Japanese Knotweed Sherbet

3 cups Japanese knotweed stalks, peeled if desired, coarsely sliced

1-1/3 cups orange juice (freshly squeezed is best)

1-1/2 cups apple juice or other fruit juice

1/2 cup lemon juice

1/4 cup canola oil

1/4 cup honey

1 tbs. freshly grated orange rind

2 tsp. vanilla extract

1 tsp. lemon extract

1 tsp. liquid stevia (optional)

1/4 tsp. salt

Simmer the Japanese knotweed shoots in the orange juice, apple juice, and lemon juice 10 minutes or until soft.

Puree in a blender with the remaining ingredients.

Chill. Pour into an ice cream machine and run it until done.

*Recipe courtesy of Steve Brill, [www.wildmanstevebrill.com](http://www.wildmanstevebrill.com).*



# EDIBLE INVASIVE SPECIES

Have you heard the term "invasivore"? There are many invaders that are edible so the idea is to help reduce the impact on the environment and prepare a delicious meal at the same time.

A few cautions regarding eating invasive species:

- Follow all laws regarding transportation of invasive species.
- Never eat anything you collect unless you are certain of its identification and that it is safe to eat.
- Don't plant invasive species in your garden.
- Get permission from landowners before picking anything.
- Properly dispose of uneaten parts to avoid spreading the invasive species.
- Be aware that people may have food allergies.

## PASTA: GARLIC MUSTARD PESTO

Garlic mustard was first introduced deliberately as an edible green. It is high in vitamins A and C and can be found in various habitats throughout Minnesota. Choose tender young leaves of the flowering plant and enjoy them raw in mixed salads or prepared.

NOTE: Movement of the seeds or propagating parts of noxious weeds, such as garlic mustard, is prohibited. Collect only the tender leaves off the stems of the younger plants making sure not to transport any garlic mustard seeds off-site.

## DESSERT: JAPANESE KNOTWEED SHERBET

Japanese knotweed shoots are tender and tart, much like rhubarb. Pick shoots in early spring when they resemble asparagus. Knotweed is rich in vitamins A and C and contains resveratrol, the same antioxidant found in grape skins that lowers LDL cholesterol. Pick shoots 6-8 inches tall to make this frozen treat.

Note: Japanese knotweed can reproduce by small fragments. Do not add uneaten pieces to a compost pile.

# JUNE

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 <i>Father's Day</i>	16	17	18	19	20	21 <i>Summer Begins</i>
22	23	24	25	26	27	28
29	30					



# BLACK SWALLOW-WORT



Photo: A. Cortlet, Minnesota Department of Agriculture



Photo: M. Chandler, Minnesota Department of Agriculture

## Keys to ID:

**Pod:** 3-inch long seed pods are slender and tapering similar to other milkweeds.



**Keys to ID:** Twining stems, leaves are simple, dark green, oblong and pointed. Minnesota has no native milkweeds that are vines. **Flowers:** Small (1/4-inch) purplish-black flowers with yellow centers bloom in June and July.



Photo: A. Cortlet, Minnesota Department of Agriculture



## Black Swallow-wort

*Cynanchum louiseae*

**Species:** Black swallow-wort is a perennial herbaceous vine in the milkweed family.

**Origin:** Native to Europe, it has been sold in the U.S. for ornamental plantings.

**Impacts:** Grows aggressively and forms dense patches that can cover other species. May have negative impacts on monarch butterflies by displacing the native milkweeds upon which monarchs depend.

Additionally, swallow-wort may serve as a fatal host to monarch larvae. When monarch butterflies lay eggs on black swallow-wort, the butterfly larvae are unable to develop, and die.

**Status:** Isolated patches of black swallow-wort have been found in Minnesota in Hennepin and Ramsey counties.

**Where to look:** Look in residential areas and rural homesteads in gardens along fences and hedges, also look in grasslands, savannas, and forests.

**Regulatory classification (agency):** Black swallow-wort 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 are allowed.

**Means of spread:** Like other members of the milkweed family, seeds are wind-dispersed. Plants also can spread by rhizomes.

### How can people help?

- Keep a lookout and report occurrences to MDA at [Arrest.The.Pest@state.mn.us](mailto:Arrest.The.Pest@state.mn.us) or 1-888-545-6684

**Further information:** Visit [www.mda.state.mn.us/plants/badplants/swallowwort.aspx](http://www.mda.state.mn.us/plants/badplants/swallowwort.aspx).

# 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 WING DROSOPHILA



Close-up of female ovipositor showing "saw teeth".



Larva in raspberry.



Adult male on a raspberry – look for wing spots on adult males.



**Keys to ID:** Adult male flies can be identified by the prominent spot on each wing. They can be distinguished from look-alikes with a 10x lens by the location of the spots. Adult female flies can be identified by the structure of the ovipositor – this requires a 30x dissecting scope. Larval instars of SWD cannot be distinguished from other fly larvae, but if the larvae are seen in ripening fruit, SWD may be suspected.



## Spotted Wing Drosophila

*Drosophila suzukii*

**Species:** Spotted wing drosophila (SWD) is a species of vinegar fly.

**Origin:** SWD is native to southeast Asia.

**Impacts:** SWD is a pest of soft fruits. Unlike most vinegar flies which are restricted to laying eggs within overripe or rotting fruit, SWD females have saw-like ovipositors that allow them to penetrate and lay eggs in ripening fruit.

**Status:** SWD was first discovered in North America in 2008 and was first found in Minnesota in August 2012.

**Where to look:** Several soft fruit crops such as grapes, cherries and berries are potential hosts for SWD. In 2012, the biggest impact in Minnesota was to fall raspberries.

**Regulatory classification (agency):** Since it has already been found throughout the U.S. and most of Minnesota, SWD is not a regulated pest.

**Means of spread:** SWD is already widespread in North America — probably due in part to the movement of infested fruit.

### How can people help?

- SWD is still new to Minnesota. Inquire with Minnesota Department of Agriculture for information about volunteer monitoring networks to help predict areas where SWD problems are developing.

**Management information:** Anyone growing thin-skinned fruits should be aware of SWD and the potential impacts to their fruit. The University of Minnesota has recommendations for management and is working to tailor them for Minnesota.

# 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						



# WATER HYACINTH



**Keys to ID:** Showy, lavender flowers. Rounded, leathery leaves attached to spongy stalks, and dark feathery roots.



# Water Hyacinth

*Eichhornia crassipes*

**Species:** Dubbed one of the “One Hundred of the World’s Worst Invasive Alien Species,” populations of this fast-growing plant can double in as little as 12 days.

**Origin:** Water hyacinth is native to South America

**Impacts:** Rooted and free-floating mats clog waterways, making boating and fishing nearly impossible. Dense mats block sunlight, decreasing oxygen levels and biological diversity. These effects create habitat for disease carrying insects like mosquitos.

**Status:** It was previously reported in ponds and lakes in Chisago and Ramsey counties. Water hyacinth plants were found in Pool 5 of the Mississippi River near Winona, Minnesota, in 2011. Despite attempts to physically remove all of the plants, it was found in Pool 5 again in 2012. A separate population was found in Lac qui Parle Lake in 2012.

**Where to look:** Look for water hyacinth in lakes, rivers, ponds, and ditches.

**Regulatory classification (agency):** It is an *unlisted invasive species* in Minnesota (DNR).

**Means of spread:** Water hyacinth used in water gardens may establish in natural waters when planted or discarded there. It can reproduce by seed and vegetatively, producing hundreds of daughter plants that form on rhizomes.

## How can people help?

- Learn to identify water hyacinth.
- Report sightings to a local DNR office.
- Dispose of unwanted aquatic plants in sealed plastic bags in the trash.
- Do not release plants from aquariums and water gardens into the environment.

**Management information:** Mechanical harvest, insect biocontrols, and herbicides have been used to manage this invasive.

**Further information:** Contact Minnesota Sea Grant or DNR Invasive Species Specialists at [www.mndnr.gov/invasives](http://www.mndnr.gov/invasives).

# SEPTEMBER

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



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# ANNOSUM ROOT ROT



Photo: Wisconsin Department of Natural Resources



**Keys to ID:** Fruit bodies occur at the root collar of living/dead trees, on stumps or slash, or buried under soil and fallen needles. Bracket-shaped conks vary in size, have a light-gray to brown upper surface and a creamy white to light-brown lower pore surface.



# Annosum Root Rot

*Heterobasidion irregulare* (formerly *Heterobasidion annosum*)

**Species:** *H. irregulare* is a fungus within the species complex of *H. annosum*.

**Origin:** It is native to the Northern hemisphere

**Impacts:** *H. irregulare* causes root and butt rot of conifers. Although it is devastating to conifers, hardwoods are somewhat resistant to the fungus. Stringy, yellow decay results in severely weakened roots and lower stem; thin foliage; reduced height, diameter and shoot growth; and eventual mortality. Once established, it is extremely difficult to eradicate.

**Status:** There is no record of annosum root rot in Minnesota. It has been confirmed in 23 Wisconsin counties since 1993.

**Where to look:** Annosum root rot is most damaging in conifer stands where intensive thinning is used. Suspect it in root disease centers with expanding areas of dead/dying trees.

**Regulatory classification (agency):** None.

**Means of spread:** The pathogen spreads by wind-dispersed spores that land on and colonize freshly cut stumps, moves into the roots, and then spreads by root contact to adjacent trees.

## How can people help?

- Know the location of the nearest annosum root rot center.
- Do not transport dead conifers from areas with the disease.
- Recognize *H. irregulare* conks.

**Management information:** Avoid planting conifers on sites that may contribute to disease development. Treat stumps with boron formulations soon after cutting. Wash harvesting equipment before entering new sites.

Visit: [www.dnr.wi.gov/topic/ForestHealth/AnnosumRootRot](http://www.dnr.wi.gov/topic/ForestHealth/AnnosumRootRot) to learn more.

# 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
19	20	21	22	23	24	25
26	27	28	29	30	31	

Columbus Day

Upper Midwest Invasive  
Species Conference  
Oct. 20-22  
Duluth, MN

Halloween

# GRASS CARP



**Keys to ID:** Elongate body, dark olive to brownish-yellow laterally. Scales gray with dark edges. Broad, blunt head with slightly down-turned mouth and no barbels. Dorsal fin short and pointed with 8-10 rays. Anal fin set closer to base of caudal fin than other carps.



# Grass Carp

*Ctenopharyngodon idella*

**Species:** A large torpedo-shaped, voracious, plant-eating fish weighing up to 70 pounds.

**Origin:** Native to southeastern Russia and northwest China, they were imported to the U.S. in 1963 for research and to control aquatic plants in reservoirs and aquaculture ponds.

**Impacts:** They can consume up to three times their body weight in aquatic vegetation daily, and harm water quality by increasing phosphorus levels. Resultant damage to food webs destroys habitat preferred by native fish and waterfowl.

**Status:** Grass carp have been caught in Minnesota. Several individuals have been caught by commercial fishermen in border waters including the St. Croix River (2006), Okamanpeedan Lake (2011), and the Mississippi River near Winona (2012), as well as by a bow fishing angler further north in the Mississippi River near Sartell (2013).

**Where to look:** They prefer densely vegetated shoreline areas in large rivers, backwater areas, lakes, and ponds around 3-10 feet deep.

**Regulatory classification (agency):** They are a *prohibited invasive species* in Minnesota (DNR).

**Means of spread:** They have been spread by intentional stocking into ponds for vegetation control and then by escaping due to flooding or inadequate barriers. Once they have escaped, they may spread along connected waterways such as the Mississippi River. They may spread due to release by consumers who originally purchased them in live food markets. They are found in 45 states.

**How can people help?**

- Learn to identify grass carp.
- Report sightings and bring to a local DNR office.
- Do not release fish, other animals, or aquatic plants from one waterbody into another.

**Further information:** Contact Minnesota Sea Grant or DNR Invasive Species Specialist at [www.mndnr.gov/invasives](http://www.mndnr.gov/invasives).

# NOVEMBER

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



# WOOD PATHWAY



Photo: E. Conners, Minnesota Department of Agriculture



Pine logs brought from Montana to Minnesota also could bring in the mountain pine beetle.



Photo: Chad Tucker, Exotic Mazatlan Burl woods and hardwoods.



**Keys to ID:** Black walnut burl usually originates in western U.S. It is highly desired by wood turners, but could carry the walnut twig beetle and thousand cankers disease.



## Wood Pathway

**Common names of species and diseases that can be transported by wood:** Annosum root rot disease, Asian long-horned beetle, Douglas fir beetle, Dutch elm disease, eight-toothed spruce bark beetle, emerald ash borer, gypsy moth, hemlock woolly adelgid, Japanese oak wilt, mountain pine beetle, pine shoot beetle, oak wilt, siren wood wasp, sudden oak death, and thousand cankers disease.

**Species:** These are examples of invasive species that can be spread by the movement of wood, with or without bark, depending on the pest.

**Origin:** None of these species originate in Minnesota.

**Impacts:** These pests result or have the potential to result in decline and mortality of up to millions of trees in the U.S. by cankers and tunneling that kill the cambium; defoliation; providing entry for secondary pathogens; shoot dieback; weakening the structure, and wilting.

**Status:** Varies by pest.

**Where to look:** Look on or in any kind of unfinished wood or wood product.

**Regulatory classification (agency):** Varies by pest, includes federal quarantines and state quarantines (interior and exterior).

**Means of spread:** Invasive pests can be spread on firewood, pallets, logs, mulch, specialty wood for cooking, waste/debris, wood for hobbyists (e.g. burl wood).

**How can people help?**

- Follow all regulations regarding the movement of wood.
- Don't move any unfinished wood unless it has been treated or inspected to be free of pests.
- Adhere to International Standards for Phytosanitary Measures for solid wood packing material.

**Further information:** Visit

[www.mda.state.mn.us](http://www.mda.state.mn.us)  
[www.dnr.state.mn.us](http://www.dnr.state.mn.us)  
[www.dontmovefirewood.org](http://www.dontmovefirewood.org)

# DECEMBER

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



## 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 Aquatic Invasive  
Species Information Center  
**(218) 726-8712**

**Terrestrial Plants and Insects**  
Minnesota Department of Agriculture-  
Invasive Species Programs  
**(651) 201-6328**

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Gypsy Moth



Northern Snakehead



Dalmatian Toadflax Eradication Effort



Parrot's Feather



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Edible Invasive Species



Black Swallow-wort



Spotted Wing Drosophila



Water Hyacinth



Annosum Root Rot



Grass Carp



Wood Pathway