



Minnesota Invasive Species Advisory Council Ratings of Invasive Species of Concern to Minnesota

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Summary

The [Minnesota Invasive Species Advisory Council](#) (MISAC) led this effort to compile lists of invasive species of concern to Minnesota. This is an extensive list covering multiple taxa. The seven taxa categories are aquatic animals, aquatic microbes, aquatic plants, terrestrial animals, terrestrial insects, terrestrial pathogens, and terrestrial plants. Taxa teams compiled existing lists of problematic or potentially problematic invasive species developed for Minnesota or the Midwest. For each species it was noted if the species was present in Minnesota as of 2019, its risk of spread, its level of potential threat to human health, the physical environment, ecological impacts, economies, and infrastructure, as well as the difficulty of management. The final lists describe 230 invasive species present in Minnesota, 103 invasive species present but not established in Minnesota, and 268 invasive species not known to be present in Minnesota, but of concern to Minnesota. These lists do not

identify all the invasive species that occur, or could occur, in the state. These are educational and informational lists that can be used by managers, policy makers, researchers, and other interested parties.

Introduction

The Minnesota Invasive Species Advisory Council (MISAC) developed and published the document [A Minnesota State Management Plan for Invasive Species](#) (October 20, 2009). In that document, Appendix D provided a list of species of concern to Minnesota. This list provides a central place to list both aquatic and terrestrial invasive species in multiple taxa. In 2019, MISAC convened taxa teams to update the 2009 list. MISAC identified multiple reasons to update the list:

- 1) To maintain a current list of species of concern for Minnesota as a reference for businesses, residents, organizations, and agencies working in the state.
- 2) To maintain a current list of species of concern for grant writing purposes; several outside funding agencies require such a list.
- 3) The 2009 list was ten years old and there was new information available on distribution, impacts, management, etc.
- 4) Some taxa were left off the original list (for example, aquatic and terrestrial pathogens/microbes).
- 5) The 2009 Minnesota State Management Plan for Invasive Species will be updated and there should be an up to date species list to go along with that update.

The list is an educational list of species. While some species on the list are regulated by state or federal agencies, MISAC and the MISAC species list itself has no regulatory authority. The MISAC invasive species list provides a centralized resource for interested parties to learn about some of the invasive species threats to Minnesota.

Methods

MISAC acknowledges many other lists of invasive species have been developed since the 2009 State Plan and each list has their value. Different lists have different uses and are based on different criteria. The intent of the MISAC list is not to replace the other lists. As a multi-organization group focused on invasive species in Minnesota, it is appropriate for MISAC to develop a single multi-taxa list that includes and rates species in a transparent and uniform way. MISAC compiled a master “list of lists” that includes the status given each species in other lists. This master list was used to guide the taxa teams as they evaluated species.

Lists of species

In 2019, the following lists were compiled to provide a master list of species. In some cases taxa teams added additional species to the list based on their professional judgement. The list of sources for species is provided in a separate Excel file.

Aquatic invasive species

- [University of Minnesota Aquatic Invasive Species Research Center \(MAISRC\) 2015 Species Priority List](#)
- [MAISRC 2018 Priority Species List](#)
- [Great Lakes St Lawrence Governors and Premiers Least wanted list 2013](#)
- [US Fish and Wildlife Service Lacey Act Aquatic Species \(February 2017\)](#)
- [St. Louis County Sentry AIS](#)
- [MN Department of Natural Resources \(DNR\) Operational Order 113 Handbook Species List](#)
- [Established in Great Lakes species associated with the aquarium trade](#)
- [Midwest Invasive Plant Network \(MIPN\) list of plant species on regulatory or informational invasive species lists in Midwest states](#)
- [MN DNR Invasive Species and Laws](#)
- [Minnow Importation Risk Report](#)
- [MISAC 2009 State invasive species plan, Appendix D](#)

Terrestrial invasive species

- [MISAC 2009 State invasive species plan, Appendix D](#)
- [MN DNR Invasive Terrestrial Plants informational website](#)
- [MN DNR Invasive Terrestrial Pathogens informational website](#)
- [MN DNR Invasive Terrestrial Animals informational website](#)
- [MN DNR Operational Order 113 Handbook Species List](#)
- [MN Dept of Agriculture \(MDA\) noxious weed list](#)
- [Midwest Invasive Plant Network \(MIPN\) list of plant species on regulatory or informational invasive species lists in Midwest states](#)
- [Potentially Problematic Introduced Plants 10 19 2015](#)
- [University of Minnesota Invasive Terrestrial Plants and Pests Center](#)
- [US Department of Agriculture Cooperative Agricultural Pest Survey list](#)
- [Three Rivers Park District Attachment A-1 & A-2](#)
- [Minnesota Department of Agriculture Insects and Pathogens Regulated Under Quarantines in Minnesota](#)

Taxa teams

Species ratings were done separately across taxa by small groups of taxa experts (“taxa teams”), utilizing a rating process that is consistent across taxa. The process was similar to that used in the original 2009 list. There were 7 taxa teams:

1. Aquatic animals
2. Aquatic microbes

3. Aquatic plants
4. Terrestrial animals
5. Terrestrial insects
6. Terrestrial pathogens
7. Terrestrial plants

The taxa teams were provided with the species from the master list to evaluate. Taxa teams also had the flexibility to add additional species if they determined it was appropriate. Species not known to be present in Minnesota could be on the list if the taxa team considered them likely to arrive and survive in Minnesota within the next five years. These would include species that are known to occur in adjacent states, or invasive species associated with products that are moved frequently or in large volumes into the state. Species could be removed from the list if they did not meet this criteria.

Guidance for species ratings

For each species, the teams filled in the status within Minnesota, the risk of spread, the risk of damage in five categories, and the ease of management. The following lists the different ratings for those categories. Each species was reviewed by a minimum of two reviewers. Rating questions were discussed among the taxa teams. Species ratings were compiled during 2019 and reflect knowledge of distribution and impacts at that time.

Status within Minnesota

- Not present = not known to occur in MN
- Not established = reported but not confirmed or not permanently established in MN
- Established = permanently established in MN
- Unknown = the risk of spread is not currently known

Risk of spread into or within Minnesota

Risk of spread includes both risk of spread by humans and the species moving on its own. The climate and habitat match in Minnesota was also considered.

- High = if not present in the state: highly likely to be introduced or if present in the state: highly likely to spread within the state
- Moderate = if not present in the state: moderately likely to be introduced or if present in the state: moderately likely to spread within the state
- Low = if not present in the state: unlikely to be introduced or if present in the state: unlikely to spread within the state

Risk of damage to each of five types of resources

1. Human health
2. Physical environment (air, soil, water, microclimate)
3. Ecological impacts (native species, natural communities, etc.)
4. State economies (agriculture/agribusiness, timber/wood products, landscaping/nursery products, recreation, stored products, property values)
5. State infrastructure (buildings, roads, etc.)

Risk of damage ratings for each of the five types of resources:

- High = likely to cause high level damage such as direct toxicity, species mortality, severe community degradation, severe permanent change to ecosystem functions, or severe financial impact
- Moderate = likely to cause moderate level damage such as serious illness, moderate species displacement, moderate community degradation, moderate impacts to ecosystems function, or moderate financial impacts
- Low = likely to cause low level damage such as skin irritations, low levels of species displacement, some community degradation, some impact to ecosystem functions, or some financial impacts
- Unknown = the likelihood of damage is not known
- None = no impact is likely to occur

Ease of Management

- Extremely difficult = management options do not exist, or are prohibitively expensive or very difficult to implement
- Difficult = management options exist but require considerable time and money to implement
- Not Difficult = management options exist and can be integrated to practices typical for that resource area/type

For aquatic microbes only: Origin

For aquatic microbes, there are a number of species where it is not yet known if the species is native or non-native to Minnesota. The aquatic microbes taxa team wanted to be transparent about that uncertainty so the table for aquatic microbes contains a column that indicates whether the origin of the aquatic microbe is non-native or unknown.

Future updates

The list can be updated as needed. It is a goal for the list to be reviewed every ten years.

Species ratings

This section lists the species ratings for the seven taxa. Table 1 summarizes the number of species for each taxa and how many of those were considered present in Minnesota in 2019, how many were present but not established in Minnesota, and how many were not known to be present. In all, there were 604 species evaluated across the taxa. While taxa teams worked with invasive species lists that already existed and in some cases added additional species to the lists, the teams acknowledge that there are invasive species that were not evaluated in this process and that other entities may have additional species they would have added.

Table 1. Summary table of the number of species evaluated and their presence in Minnesota. For terrestrial plants, there were 3 species where their presence in Minnesota was unknown.

Taxa	Total number of species evaluated	Number of species established in Minnesota as of 2019	Number of species present, but not established in Minnesota as of 2019	Number of species not known to be present in Minnesota as of 2019
Aquatic animals	75	26	11	38
Aquatic microbes	33	11	4	18
Aquatic plants	46	13	5	28
Terrestrial animals	29	13	5	11
Terrestrial insects	84	12	2	70
Terrestrial pathogens	55	13	9	33
Terrestrial plants	282	142	67	70
All taxa combined	604	230	103	268
All aquatic taxa	154	50	20	84
All terrestrial taxa	450	180	83	184

Aquatic animals

The aquatic invasive animal species ratings (Table 2) includes 75 species. Of the 75 species, 26 are established in Minnesota, 11 are present but not established, and 38 are not known to be present in Minnesota.

Thirty-two species were rated to have the potential for high ecological impacts. Of those, 12 are considered established in Minnesota, 5 present but not established, and 15 as not present. The 12 established species are: quagga mussel (*Dreissena bugensis*, *Dreissena rostriformis*), zebra mussel (*Dreissena polymorpha*), sea lamprey (*Petromyzon marinus*), faucet snail (*Bithynia tentaculata*), spiny waterflea (*Bythotrephes longimanus*), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), ruffe (*Gymnocephalus cernuus*), round goby (*Neogobius*

melanostomus), rainbow smelt (*Osmerus mordax*), brown trout (*Salmo trutta*), and rusty crayfish (*Faxonius rusticus*). The five present but not established species are: fishhook waterflea (*Cercopagis pengoi*), grass carp (*Ctenopharyngodon idella*), silver carp (*Hypophthalmichthys molitrix*), bighead carp (*Hypophthalmichthys nobilis*), and red swamp crayfish (*Procambarus clarkii*). The 15 that are not present are: golden mussel (*Limnperna fortunei*), stone moroko (*Pseudorasbora parva*), Crucian carp (*Carassius carassius*), killer shrimp (*Dikerogammarus villosus*), Amur sleeper (*Perccottus glenii*), Prussian carp (*Carassius gibelio*), northern snakehead fish (*Channa argus*), snakehead family (Channidae family), yabby (*Cherax destructor*), largescale silver carp (*Hypophthalmichthys harmandi*), Nile perch (*Lates niloticus*), black carp (*Mylopharyngodon piceus*), European perch (*Perca fluviatilis*), Wels catfish (*Siluris glanis*), and tilapia (*Tilapia, Oreochromis, and Sarotherodon species*).

Five species were rated to have the potential for high economic impacts. Of the five, quagga mussels, zebra mussels, and sea lamprey are considered established in Minnesota. Golden mussels and stone moroko are not known to be present in Minnesota.

Table 2. Aquatic invasive animals ratings.

Scientific name (past names in parantheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Alosa pseudoharengus</i>	Alewife	Established	Low	None	Low	Moderate	Low	None	Extremely Difficult
<i>Apeltes quadracus</i>	Fourspine stickleback	Not Present	Moderate	None	None	Moderate	Low	None	Extremely Difficult
<i>Argulus japonicus</i>	Parasitic copepod	Not Present	Moderate	None	None	Moderate	Moderate	None	Extremely Difficult
<i>Bithynia tentaculata</i>	Faucet snail	Established	High	Low	Low	High	Low	Moderate	Extremely Difficult
<i>Branchiura sowerbyi</i>	Tubificid worm	Not Present	Low	None	Low	Low	Low	None	Extremely Difficult
<i>Bythotrephes longimanus (B. cederstroemi)</i>	Spiny waterflea	Established	High	None	Moderate	High	Moderate	Low	Extremely Difficult
<i>Carassius auratus</i>	Goldfish	Established	High	None	High	High	Moderate	Low	Difficult
<i>Carassius carassius</i>	Crucian carp	Not Present	Moderate	None	Moderate	High	Low	None	Difficult
<i>Carassius gibelio</i>	Prussian carp	Not Present	High	None	Moderate	High	Moderate	Low	Difficult
<i>Cercopagis pengoi</i>	Fishhook waterflea	Present, Not Established	Moderate	None	Low	High	Low	None	Extremely Difficult

Scientific name (past names in parantheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environ- ment	Ecological Impacts	Economies	Infrastructure	Management
<i>Channa argus</i>	Northern snakehead fish	Not Present	High	None	None	High	Moderate	None	Extremely Difficult
Channidae family	Snakehead family	Not Present	Moderate	Moderate	None	High	Moderate	None	Extremely Difficult
<i>Chelicorophium curvispinum</i>	Caspian mud shrimp	Not Present	Moderate	None	Moderate	Moderate	Low	None	Extremely Difficult
<i>Cherax destructor</i>	Yabby	Not Present	Moderate	None	Low	High	Moderate	Low	Extremely Difficult
<i>Cipangopaludina chinensis malleata</i>	Chinese mysterysnail	Established	High	Unknown	Low	Moderate	Low	Low	Difficult
<i>Cipangopaludina japonica</i>	Japanese mysterysnail	Present, Not Established	High	Unknown	Low	Moderate	Low	Low	Difficult
Clariidae family	Walking catfish family	Not Present	Low	None	None	Moderate	Moderate	None	Extremely Difficult
<i>Corbicula fluminea</i>	Corbicula, Asiatic clam	Established	Low	None	Low	Low	Low	Moderate	Difficult
<i>Cordylophora caspia</i>	Freshwater hydroid	Established	Low	None	Moderate	Low	Low	Moderate	Extremely Difficult
<i>Ctenopharyngodon idella</i>	Grass carp	Present, Not Established	High	None	Moderate	High	Low	Low	Difficult
<i>Cyprinus carpio</i>	Common carp, koi	Established	High	None	High	High	Moderate	Low	Difficult
<i>Daphnia lumholtzi</i>	Lumholtzi waterflea	Established	Low	None	None	Moderate	Low	None	Extremely Difficult
<i>Dikerogammarus villosus</i>	Killer shrimp	Not Present	Moderate	None	None	High	Low	Low	Extremely Difficult
<i>Dreissena bugensis, Dreissena rostriformis</i>	Quagga mussel	Established	Low	Moderate	High	High	High	High	Extremely Difficult

Scientific name (past names in parantheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environ- ment	Ecological Impacts	Economies	Infrastructure	Management
<i>Dreissena polymorpha</i>	Zebra mussel	Established	High	Moderate	High	High	High	High	Extremely Difficult
<i>Echinogammarus ischnus</i>	Ponto- Caspian amphipod	Present, Not Established	Moderate	None	None	Moderate	Low	Low	Extremely Difficult
<i>Enneacanthus gloriosus</i>	Bluespotted sunfish	Not Present	Moderate	None	Unknown	Unknown	Unknown	None	Difficult
<i>Eriocheir sinensis and japonica</i>	Chinese / Japanese Mitten Crabs	Present, Not Established	Low	Low	None	None	None	None	Not Difficult
<i>Faxonius rusticus (Orconectes rusticus)</i>	Rusty crayfish	Established	Moderate	None	Low	High	Unknown	Low	Extremely Difficult
<i>Gambusia affinis</i>	Western mosquitofish	Present, Not Established	Low	None	Low	Moderate	None	Low	Difficult
<i>Gambusia holbrooki</i>	Eastern mosquitofish	Not Present	Low	None	Low	Moderate	None	None	Difficult
<i>Gasterosteus aculeatus</i>	Threespine stickleback	Established	Moderate	None	None	Moderate	Low	None	Unknown
<i>Gymnocephalus cernuus</i>	Ruffe	Established	Moderate	None	None	High	Moderate	None	Difficult
<i>Hemimysis anomala</i>	Bloody red shrimp	Established	Low	None	None	Low	Low	Low	Extremely Difficult
<i>Hypophthalmichthys harmandi</i>	Largescale silver carp	Not Present	Low	Moderate	Low	High	Moderate	None	Difficult
<i>Hypophthalmichthys molitrix</i>	Silver carp	Present, Not Established	High	Moderate	Low	High	Moderate	None	Difficult
<i>Hypophthalmichthys nobilis</i>	Bighead carp	Present, Not Established	High	None	Low	High	Moderate	None	Difficult
<i>Lates niloticus</i>	Nile perch	Not Present	Low	None	Moderate	High	Moderate	None	Not Difficult

Scientific name (past names in parantheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environ- ment	Ecological Impacts	Economies	Infrastructure	Management
<i>Limnperna fortunei</i>	Golden mussel	Not Present	Low	Moderate	High	High	High	High	Extremely Difficult
<i>Mayaheros urophthalmus</i> (<i>Cichlasoma urophthalmus</i>)	Mayan cichlid	Not Present	Low	Low	None	Moderate	Low	None	Not Difficult
<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	Not Present	High	Low	Low	Moderate	Moderate	Low	Extremely Difficult
<i>Monopterus albus</i>	Swamp eel	Not Present	Unknown	None	Moderate	Unknown	Low	Low	Extremely Difficult
<i>Morone americana</i>	White perch	Established	Low	None	Unknown	Moderate	Low	None	Unknown
<i>Mylopharyngodon piceus</i>	Black carp	Not Present	High	None	Moderate	High	Moderate	None	Difficult
<i>Neogobius melanostomus</i>	Round goby	Established	Moderate	None	Unknown	High	Moderate	None	Difficult
<i>Oncorhynchus gorbuscha</i>	Pink salmon	Established	Low	None	Low	Moderate	Low	None	Unknown
<i>Oncorhynchus kisutch</i>	Coho salmon	Established	Low	None	Low	Moderate	None	None	Unknown
<i>Oncorhynchus mykiss</i>	Rainbow trout	Established	Low	None	Low	Moderate	None	None	Unknown
<i>Oncorhynchus tshawytscha</i>	Chinook salmon	Established	Low	None	Low	Moderate	None	None	Unknown
<i>Osmerus mordax</i>	Rainbow smelt	Established	High	None	None	High	None	None	Unknown
<i>Perca fluviatilis</i>	European perch	Not Present	Moderate	None	Low	High	Moderate	Low	Difficult
<i>Percottus glenii</i>	Amur sleeper	Not Present	Low	Moderate	Low	High	Low	None	Extremely Difficult
<i>Petromyzon marinus</i>	Sea lamprey	Established	Moderate	None	Low	High	High	Low	Difficult
<i>Phoxinus phoxinus</i>	Eurasian minnow	Not Present	Moderate	None	Low	Moderate	Moderate	None	Difficult

Scientific name (past names in parantheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environ- ment	Ecological Impacts	Economies	Infrastructure	Management
<i>Poecilia latipinna</i>	Sailfin molly	Not Present	Low	None	Unknown	Low	Unknown	None	Not Difficult
<i>Poecilia mexicana</i>	Shortfin molly	Not Present	Low	None	Unknown	Low	Unknown	None	Not Difficult
<i>Potamopyrgus antipodarum</i>	New Zealand mud snail	Present, Not Established	Moderate	None	Low	Moderate	Low	Low	Extremely Difficult
<i>Procambarus clarkii</i>	Red swamp crayfish	Present, Not Established	Moderate	None	High	High	Moderate	Moderate	Extremely Difficult
<i>Procambarus virginalis</i>	marbled crayfish, marmorkrebs	Not Present	High	None	Unknown	Unknown	Moderate	Low	Extremely Difficult
<i>Proterorhinus marmoratus</i>	Tubenose goby	Established	Low	None	Unknown	Moderate	Low	None	Difficult
<i>Pseudorasbora parva</i>	Stone moroko	Not Present	Low	Unknown	Unknown	High	High	None	Difficult
<i>Pterygoplichthys multiradiatus</i>	Sailfin catfish	Not Present	Low	None	Moderate	Moderate	Moderate	Low	Not Difficult
<i>Radix auricularia</i>	European ear snail	Not Present	Moderate	Moderate	Low	Low	None	None	Extremely Difficult
<i>Rutilus rutilus</i>	Roach (fish)	Not Present	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Salmo salar</i>	Atlantic salmon	Present, Not Established	Low	None	Low	Moderate	None	None	Unknown
<i>Salmo trutta</i>	Brown trout	Established	Low	None	None	High	None	None	Difficult
<i>Sander lucioperca (Stizostedion lucioperca)</i>	Zander	Not Present	Moderate	None	None	Moderate	Unknown	None	Difficult
<i>Sarotherodon melanotheron</i>	Blackchin tilapia	Not Present	Low	None	Unknown	Moderate	Unknown	None	Not Difficult

Scientific name (past names in parentheses)	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Scardinius erythrophthalmus</i>	Rudd	Not Present	Moderate	None	Low	Low	Unknown	None	Difficult
<i>Silurus glanis</i>	Wels catfish	Not Present	Low	None	Unknown	High	None	None	Difficult
<i>Tilapia, Oreochromis, and Sarotherodon species</i>	Tilapia	Not Present	Low	None	Moderate	High	Unknown	None	Not Difficult
<i>Tinca tinca</i>	Tench	Not Present	Low	None	Moderate	Moderate	None	None	Difficult
<i>Trichromis salvini (Cichlasoma salvini)</i>	Yellowbelly cichlid	Not Present	Low	None	Unknown	Unknown	Unknown	Unknown	Not Difficult
<i>Viviparus georgianus</i>	Banded mysterysnail	Established	High	None	Low	Moderate	Low	Low	Extremely Difficult
<i>Xiphophorus variatus</i>	Variable platyfish	Not Present	Moderate	None	None	Moderate	None	None	Not Difficult

Aquatic microbes

The aquatic invasive microbe species ratings (Table 3) includes 33 species. Of the 33 species, 11 are established in Minnesota, four are present but not established, and 18 are not known to be present in Minnesota.

Six species were rated to have the potential for high ecological impacts. Of these, two are established in Minnesota: Bd (*Batrachochytrium dendrobatidis*) and the cyanobacteria *Cylindrospermopsis raciborskii*. Viral hemorrhagic septicemia (VHS) virus strain IVb is considered present, but not established in Minnesota. Bsal (*Batrachochytrium salamandrivorans*), whirling disease (*Myxobolus cerebralis*), and viral hemorrhagic septicemia (VHS) virus all strains other than IVb are not known to be present in Minnesota as of 2019.

Six species were rated to have the potential for high ecological impacts. *Renibacterium salmoninarum* is the only of the six that is considered established in Minnesota. Viral hemorrhagic septicemia (VHS) virus strain IVb is considered present, but not established in Minnesota. Whirling disease, *Nucleospora salmonis*, Infectious hematopoietic necrosis virus (*Oncorhynchus 1 novirhabdovirus*), and viral hemorrhagic septicemia (VHS) virus all strains other than IVb are not known to be present in Minnesota as of 2019.

Table 3. Aquatic invasive microbes ratings.

Scientific name	Common name	Origin: Non-native or Unknown	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Aeromonas salmonicida</i>	Aeromonas salmonicida	Native	Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Batrachochytrium dendrobatidis</i>	Bd	Unknown	Established	High	None	None	High	Unknown	None	Extremely Difficult
<i>Batrachochytrium salamandrivora</i>	Bsal	Non-native	Not Present	High	None	None	High	Unknown	None	Extremely Difficult
Carp edema virus	Carp edema virus (CEV)	Non-native	Established	Moderate	None	None	Low	Low	None	Extremely Difficult
<i>Ceratonova shasta</i>	Ceratonova shasta	Unknown	Not Present	Low	None	None	Moderate	Low	None	Not Difficult
<i>Cylindrospermopsis raciborskii</i>	Cyanobacteria	Non-native	Established	Unknown	Moderate	None	High	Moderate	None	Extremely Difficult
<i>Cyprinid herpesvirus 3</i>	Koi herpesvirus	Non-native	Established	Moderate	None	None	Moderate	Low	None	Extremely Difficult
<i>Edwardsiella ictaluri</i>	Enteric septicemia of catfish (ESC)	Unknown	Not Present	Low	None	None	Low	Low	None	Not Difficult
<i>Edwardsiella tarda</i>	Edwardsiella tarda	Unknown	Not Present	Low	Low	None	None	None	None	Difficult
Epizootic Epitheliotropic Disease Virus	Epizootic Epitheliotropic Disease Virus (EEDV)	Unknown	Not Present	Low	None	None	Low	Low	None	Not Difficult
Fathead minnow nidovirus	Fathead minnow nidovirus (FHMNV)	Unknown	Established	High	None	None	Low	Low	None	Extremely Difficult

Scientific name	Common name	Origin: Non-native or Unknown	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
Golden shiner virus	Golden shiner virus (GSV)	Unknown	Present, Not Established	Moderate	None	None	Low	Low	None	Difficult
<i>Heterosporis sutherlandae</i>	Heterosporis	Non-native	Established	High	None	None	Low	Moderate	None	Difficult
<i>Ictalurid herpesvirus 1</i>	Channel catfish virus	Non-native	Not Present	Low	None	None	Low	Low	None	Difficult
<i>Infectious pancreatic necrosis virus</i>	Infectious pancreatic necrosis virus	Non-native	Present, Not Established	Low	None	None	Moderate	Low	None	Difficult
<i>Infectious salmon anemia virus</i>	Infectious salmon anemia virus	Non-native	Not Present	Low	None	None	Low	Low	None	Difficult
Largemouth bass virus	Largemouth bass virus	Non-native	Established	Moderate	None	None	None	None	None	Not Difficult
<i>Myxobolus cerebralis</i>	Whirling disease	Non-native	Not Present	Moderate	None	None	High	High	None	Difficult
<i>Nucleospora salmonis</i>	Nucleospora salmonis	Non-native	Not Present	Moderate	None	None	Low	High	None	Difficult
<i>Oncorhynchus 1 novirhabdovirus</i>	Infectious hematopoietic necrosis virus	Non-native	Not Present	Low	None	None	None	High	None	Difficult
<i>Ovipleistophora ovariae</i>	ovarian parasite	Unknown	Present, Not Established	High	None	None	Moderate	Moderate	None	Difficult
<i>Piscirickettsia salmonis</i>	Piscirickettsia salmonis	Unknown	Not Present	Low	None	None	Unknown	Unknown	None	Difficult
<i>Piscirickettsia-like organism, Rickettsia-like organism</i>	Piscirickettsia-like organism, Rickettsia-like organism	Non-native	Not Present	Moderate	None	None	None	Moderate	None	Difficult

Scientific name	Common name	Origin: Non-native or Unknown	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Renibacterium salmoninarum</i>	Renibacterium salmoninarum	Unknown	Established	Moderate	None	None	None	High	None	Difficult
<i>Rhabdovirus carpio</i>	Spring viremia of carp virus	Unknown	Established	Moderate	None	None	None	Low	None	Difficult
<i>Schyzocotyle acheilognathi</i>	Asian Tapeworm	Non-native	Not Present	Moderate	None	None	None	Moderate	None	Difficult
<i>Tetracapsuloides bryosalmonae</i>	Tetracapsuloides bryosalmonae	Non-native	Not Present	Low	None	None	Low	Low	None	Extremely Difficult
Tilapia Lake Virus	Tilapia lake virus (TiLV)	Non-native	Not Present	Moderate	None	None	Low	Moderate	None	Extremely Difficult
<i>Viral hemorrhagic septicemia (VHS) virus (all strains other than IVb)</i>	Viral hemorrhagic septicemia (VHS) virus (all strains other than IVb)	Non-native	Not Present	Low	None	None	High	High	None	Not Difficult
<i>Viral hemorrhagic septicemia (VHS) virus strain IVb</i>	Viral hemorrhagic septicemia (VHS) virus strain IVb	Non-native	Present, Not Established	Moderate	None	None	High	High	None	Difficult
<i>White sturgeon herpesvirus</i>	White sturgeon herpesvirus	Non-native	Not Present	Low	None	None	Low	Low	None	Not Difficult
<i>White sturgeon iridovirus</i>	White sturgeon iridovirus	Non-native	Not Present	Low	None	None	Low	Low	None	Not Difficult
<i>Yersinia ruckeri</i>	Yersinia ruckeri	Non-native	Established	Moderate	Unknown	None	Low	Low	None	Extremely Difficult

Aquatic plants

The aquatic invasive plant species ratings (Table 4) includes 46 species. Of the 46 species, 13 are established in Minnesota, 5 are present but not established, and 28 are not known to be present in Minnesota.

Twenty-one species were rated to have the potential for high ecological impacts. Of those, nine are established in Minnesota: flowering rush (*Butomus umbellatus*), didymo (*Didymosphenia geminata*), yellow iris (*Iris pseudacoris*), purple loosestrife (*Lythrum salicaria*), Eurasian watermilfoil (*Myriophyllum spicatum*), non-native Phragmites (*Phragmites australis* spp. *australis*), curly-leaf pondweed (*Potamogeton crispus*), narrow-leaved cattail (*Typha angustifolia*), and hybrid cattail (*Typha x glauca*). Brazilian waterweed (*Egeria densa*) and common water hyacinth (*Eichhornia crassipes*) are considered present, but not established in Minnesota. The remaining 11 are not known to be present in Minnesota: mosquito fern (*Azolla pinnata*), Carolina fanwort (*Cabomba caroliniana*), Australian stonecrop (*Crassula helmsii*), anchored water hyacinth (*Eichhornia azurea*), hydrilla (*Hydrilla verticillata*), European frogbit (*Hydrocharis morsus-ranae*), Oxygen weed (*Lagarosiphon major*), Asian marshweed (*Limnophila sessiflora*), golden algae (*Prymnesium parvum*), water chestnut (*Trapa natans*), southern cattail (*Typha domingensis*).

Eight species were rated to have the potential for high economic impacts. Of the eight, Eurasian watermilfoil and curly-leaf pondweed are established in Minnesota. Hydrilla, European frogbit, oxygen weed, golden algae, water chestnut, and Indian swampweed (*Hygrophila polysperma*) are not known to be present in Minnesota.

Table 4. Aquatic invasive plants ratings.

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Azolla pinnata</i>	Mosquito fern	Not Present	Low	None	Moderate	High	Moderate	Low	Difficult
<i>Butomus umbellatus</i>	Flowering rush	Established	High	None	Low	High	Moderate	Low	Difficult
<i>Cabomba caroliniana</i>	Carolina fanwort, cabomba	Not Present	Moderate	None	Moderate	High	Moderate	Moderate	Difficult
<i>Caulerpa taxifolia</i>	Caulerpa, Mediterranean killer algae	Not Present	Low	None	None	None	None	None	Not Difficult
<i>Crassula helmsii</i>	Australian stonecrop	Not Present	Moderate	None	Low	High	Moderate	Low	Difficult
<i>Didymosphenia geminata</i>	Didymo	Established	Moderate	None	High	High	Moderate	Moderate	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Egeria densa</i>	Brazilian waterweed	Present, Not Established	Moderate	None	Low	High	Moderate	Low	Difficult
<i>Eichhornia azurea</i>	Anchored water hyacinth	Not Present	Low	None	Moderate	High	Moderate	None	Difficult
<i>Eichhornia crassipes</i>	Common water hyacinth	Present, Not Established	High	None	Moderate	High	Moderate	None	Extremely Difficult
<i>Glossostigma cleistanthum</i>	Mudmat	Not present	Moderate	None	Low	Moderate	None	None	Unknown
<i>Glyceria maxima</i>	Tall or reed mannagrass	Established	Moderate	None	Low	Moderate	Moderate	Low	Not Difficult
<i>Hydrilla verticillata</i>	Hydrilla	Not Present	High	None	Low	High	High	Low	Difficult
<i>Hydrocharis morsus-ranae</i>	European frogbit	Not Present	High	None	Moderate	High	High	Moderate	Difficult
<i>Hygrophila polysperma</i>	Indian swampweed	Not Present	Low	None	Low	Low	High	Low	Not Difficult
<i>Ipomea aquatica</i>	Chinese water spinach	Not Present	Low	None	Low	Moderate	Moderate	None	Difficult
<i>Iris pseudacoris</i>	Yellow iris	Established	High	Low	Moderate	High	Moderate	None	Difficult
<i>Lagarosiphon major</i>	Oxygen weed, African elodea, African waterweed	Not Present	Moderate	None	Low	High	High	Low	Difficult
<i>Landoltia punctata</i>	Dotted duckweed	Not Present	Moderate	None	Low	Low	None	None	Not Difficult
<i>Limnophila sessiliflora</i>	Asian marshweed	Not Present	Low	None	Moderate	High	Low	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Lythrum salicaria</i>	Purple loosestrife	Established	High	None	Moderate	High	Low	None	Difficult
<i>Marsilea quadrifolia</i>	European water-clover, banded nardoo	Not Present	Moderate	None	Low	Moderate	Low	Low	Difficult
<i>Monochoria hastata</i>	Monochoria, Arrowleaf, False pickerelweed	Not Present	Low	None	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Monochoria vaginalis</i>	Heartshaped pickerelweed	Not Present	Low	None	Low	Moderate	Low	Low	Difficult
<i>Myriophyllum aquaticum</i>	Parrot's feather	Present, Not Established	High	None	Low	Moderate	Moderate	Low	Difficult
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	Established	High	None	Low	High	High	Low	Difficult
<i>Najas minor</i>	Brittle naiad	Established	High	None	Low	Moderate	Low	Low	Difficult
<i>Nastrurtium officinale (Rorippa nastrurtium-aquaticum)</i>	Watercress	Established	Moderate	Low	Low	Low	None	Low	Difficult
<i>Nelumbo nucifera</i>	Sacred lotus	Not Present	Moderate	None	Low	Moderate	Low	Low	Difficult
<i>Nitellopsis obtusa</i>	Starry stonewort	Established	High	None	Low	Moderate	Moderate	Low	Difficult
<i>Nymphaea spp. (nonnative)</i>	Nonnative waterlillies	Present, Not Established	Low	None	Low	Moderate	Low	None	Not Difficult
<i>Nymphoides peltata</i>	Yellow floating heart	Not Present	Moderate	None	Low	Moderate	Moderate	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Phragmites australis</i> spp. <i>australis</i>	Non-native common reed, non-native Phragmites	Established	High	None	High	High	Moderate	Moderate	Difficult
<i>Pistia stratiotes</i>	Water lettuce	Present, Not Established	High	None	Low	Moderate	Low	Low	Difficult
<i>Potamogeton crispus</i>	Curly-leaf pondweed	Established	High	None	Low	High	High	Low	Difficult
<i>Prymnesium parvum</i>	Golden algae	Not Present	Low	None	Low	High	High	None	Difficult
<i>Sagittaria sagittifolia</i>	Arrowhead	Not Present	Low	None	Low	Unknown	None	Unknown	Unknown
<i>Salvinia</i> complex of species, <i>Salvinia auriculata</i> , <i>S. biloba</i> , <i>S. herzogii</i>	Giant salvinia species	Not Present	Low	Low	Low	Low	Low	Low	Difficult
<i>Salvinia molesta</i>	Giant salvinia, aquarium watermoss	Not Present	Low	None	Low	Low	Low	Low	Difficult
<i>Sparganium erectum</i>	Exotic bur-reed	Not Present	Unknown	None	Moderate	Moderate	Low	None	Unknown
<i>Sphacelaria fluviatilis</i>	Brown alga	Not Present	Moderate	None	None	Low	None	Low	Unknown
<i>Stratiotes aloides</i>	Water aloes, Water soldiers	Not Present	Moderate	Low	Moderate	Moderate	Moderate	Low	Difficult
<i>Trapa natans</i>	Water chestnut	Not Present	Moderate	Low	High	High	High	None	Difficult
<i>Typha angustifolia</i>	Narrow-leaved cattail	Established	High	Low	High	High	Moderate	Moderate	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Typha domingensis</i>	Southern cattail	Not Present	Moderate	Low	High	High	Moderate	Moderate	Difficult
<i>Typha laxmannii</i>	Graceful cattail	Not Present	Moderate	Unknown	Moderate	Moderate	Low	None	Unknown
<i>Typha x glauca</i>	Hybrid cattail	Established	High	Low	High	High	Moderate	Moderate	Difficult

Terrestrial animals

The terrestrial invasive animal species ratings (Table 5) includes 29 species. Of the 29 species, 13 are established in Minnesota, 5 are present but not established, and 11 are not known to be present in Minnesota. Some species are present in captivity in Minnesota, but not established in the wild.

Eight species were rated as having the potential for high ecological impacts. Of those species jumping worms (*Amyntas sp.*), other non-native earthworms (various), and European starlings (*Stunus vulgaris*) are established in Minnesota. Mute swans (*Cygnus olor*) are considered present in Minnesota, but not established. European rabbits (*Oryctolagus cuniculus*) were rated with the potential for high ecological impacts. Domesticated European rabbits (*Oryctolagus cuniculus*) are present in captivity in Minnesota, but there are no known wild populations. European wild boar (*Sus scrofa scrofa*), nutria (*Mycocastor coypu*), and Asian raccoon dogs (*Nyctereutes procyonoides*) are three species that were identified with the potential for high ecological impacts, but they are not known to be in the state.

Ten species had the potential for high economic impacts. Of these species, European starlings, house mice (*Mus musculus*), and Norway rats (*Rattus norvegicus*) are established in the state. Domesticated European rabbits (*Oryctolagus cuniculus*) are present in captivity in Minnesota, but there are no known wild populations. Species with the potential for high economic impact, but not present in Minnesota are European wild boar, four types of snails (*Cernuella sp.*, *Cernuella virgate*, *Cochlicella spp.*, *Monacha spp.*), and black rats (*Rattus rattus*).

Table 5. Terrestrial invasive animals ratings.

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Alectoris chukar</i>	Chukar partridge	Present, Not Established	Low	Low	Low	Low	Low	None	Not Difficult
<i>Alopochen aegyptiacus</i>	Egyptian goose	Not Present	Low	Low	Low	Moderate	Low	Low	Unknown

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Amyntas species</i>	Jumping worms	Established	High	Low	High	High	Moderate	Low	Extremely Difficult
<i>Arion sp.</i>	Slugs	Established	Moderate	None	Low	Unknown	Unknown	None	Extremely Difficult
<i>Cernuella spp.</i>	No common name, hygromiid snails	Not Present	Moderate	High	Low	Moderate	High	Low	Difficult
<i>Cernuella virgata</i>	Maritime garden snail	Not Present	Moderate	High	Low	Moderate	High	Low	Difficult
<i>Cochlicella spp.</i>	No common name, cochlicellid snails	Not Present	Moderate	High	Low	Moderate	High	Low	Difficult
<i>Columba livia</i>	Pigeon or rock dove	Established	High	Moderate	Low	Low	Moderate	Moderate	Difficult
<i>Cygnus olor</i>	Mute swan	Present, Not Established	High	Moderate	Low	High	Moderate	None	Difficult
<i>Haemorhous mexicanus (Carpodacus mexicanus)</i>	House finch	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Monacha spp.</i>	No common name, hygromiid snails	Not Present	Moderate	High	Low	Moderate	High	None	Difficult
<i>Mus musculus</i>	House mouse	Established	High	Moderate	Low	Moderate	High	Moderate	Difficult
<i>Mycocastor coypu</i>	Nutria	Not Present	Low	Moderate	Moderate	High	Moderate	Low	Difficult
<i>Numida meleagris</i>	Helmeted Guinea fowl	Not Present	Low	Low	None	Unknown	Unknown	None	Not Difficult
<i>Nyctereutes procyonoides</i>	Asian raccoon dog	Not Present	Low	High	Low	High	Low	None	Unknown

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Oryctolagus cuniculus</i>	European rabbit	Present, Not Established	Moderate	Low	Moderate	High	High	None	Difficult
<i>Passer domesticus domesticus</i>	House sparrow	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Passer montanus</i>	Eurasian Tree Sparrow	Present, Not Established	Moderate	Low	Low	Low	Low	None	Difficult
<i>Pavo cristatus</i>	Peafowl	Present, Not Established	Low	Low	Low	Low	Low	Moderate	Not Difficult
<i>Perdix perdix</i>	Hungarian partridge, gray partridge	Established	High	Low	Low	Low	Low	Low	Not Difficult
<i>Phasianus colchicus</i>	Ringnecked pheasant	Established	High	Low	Low	Moderate	Low	None	Not Difficult
<i>Phasianus colchicus strachi</i>	Sichuan pheasant	Not Present	Moderate	Low	Low	Moderate	Low	None	Not Difficult
<i>Rattus norvegicus</i>	Norway rat	Established	High	Moderate	Low	Moderate	High	Moderate	Difficult
<i>Rattus rattus</i>	Black rat	Not Present	Moderate	Moderate	Low	Moderate	High	Moderate	Difficult
<i>Streptopelia decaocto</i>	Eurasian Collared-Dove	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Sturnus vulgaris</i>	European starling	Established	High	Low	Low	High	High	None	Difficult
<i>Sus scrofa scrofa</i>	European wild boar	Not Present	Moderate	Moderate	High	High	High	Low	Difficult
<i>Trachemys scripta elegans</i>	Red-eared slider	Established	High	Low	Low	Moderate	Low	None	Difficult
Various	Earthworms, nonnative	Established	High	Low	High	High	Moderate	None	Extremely Difficult

Terrestrial insects

The terrestrial invasive insect species ratings (Table 6) includes 84 species. Of the 84 species, 12 are established in Minnesota, 2 are present but not established, and 70 are not known to be present in Minnesota.

Twelve species were rated to have the potential for high ecological impacts. Three of the species, emerald ash borer (*Agrilus planipennis*), European elm bark beetle (*Scolytus multistriatus*) and Banded elm bark beetle (*Scolytus schevyrewi*), are established in Minnesota. The other nine species are not established in Minnesota. They include citrus longhorned beetle (*Anoplophora chinensis*), Asian longhorned beetle (*Anoplophora glabripennis*), Japanese cedar longhorn beetle (*Callidiellum rufipenne*), mountain pine beetle (*Dendroctonus ponderosae*), pine-tree lappet (*Dendrolimus pini*), Siberian silk moth (*Dendrolimus sibiricus*), large pine weevil (*Hylobius abietis*), six-toothed spruce bark beetle (*Pityogenes chalcographus*), and oak ambrosia beetle (*Platypus quercivorus*).

Forty-two insect species were rated to have the potential for high economic impacts. Five of the species, emerald ash borer, soybean aphid (*Aphis glycines*), spotted wing drosophila (*Drosophila suzuki*), brown marmorated stink bug (*Halyomorpha halys*), and Japanese beetle (*Popillia japonica*) are established in Minnesota. European gypsy moths (*Lymantria dispar dispar*) are considered present, but not established in Minnesota. The other 36 of the species are not known to be present in Minnesota.

Table 6. Terrestrial invasive insects ratings.

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Acrolepiopsis assectella</i>	Leek moth	Not Present	Moderate	None	None	Low	Low	None	Difficult
<i>Adelges picea</i>	Balsam woolly adelgid	Not Present	Moderate	None	Low	Low	Moderate	None	Extremely Difficult
<i>Adoxophyes orana</i>	Summer fruit tortrix moth	Not Present	Moderate	None	None	Unknown	Moderate	None	Unknown
<i>Aedes albopictus</i>	Asian tiger mosquito	Present, Not Established	Moderate	High	None	Unknown	Moderate	None	Unknown
<i>Agrilus auroguttatus</i>	Goldspotted oak borer	Not Present	Moderate	None	None	Unknown	High	None	Difficult
<i>Agrilus biguttatus</i>	Oak splendor beetle	Not Present	Moderate	None	Low	Moderate	High	None	Extremely Difficult
<i>Agrilus planipennis</i>	Emerald ash borer	Established	High	Low	High	High	High	None	Extremely Difficult
<i>Agrilus sulicollis</i>	European oak borer	Not Present	Moderate	None	None	Low	Low	None	Extremely Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Anoplophora chinensis</i>	Citrus longhorned beetle	Not Present	High	None	None	High	High	None	Difficult
<i>Anoplophora glabripennis</i>	Asian longhorned beetle	Not Present	Moderate	None	Low	High	High	None	Extremely Difficult
<i>Aphis glycines</i>	Soybean aphid	Established	High	None	Low	Low	High	None	Difficult
<i>Archips xylosteanus</i>	Variiegated golden tortrix	Not Present	Moderate	None	None	Unknown	Low	None	Unknown
<i>Argyresthia pruniella</i>	Cherry blossom moth	Not Present	Moderate	None	None	Unknown	Moderate	None	Not Difficult
<i>Autographa gamma</i>	Silver Y moth	Not Present	Moderate	None	None	None	High	None	Difficult
<i>Callidiellum rufipenne</i>	Japanese cedar longhorn beetle	Not Present	High	None	None	High	High	None	Unknown
<i>Ceroplastes japonicus</i>	Japanese wax scale	Not Present	Moderate	None	None	Unknown	Moderate	None	Unknown
<i>Chilo partellus</i>	Spotted stem borer	Not Present	Low	None	None	Unknown	Moderate	None	Not Difficult
<i>Chilo suppressalis</i>	Asiatic rice borer	Not Present	Low	None	None	Unknown	Moderate	None	Difficult
<i>Chrysodeixis chalcites</i>	Golden twin spot moth	Not Present	Moderate	None	None	Moderate	High	None	Difficult
<i>Coleophora laricella</i>	Larch casebearer	Established	High	None	Low	Moderate	Low	None	Extremely Difficult
<i>Contarinia nasturtii</i>	Swede midge	Established	Moderate	None	None	Low	Moderate	None	Difficult
<i>Crociosema aporema</i>	Bud borer	Not Present	Low	None	None	Low	None	None	Unknown

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Dendroctonus micans</i>	European spruce beetle, Great spruce bark beetle	Not Present	Low	None	None	Unknown	Unknown	None	Unknown
<i>Dendroctonus ponderosae</i>	Mountain pine beetle	Not Present	High	Low	High	High	High	None	Extremely Difficult
<i>Dendrolimus pini</i>	Pine-tree lappet	Not Present	Moderate	Low	None	High	High	None	Unknown
<i>Dendrolimus sibiricus</i>	Siberian silk moth	Not Present	High	Low	None	High	High	None	Difficult
<i>Diabrotica speciosa</i>	Cucurbit beetle	Not Present	Moderate	None	None	Low	High	None	Difficult
<i>Diprion pini</i>	Pine sawfly	Not Present	Low	None	None	Low	Low	None	Difficult
<i>Drosophila suzuki</i>	Spotted wing drosophila	Established	High	None	None	Low	High	None	Extremely Difficult
<i>Enarmonia formosana</i>	Cherry bark tortrix	Not Present	Moderate	None	None	Low	Low	None	Not Difficult
<i>Epiphyas postvittana</i>	Light brown apple moth	Not Present	Low	None	None	Moderate	Low	None	Difficult
<i>Eupoecilia ambiguella</i>	European grape berry moth	Not Present	Low	None	None	Moderate	High	None	Difficult
<i>Eurygaster integriceps</i>	Sunn pest	Not Present	High	None	None	Low	High	None	Difficult
<i>Halyomorpha halys</i>	Brown marmorated stink bug	Established	High	None	None	Moderate	High	Low	Difficult
<i>Helicoverpa armigera</i>	Old world bollworm	Not Present	Moderate	None	None	Low	High	None	Extremely Difficult
<i>Hylobius abietis</i>	Large pine weevil	Not Present	Low	None	None	High	High	None	Unknown

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Hylurgus ligniperda</i>	Red-Haired Pine Bark Beetle	Not Present	High	None	None	Moderate	High	None	Difficult
<i>Ips sexdentatus</i>	Six-toothed bark beetle	Not Present	High	None	None	Low	Low	None	Difficult
<i>Ips typographus</i>	European spruce bark beetle	Not Present	Moderate	None	Low	Moderate	High	None	Extremely Difficult
<i>Laodelphax striatellus</i>	Small brown planthopper	Not Present	High	None	None	Low	High	None	Unknown
<i>Leguminivora glycinivorella</i>	Soybean pod borer	Not Present	Moderate	None	None	None	High	None	Extremely Difficult
<i>Leucoptera malifoliella</i>	Pear leaf blister moth	Not Present	High	None	None	Moderate	Moderate	None	Unknown
<i>Lilioceris lili</i>	Lily leaf beetle	Not Present	Moderate	None	None	Low	Moderate	None	Not Difficult
<i>Lobesia botrana</i>	European grapevine moth	Not Present	Moderate	None	None	Low	Moderate	None	Difficult
<i>Lycorma delicatula</i>	Spotted lanternfly	Not Present	Low	None	None	Low	Moderate	None	Extremely Difficult
<i>Lymantria albescens</i>	Okinawa gypsy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Lymantria dispar asiatica</i>	Asian gypsy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Lymantria dispar dispar</i>	European gypsy moth	Present, Not Established	High	Low	Low	Moderate	High	None	Difficult
<i>Lymantria dispar japonica</i>	Japanese gypsy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Lymantria mathura</i>	Rosy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Lymantria monacha</i>	Nun moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Lymantria postalba</i>	White-winged gypsy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Lymantria umbrosa</i>	Hokkaido gypsy moth	Not Present	Moderate	Low	Low	Moderate	High	None	Difficult
<i>Monochamus alternatus</i>	Japanese pine sawyer	Not Present	Moderate	None	Low	Moderate	Moderate	None	Difficult
<i>Monochamus urussovii</i>	Black fir sawyer	Not Present	Moderate	None	Low	Moderate	Moderate	None	Not Difficult
<i>Operophtera brumata</i>	Winter moth	Not Present	Moderate	None	None	Moderate	Low	None	Not Difficult
<i>Orgyia pseudotsugata</i>	Douglas fir tussock moth	Not Present	Moderate	Low	Low	Moderate	Moderate	None	Not Difficult
<i>Panolis flammea</i>	Pine beauty moth	Not Present	Moderate	None	Low	Low	Low	None	Not Difficult
<i>Phytomyza gymnostoma</i>	Onion leafminer	Not Present	Moderate	None	None	Low	Moderate	None	Not Difficult
<i>Pityogenes chalcographus</i>	Six-toothed spruce bark beetle	Not Present	Moderate	None	Low	High	High	None	Difficult
<i>Pityophthorus juglandis</i>	Walnut twig beetle	Not Present	Low	None	None	Moderate	Moderate	None	Extremely Difficult
<i>Platypus quercivorus</i>	Oak ambrosia beetle	Not Present	High	None	Low	High	High	None	Extremely Difficult
<i>Popillia japonica</i>	Japanese beetle	Established	High	None	None	Low	High	None	Difficult
<i>Pyrhalta viburni</i>	Viburnum leaf beetle	Established	Moderate	None	None	Low	Moderate	None	Not Difficult
<i>Rhagoletis cerasi</i>	European cherry fruit fly	Not Present	Moderate	None	None	Low	Unknown	None	Not Difficult
<i>Rhizotrogus majalis</i>	European chafer	Not Present	Moderate	None	None	Low	High	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Scolytus intricatus</i>	European oak bark beetle	Not Present	Low	None	Low	Moderate	Moderate	None	Unknown
<i>Scolytus multistriatus</i>	European elm bark beetle	Established	High	None	Low	High	Moderate	None	Difficult
<i>Scolytus schevyrewi</i>	Banded elm bark beetle	Established	High	None	Low	High	Moderate	None	Difficult
<i>Sirex noctilio</i>	Sirex woodwasp	Not Present	Moderate	None	Low	Moderate	Moderate	None	Difficult
<i>Spodoptera littoralis</i>	Egyptian cottonworm	Not Present	Moderate	None	None	Low	High	None	Difficult
<i>Spodoptera litura</i>	Cotton cutworm	Not Present	Low	None	None	Low	High	None	Difficult
<i>Tetropium castaneum</i>	Black spruce beetle	Not Present	Moderate	None	Low	Moderate	Low	None	Unknown
<i>Tetropium fuscum</i>	Brown spruce longhorned beetle	Not Present	Moderate	None	None	Moderate	High	None	Extremely Difficult
<i>Thaumetopoea pityocampa</i>	Pine processionary moth	Not Present	Low	Low	Low	Low	Moderate	None	Not Difficult
<i>Thaumetopoea processionea</i>	Oak processionary moth	Not Present	Low	Low	Moderate	Low	Moderate	None	Difficult
<i>Tipula oleracea</i>	European crane flies	Not Present	Low	None	None	Low	High	None	Not Difficult
<i>Tipula paludosa</i>	European crane flies	Not Present	Low	None	None	Low	High	None	Not Difficult
<i>Tomicus destruens</i>	Mediterranean pine shoot beetle	Not Present	Low	None	Low	Moderate	Moderate	None	Difficult
<i>Tomicus piniperda</i>	European shoot beetle	Established	High	None	None	Low	Low	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Trichoferus campestris</i>	Velvet longhorned beetle	Established	Moderate	None	Low	Unknown	Low	Low	Difficult
<i>Trogoderma granarium</i>	Khapra beetle	Not Present	High	Low	None	Moderate	High	None	Extremely Difficult
<i>Trypodendron domesticum</i>	European hardwood ambrosia beetle	Not Present	Moderate	Low	Low	Moderate	High	None	Extremely Difficult
<i>Yponomeuta malinellus</i>	Apple ermine moth	Not Present	Moderate	None	None	None	Moderate	None	Not Difficult

Terrestrial pathogens

The terrestrial invasive pathogen species ratings (Table 7) includes 55 species. Of the 55 species, 13 are established in Minnesota, 9 are present but not established, and 33 are not known to be present in Minnesota.

Four species were rated with the potential to have high ecological impacts. Of the four, white pine blister rust (*Cronartium ribicola*), Dutch elm disease (*Ophiostoma novo-ulmi*), and white nose syndrome of bats (*Pseudogymnoascus destructans*) are established in Minnesota. Ash dieback (*Hymenoscyphus fraxineus*) is not known to be present in Minnesota.

Six species were rated with the potential to have high economic impacts. Of the six, oak wilt (*Bretziella fagacearum*) is established in Minnesota. Late blight (*Phytophthora infestans*) is present, but not established. Pale cyst nematode (*Globodera pallida*), root-knot nematode (*Meloidogyne minor*), bacterial wilt (*Ralstonia solanacearum* race 3 biovar 2), and golden nematode (*Globodera rostochiensis*) are not known to be present in Minnesota.

Table 7. Terrestrial invasive pathogens ratings.

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Anguina tritici</i>	Wheat seed gall nematode	Not Present	Low	None	None	Low	Moderate	None	Not Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Arceuthobium americanum</i>	American Dwarf mistletoe	Not Present	Moderate	None	Low	Low	Moderate	None	Not Difficult
<i>Aster yellows phytoplasma</i>	Aster yellows	Present, Not Established	High	None	None	Low	Moderate	None	Difficult
<i>Bretziella fagacearum (Ceratocystis fagacearum)</i>	Oak wilt	Established	High	None	Moderate	Moderate	High	None	Difficult
<i>Candidatus Phytoplasma australiense</i> ' 16SrXII-B	Australian grapevine yellows	Not Present	Low	None	None	Low	Moderate	None	Difficult
<i>Candidatus Phytoplasma mali</i> ' 16SrX-A	Apple proliferation phytoplasma	Not Present	Moderate	None	None	Low	Moderate	None	Extremely Difficult
<i>Candidatus Phytoplasma prunorum</i> ' 16SrX-F	European stone fruit yellows	Not Present	Low	None	Low	Low	Low	None	Difficult
<i>Candidatus Phytoplasma solani</i> ' 16SrXII-A	Bois noir, Stolbur	Not Present	Low	None	None	Low	Moderate	None	Difficult
<i>Candidatus Phytoplasma ulmi</i>	Elm Yellows	Present, Not Established	Moderate	None	None	Low	Low	None	Extremely Difficult
<i>Candidatus Phytoplasma vitis</i> ' 16SrV-C	Flavescence dorée	Not Present	Low	None	None	Low	Low	None	Difficult
<i>Clavonectria pseudonaviculata</i>	Boxwood blight	Not Present	High	None	None	None	Moderate	None	Difficult
<i>Clavibacter michiganensis</i>	Bacterial wilt of tomato	Present, Not Established	Moderate	None	None	None	Moderate	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>ssp. michigenensis</i>									
<i>Clavibacter michiganensis ssp. nebraskensis</i>	Goss's wilt	Established	High	None	None	Low	Moderate	None	Not Difficult
<i>Cronartium flaccidum</i>	Scots pine blister rust	Not Present	Low	None	None	Low	Low	None	Not Difficult
<i>Cronartium ribicola</i>	White pine blister rust	Established	High	None	Moderate	High	Moderate	None	Difficult
<i>Curtobacterium flaccumfaciens</i>	Bacterial wilt	Not Present	High	Low	None	None	Moderate	None	Not Difficult
<i>Diplodia sapinea</i>	Diplodia shoot blight and collar rot	Established	High	None	None	Low	Moderate	None	Not Difficult
<i>Discula destructiva</i>	Dogwood anthracnose	Not Present	Unknown	None	None	Low	Unknown	None	Difficult
<i>Ditylenchus dipsaci</i>	Stem and bulb nematode	Established	Moderate	None	None	None	Moderate	None	Difficult
<i>Fusarium euwallaceae</i>	Dieback, wilt	Not Present	Low	None	Unknown	Unknown	Low	None	Difficult
<i>Fusarium virguliforme</i>	Soybean sudden death	Established	High	None	None	Unknown	Moderate	None	Difficult
<i>Globodera pallida</i>	Pale cyst nematode	Not Present	Moderate	None	None	Low	High	None	Difficult
<i>Globodera rostochiensis</i>	Golden nematode	Not Present	Moderate	None	None	Low	High	None	Difficult
<i>Heterobasidion irregulare</i>	Annosum root rot of conifers	Not Present	Moderate	None	Low	Low	Moderate	None	Difficult
<i>Hymenoscyphus fraxineus</i>	Ash dieback	Not Present	Moderate	None	Moderate	High	Moderate	None	Extremely Difficult
<i>Lachnellula willkommii</i>	European larch canker	Not Present	Low	None	Low	Low	Low	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Meloidogyne minor</i>	Root-knot nematode	Not Present	Moderate	None	None	None	High	None	Difficult
<i>Monilia polystroma</i>	Asiatic brown rot	Not Present	Moderate	None	None	None	Moderate	None	Difficult
<i>Monilinia fructigena</i>	Brown rot, Apple brown rot	Not Present	Moderate	None	None	None	Moderate	None	Difficult
<i>Ophiognomonina clavigigenti-juglandacearum</i>	Butternut canker	Established	High	None	Moderate	Moderate	Low	None	Extremely Difficult
<i>Ophiostoma novo-ulmi</i>	Dutch elm disease	Established	High	None	Moderate	High	Low	None	Difficult
<i>Peronospora belbahrii</i>	Basil downy mildew	Present, Not Established	High	None	None	None	Low	None	Extremely Difficult
<i>Phakospora pachyrhizii</i>	Soybean rust	Not Present	Moderate	None	Low	Low	Moderate	None	Difficult
<i>Phyllachora maydis</i>	Tar spot	Present, Not Established	Moderate	None	None	None	Unknown	None	Unknown
<i>Phytophthora austrocedri</i>	Juniper dieback	Not Present	Low	None	Low	Unknown	Low	None	Extremely Difficult
<i>Phytophthora cinnamomi</i>	Ink disease on chestnut and oak	Not Present	Moderate	None	Low	Low	Low	None	Extremely Difficult
<i>Phytophthora hedraiandra</i>	Beech, azalea, and viburnum dieback	Present, Not Established	Moderate	None	Low	Unknown	Low	None	Extremely Difficult
<i>Phytophthora infestans</i>	Late blight	Present, Not Established	High	None	None	None	High	None	Difficult
<i>Phytophthora kernoviae</i>	Beech bleeding canker	Not Present	Low	None	Unknown	Unknown	Low	None	Extremely Difficult
<i>Phytophthora quercina</i>	Oak decline	Not Present	Unknown	None	Low	Low	Low	None	Extremely Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Phytophthora ramorum</i>	Sudden oak death	Not Present	Moderate	None	Unknown	Unknown	Moderate	None	Extremely Difficult
<i>Phytophthora xalni</i>	Alder root and collar rot	Not Present	Low	None	Unknown	Unknown	Unknown	None	Extremely Difficult
<i>Plasmiodiophora brassicae</i>	Club root	Established	Moderate	None	None	None	Moderate	None	Extremely Difficult
<i>Plasmopara obducens</i>	Impatiens downy mildew	Established	High	Low	None	None	Low	None	Not Difficult
<i>Potyvirus plum pox virus</i>	Plum pox (PPV)	Not Present	Moderate	None	None	Low	Moderate	None	Difficult
<i>Pseudogymnoascus destructans</i>	White nose syndrome of bats	Established	High	None	None	High	Moderate	None	Extremely Difficult
<i>Pseudoperonospora cubensis</i>	Downy mildew of cucurbits	Present, Not Established	Moderate	None	None	None	Low	None	Not Difficult
<i>Pseudopezicula tracheiphila</i>	Rotbrenner	Not Present	Moderate	None	None	Moderate	Moderate	None	Unknown
<i>Puccinia polysora</i>	Southern Rust	Present, Not Established	High	None	None	None	Moderate	None	Difficult
<i>Ralstonia solanacearum race 3 biovar 2</i>	Bacterial wilt	Not Present	Moderate	None	None	None	High	None	Extremely Difficult
<i>Synchytrium endobioticum</i>	Potato wart	Not Present	Moderate	None	None	None	Moderate	None	Extremely Difficult
<i>Tilletia controversa (cereal strain)</i>	Dwarf bunt	Not Present	Moderate	None	None	Low	Moderate	None	Not Difficult
<i>Tobamovirus Cucumber green mottle mosaic virus</i>	Cucumber green mottle mosaic (CGMMV)	Not Present	Moderate	None	None	Low	Moderate	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Urocystis agropyri</i>	Wheat flag smut	Established	High	None	None	Low	Low	None	Not Difficult
<i>Xanthomonas vasicola</i> pv. <i>vasculorum</i>	Bacterial streak of corn	Established	Moderate	None	None	None	Unknown	None	Unknown

Terrestrial plants

The terrestrial invasive plant species ratings (Table 8) includes 282 species. Of the 282 species, 142 are established in Minnesota, 67 are present but not established, 70 are not known to be present in Minnesota, and three are listed as Unknown as there wasn't clear enough information to make a determination.

Forty-seven species were rated to have the potential for high ecological impacts. Of those, 30 are considered established in Minnesota, seven present but not established, nine as not present, and one as unknown. The 30 established in Minnesota are Norway maple (*Acer platanoides*), garlic mustard (*Alliaria petiolata*), common barberry (*Berberis vulgaris*), Oriental bittersweet (*Celastrus orbiculatus*), spotted knapweed (*Centaurea stoebe* subsp. *micranthos*), meadow knapweed (*Centaurea x moncktonii*), Canada thistle (*Cirsium arvense*), Grecian foxglove (*Digitalis lanata*), Russian olive (*Elaeagnus angustifolia*), autumn olive (*Elaeagnus umbellata*), winged burning bush (*Euonymus alatus*), leafy spurge (*Euphorbia esula*), glossy buckthorn (*Frangula alnus*), Japanese hops (*Humulus japonicus*), lyme grass (*Leymus arenarius*), Morrow's honeysuckle (*Lonicera morrowii*), Tatarian honeysuckle (*Lonicera tartarica*), Bell's Honeysuckle (*Lonicera x bella*), birdsfoot trefoil (*Lotus corniculatus*), white sweetclover (*Melilotus alba*), yellow sweetclover (*Melilotus officinalis*), reed canary grass (*Phalaris arundinacea*), Amur corktree (*Phellodendron amurense*), Japanese knotweed (*Polygonum cuspidatum*), Bohemian knotweed (*Polygonum x bohemicum*), common buckthorn (*Rhamnus cathartica*), black locust (*Robinia pseudoacacia*), crown vetch (*Securigera varia*), common tansy (*Tanacetum vulgare*), and European highbush cranberry (*Viburnum opulus* var. *opulus*). The six species that are present in Minnesota but not established are porcelain berry (*Ampelopsis brevipedunculata*), European marsh thistle (*Cirsium palustre*), black swallow-wort (*Cynanchum louiseae*), Amur honeysuckle (*Lonicera maackii*), European fly honeysuckle (*Lonicera xylosteum*), giant knotweed (*Polygonum sachalinense*), and saltcedar (*Tamarix* spp.). The 10 species that are not known to be present are fiveleaf akebia (*Akebia quinata*), giant reed (*Arundo donax*), yellow star thistle (*Centaurea solstitialis*), pale swallow-wort (*Cynanchum rossicum*), Scotch broom (*Cytisus scoparius*), Chinese yam (*Dioscorea oppositifolia*), Japanese honeysuckle (*Lonicera japonica*), Japanese stiltgrass (*Microstegium vimineum*), and sawtooth Oak (*Quercus acutissima*). The status of Russian knapweed (*Acroptilon repens*) is unknown.

Seventeen species were rated to have the potential for high economic impacts. Of those, 13 are considered established in Minnesota, 1 present but not established, and 2 as not present. The 13 species established in Minnesota are Palmer amaranth (*Amaranthus palmeri*), common barberry (*Berberis vulgaris*), hoary alyssum (*Berteroa incana*), Oriental bittersweet (*Celastrus orbiculatus*), spotted knapweed (*Centaurea stoebe*

subsp. micranthos), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), Grecian foxglove (*Digitalis lanata*), leafy spurge (*Euphorbia esula*), glossy buckthorn (*Frangula alnus*), Amur corktree (*Phellodendron amurense*), Bohemian knotweed (*Polygonum x bohemicum*), and common buckthorn (*Rhamnus cathartica*). Saltcedar (*Tamarix spp.*) is considered present, but not established. Yellow star thistle (*Centaurea solstitialis*) and milk thistle (*Silybum marianum*) are not known to be present.

Table 8. Terrestrial invasive plants ratings.

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Abutilon theophrasti</i>	Velvetleaf	Established	High	None	Low	Low	Moderate	None	Not Difficult
<i>Acer ginnala</i>	Amur maple	Established	Moderate	None	Moderate	Moderate	Low	None	Difficult
<i>Acer platanoides</i>	Norway maple	Established	Moderate	None	None	High	Low	None	Difficult
<i>Achillea ptarmica</i>	Sneezewort	Established	Low	Low	None	Low	Low	None	Difficult
<i>Achyranthes japonica</i>	Japanese chaff flower	Not Present	Moderate	Low	Unknown	Moderate	Low	None	Unknown
<i>Acroptilon repens</i>	Russian knapweed	Unknown	High	Low	High	High	Moderate	None	Difficult
<i>Aegopodium podagraria</i>	Bishop's goutweed	Established	Low	Low	Low	Moderate	None	None	Difficult
<i>Agrostis gigantea</i>	Redtop	Established	High	None	None	Low	Low	None	Difficult
<i>Ailanthus altissima</i>	Tree of heaven	Present, Not Established	Moderate	None	Low	Moderate	Low	None	Difficult
<i>Akebia quinata</i>	Fiveleaf akebia, Chocolate vine	Not Present	Unknown	Unknown	Moderate	High	Low	Low	Difficult
<i>Albezia julibrissin</i>	Silk tree, Mimosa	Not Present	Low	Unknown	Low	Moderate	Low	Low	Difficult
<i>Alectra vogelii</i>	Yellow witchweed	Not Present	Unknown	Unknown	Low	Unknown	Moderate	None	Difficult
<i>Alliaria petiolata</i>	Garlic mustard	Established	High	None	None	High	Low	None	Difficult
<i>Allium vineale</i>	Wild garlic	Not Present	Moderate	None	Low	Moderate	Moderate	None	Unknown

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Alnus glutinosa</i>	Black alder	Established	Moderate	None	Low	Moderate	Low	Low	Difficult
<i>Amaranthus palmeri</i>	Palmer amaranth	Established	High	None	Low	Moderate	High	None	Difficult
<i>Ampelopsis brevipedunculata</i>	Porcelain berry	Present, Not Established	Moderate	Low	Low	High	Moderate	None	Difficult
<i>Anchusa arvensis</i>	Common bugloss	Present, Not Established	Moderate	None	Unknown	Moderate	Low	None	Difficult
<i>Anthriscus sylvestris</i>	Wild chervil	Established	High	None	None	Moderate	Moderate	None	Not Difficult
<i>Arctium lappa</i>	Greater burdock	Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Arctium minus</i>	Common (lesser) burdock	Established	Moderate	None	Low	Low	Low	None	Not Difficult
<i>Artemisia absinthium</i>	Absinth wormwood	Established	Low	Low	None	Low	None	None	Not Difficult
<i>Artemisia biennis</i>	Biennial wormwood	Established	Moderate	Low	None	Moderate	Moderate	None	Difficult
<i>Artemisia vulgaris</i>	Mugwort	Established	Moderate	Low	None	Moderate	Moderate	None	Difficult
<i>Arthraxon hispidus</i>	Small carpetgrass	Not Present	Low	None	None	Moderate	None	None	Difficult
<i>Arundo donax</i>	Giant reed	Not Present	Low	Low	Moderate	High	Moderate	None	Extremely Difficult
<i>Barbarea vulgaris</i>	Yellow rocket	Established	High	None	Moderate	Moderate	Moderate	None	Difficult
<i>Bassia scoparia (Kochia scoparia)</i>	Kochia, Mexican fireweed	Established	High	Low	None	Moderate	Moderate	None	Extremely Difficult
<i>Berberis thunbergii</i>	Japanese barberry	Established	High	Low	Moderate	Moderate	Moderate	None	Difficult
<i>Berberis vulgaris</i>	Common barberry	Established	Moderate	Moderate	Low	High	High	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Berteroa incana</i>	Hoary alyssum	Established	Moderate	None	Moderate	Moderate	High	None	Not Difficult
<i>Bothriochola bladhii</i>	Caucasian bluestem	Not Present	Low	Low	Low	Low	Low	None	Difficult
<i>Bothriochola ischaemum</i>	Yellow bluestem	Not Present	Low	Low	Low	Low	Low	None	Difficult
<i>Bromus arvensis</i>	Field brome	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Bromus inermis</i>	Smooth brome	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Bromus racemosus</i>	Bald brome	Not Present	Low	Low	Low	Moderate	Low	None	Difficult
<i>Bromus secalinus</i>	Rye brome	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Bromus tectorum</i>	Cheatgrass	Established	Moderate	Low	Moderate	Moderate	Moderate	None	Difficult
<i>Bunias orientalis</i>	Hill mustard	Not Present	Low	None	Low	Low	Low	None	Not Difficult
<i>Campanula cervicaria</i>	Bristly bellflower	Established	High	None	None	Low	None	None	Not Difficult
<i>Campanula rapunculoides</i>	Creeping bellflower	Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Cannabis sativa</i>	Hemp	Established	Low	Low	Low	Moderate	Low	None	Difficult
<i>Caragana arborescens</i>	Siberian peashrub	Established	Moderate	Low	Moderate	Moderate	Moderate	None	Difficult
<i>Caragana frutex</i>	Russian peashrub	Present, Not Established	Low	None	Low	Low	None	None	Difficult
<i>Cardamine hirsuta</i>	Hairy bittercress	Not Present	Low	None	None	Low	None	None	Not Difficult
<i>Cardamine impatiens</i>	Narrowleaf bittercress	Established	High	None	None	Moderate	Low	None	Not Difficult
<i>Cardaria draba (Lepidium draba)</i>	Hoary cress, Perennial peppergrass	Present, Not Established	Moderate	None	None	Low	Low	None	Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Carduus acanthoides</i>	Plumeless thistle	Established	High	Low	Moderate	Low	Low	None	Not Difficult
<i>Carduus nutans</i>	Musk thistle	Established	High	Low	Moderate	Low	Low	None	Not Difficult
<i>Carex kobomugi</i>	Asiatic sand sedge	Not Present	Low	None	Moderate	Moderate	Low	None	Difficult
<i>Carum carvi</i>	Caraway	Established	High	None	None	Low	None	None	Difficult
<i>Celastrus loeseneri</i> (<i>Celastrus rosthornianus</i>)	Asian loeseneri bittersweet	Unknown	Moderate	None	Moderate	Moderate	Low	None	Difficult
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Established	High	None	Moderate	High	High	None	Difficult
<i>Centaurea diffusa</i>	Diffuse knapweed	Present, Not Established	High	None	Low	Moderate	Low	None	Difficult
<i>Centaurea jacea</i>	Brown knapweed	Established	High	None	Low	Moderate	Low	None	Difficult
<i>Centaurea nigra</i>	Black knapweed	Unknown	High	None	Low	Moderate	Low	None	Difficult
<i>Centaurea nigrescens</i>	Alpine knapweed	Present, Not Established	High	None	Low	Moderate	Low	None	Difficult
<i>Centaurea solstitialis</i>	Yellow star thistle	Not Present	Low	Low	Moderate	High	High	Low	Difficult
<i>Centaurea stoebe subsp. micranthos</i> (<i>Centaurea biebersteinii</i> , <i>Centaurea maculosa</i>)	Spotted knapweed	Established	High	Low	Low	High	High	None	Difficult
<i>Centaurea x moncktonii</i>	Meadow knapweed	Established	High	Low	Moderate	High	Moderate	Low	Difficult
<i>Chelidonium majus</i>	Greater celandine	Established	Low	High	Moderate	Moderate	Low	Low	Extremely Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Chorispora tenella</i>	Blue mustard	Present, Not Established	Low	Low	Low	Low	Low	Low	Difficult
<i>Cichorium intybus</i>	Chicory	Established	Moderate	Low	Low	Moderate	Moderate	Moderate	Difficult
<i>Cirsium arvense</i>	Canada thistle	Established	High	None	None	High	High	None	Difficult
<i>Cirsium palustre</i>	European marsh thistle	Present, Not Established	High	None	None	High	Moderate	None	Difficult
<i>Cirsium vulgare (Cirsium lanceolatum)</i>	Bull thistle	Established	High	None	Low	Low	Low	None	Difficult
<i>Clematis terniflora</i>	Sweet autumn virginsbower	Present, Not Established	Low	Low	Low	Low	Low	Low	Not Difficult
<i>Conium maculatum</i>	Poison hemlock	Established	Moderate	High	Moderate	Moderate	Moderate	Low	Difficult
<i>Convallaria majalis</i>	Lily of the valley	Established	Low	Moderate	Low	Moderate	Low	None	Unknown
<i>Convolvulus arvensis</i>	Field bindweed	Established	Moderate	Low	High	Moderate	High	Low	Extremely Difficult
<i>Cotoneaster lucidus</i>	Hedge cotoneaster	Established	High	Low	Unknown	Unknown	Unknown	None	Difficult
<i>Crepis tectorum</i>	Narrowleaf Hawksbeard	Established	High	None	None	Low	Low	None	Difficult
<i>Cynanchum louiseae (Vincetoxicum nigrum)</i>	Black swallow-wort	Present, Not Established	High	None	Low	High	Moderate	None	Difficult
<i>Cynanchum rossicum</i>	Pale swallow-wort	Not Present	Moderate	Low	None	High	Low	None	Difficult
<i>Cynoglossum officinale</i>	Houndstongue	Established	Moderate	Low	None	Moderate	Moderate	None	Not Difficult
<i>Cyperus esculentus</i>	Yellow nutsedge	Established	High	None	None	Low	Moderate	None	Extremely Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Cyperus rotundus</i>	Purple nutsedge	Present, Not Established	Moderate	None	None	Low	Moderate	None	Extremely Difficult
<i>Cytisus scoparius</i>	Scotch broom	Not Present	Low	None	Moderate	High	Low	None	Difficult
<i>Daucus carota</i>	Queen Anne's lace, wild carrot	Established	High	Low	Moderate	Moderate	Low	None	Difficult
<i>Digitalis lanata</i>	Grecian foxglove	Established	High	Moderate	None	High	High	None	Difficult
<i>Digitalis purpurea</i>	Purple foxglove, garden foxglove	Present, Not Established	Moderate	Moderate	None	Low	Low	None	Difficult
<i>Dioscorea oppositifolia (polystachia)</i>	Chinese yam	Not Present	Low	None	None	High	Moderate	None	Extremely Difficult
<i>Dipsacus folionum</i>	Common teasel	Established	High	Low	Moderate	Moderate	Low	None	Difficult
<i>Dipsacus laciniatus</i>	Cutleaf teasel	Established	High	Low	Moderate	Moderate	Low	None	Difficult
<i>Duchesnea indica/ Potentilla indica</i>	False strawberry, mock strawberry	Present, Not Established	Moderate	None	None	Unknown	Unknown	None	Not Difficult
<i>Echinochloa crus-galli</i>	Barnyard grass	Established	Moderate	Low	Low	Low	Low	None	Extremely Difficult
<i>Echinops sphaerocephalus</i>	Globe thistle	Not Present	Low	None	None	Unknown	None	None	Not Difficult
<i>Elaeagnus angustifolia</i>	Russian olive	Established	Moderate	None	High	High	Low	None	Difficult
<i>Elaeagnus umbellata</i>	Autumn olive	Established	High	None	High	High	Moderate	None	Difficult
<i>Elytrigia repens</i>	Quackgrass	Established	High	None	Moderate	Moderate	Moderate	None	Difficult

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<i>Epilobium hirsutum</i>	Hairy willow herb	Not Present	Moderate	None	None	Moderate	None	None	Difficult
<i>Epipactis helleborine</i>	Helleborine	Present, Not Established	Moderate	None	Moderate	Moderate	Low	None	Difficult
<i>Euonymus alatus</i>	Winged burning bush	Established	High	Low	Moderate	High	Low	None	Difficult
<i>Euonymus fortunei</i>	Wintercreeper	Not Present	Moderate	Low	Moderate	Moderate	None	None	Difficult
<i>Euphorbia cyparissias</i>	Cypress spurge	Established	High	Low	None	Low	Moderate	None	Difficult
<i>Euphorbia esula</i>	Leafy spurge	Established	High	None	None	High	High	None	Difficult
<i>Filipendula ulmaria</i>	Queen of the meadow	Established	Moderate	Low	None	Moderate	None	None	Difficult
<i>Frangula alnus</i>	Glossy buckthorn	Established	High	None	Moderate	High	High	None	Difficult
<i>Galega officinalis</i>	Goatsrue	Not Present	Low	Low	Unknown	Low	Moderate	None	Difficult
<i>Galeopsis tetrahit</i>	Hemp nettle	Established	High	Low	None	Low	Moderate	None	Difficult
<i>Galium mollugo</i>	White bedstraw	Established	Moderate	None	None	Moderate	Moderate	None	Difficult
<i>Galium odoratum</i>	Sweet Woodruff	Present, Not Established	Low	Low	None	Unknown	Unknown	None	Unknown
<i>Galium verum</i>	Yellow bedstraw	Present, Not Established	Moderate	None	Low	Moderate	Unknown	None	Unknown
<i>Glechoma hederacea</i>	Creeping Charlie, ground ivy	Established	High	None	None	Low	None	None	Not Difficult
<i>Gypsophila elegans</i>	Showy baby's-breath	Present, Not Established	Low	None	Low	Low	Low	None	Unknown
<i>Gypsophila paniculata</i>	Baby's breath	Established	High	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hedera helix</i>	English ivy	Not Present	Low	Moderate	Low	Low	Low	None	Unknown

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<i>Hemerocallis fulva</i>	Orange Day Lily	Established	Low	None	None	Low	None	None	Not Difficult
<i>Heracleum mantegazzianum</i>	Giant hogweed	Not Present	High	High	Moderate	Moderate	Moderate	None	Extremely Difficult
<i>Hesperis matronalis</i>	Dame's rocket	Established	Moderate	Low	Low	Moderate	Low	None	Difficult
<i>Hieracium aurantiacum</i>	Orange hawkweed	Established	High	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hieracium caespitosum</i>	Meadow hawkweed	Present, Not Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hieracium lachenalii</i>	Common hawkweed	Present, Not Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hieracium pilosella</i>	Mouseear hawkweed	Present, Not Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hieracium piloselloides</i>	Kingdevil hawkweed	Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Hieracium x floribundum</i>	Yellow devil hawkweed	Present, Not Established	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Humulus japonicus</i>	Japanese hops	Established	Moderate	Low	Moderate	High	Low	Low	Extremely Difficult
<i>Hypericum perforatum</i>	Saint Johnswort	Established	Moderate	Moderate	Low	Moderate	Low	None	Difficult
<i>Impatiens balfourii</i>	Balfour's touch-me-not	Present, Not Established	High	Low	Low	Moderate	Low	Low	Difficult
<i>Impatiens glandulifera</i>	Himalayan balsam	Present, Not Established	High	Low	Low	Moderate	Low	Low	Difficult
<i>Imperata cylindrica</i>	Cogongrass	Not Present	Low	Low	Low	Low	Low	Low	Extremely Difficult
<i>Inula britannica</i>	British yellowhead	Present, Not Established	Moderate	None	None	Low	Moderate	None	Not Difficult
<i>Inula helenium</i>	Elecampane	Established	Moderate	Low	Low	Moderate	Low	Low	Not Difficult
<i>Ipomoea purpurea</i>	Common morning glory	Present, Not Established	Low	Low	Moderate	Moderate	Low	None	Not Difficult

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<i>Ipomoea tricolor</i>	Tricolor morning glory	Present, Not Established	Low	Low	Moderate	Moderate	Low	None	Not Difficult
<i>Iris domestica</i>	Blackberry lily	Present, Not Established	Low	None	None	Low	None	None	Not Difficult
<i>Knautia arvensis</i>	Field scabiosa	Present, Not Established	Moderate	Unknown	None	Moderate	None	None	Unknown
<i>Koeleruteria paniculata</i>	Golden rain tree	Not Present	Low	None	None	Low	None	None	Difficult
<i>Kummerowia stipulacea</i>	Korean lespedeza	Not Present	Low	None	None	Low	None	None	Difficult
<i>Kummerowia striata</i>	Striate lespedeza	Not Present	Low	None	None	Low	None	None	Difficult
<i>Lathyrus latifolius</i>	Everlasting Pea	Present, Not Established	Low	Low	None	Moderate	None	None	Not Difficult
<i>Leonurus cardiaca</i>	Motherwort	Established	Moderate	None	None	Low	None	None	Not Difficult
<i>Lepidium latifolium</i>	Pepperweed	Not Present	Low	None	None	Low	Low	None	Difficult
<i>Lespedeza bicolor</i>	Bicolor lespedeza	Not Present	Low	None	None	Moderate	None	None	Not Difficult
<i>Lespedeza cuneata</i>	Sericea lespedeza	Not Present	Low	None	None	Low	Low	None	Difficult
<i>Leucanthemella serotina</i>	Giant daisy, autumn ox-eye daisy	Established	Unknown	None	Unknown	Unknown	None	None	Not Difficult
<i>Leucanthemum lacustre</i>	Portuguese daisy	Not Present	Low	Moderate	None	Low	None	None	Not Difficult
<i>Leucanthemum vulgare</i> (Chrysanthemum leucanthemum)	Oxeye daisy	Established	High	Low	None	Moderate	Low	None	Difficult
<i>Leymus arenarius</i>	Lyme grass	Established	Moderate	None	None	High	None	None	Difficult

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<i>Ligustrum amurense</i>	Amur privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Ligustrum japonica</i>	Japanese privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Ligustrum obtusifolium</i>	Blunt leaved privet, Border privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Ligustrum ovalifolium</i>	California privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Ligustrum sinesense</i>	Chinese privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Ligustrum vulgare</i>	Common privet	Not Present	Low	Low	None	Low	None	None	Difficult
<i>Linaria dalmatica</i>	Dalmatian toadflax	Established	Moderate	None	Low	Moderate	Moderate	None	Not Difficult
<i>Linaria vulgaris</i>	Yellow toadflax, butter and eggs	Established	High	None	Low	Low	Low	None	Difficult
<i>Lonicera fragrantissima</i>	Fragrant honeysuckle	Not Present	Low	Low	None	Low	None	None	Not Difficult
<i>Lonicera japonica</i>	Japanese honeysuckle	Not present	High	Low	Low	High	Moderate	Low	Difficult
<i>Lonicera maackii</i>	Amur honeysuckle	Present, Not Established	Moderate	None	Moderate	High	Low	None	Difficult
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Established	High	None	Moderate	High	Low	None	Difficult
<i>Lonicera ruprechtiana</i>	Manchurian honeysuckle	Not Present	low	Low	Low	Low	Low	Low	Difficult
<i>Lonicera standishii</i>	Standish's honeysuckle	Not Present	Moderate	Low	Low	Moderate	Low	Low	Difficult
<i>Lonicera tartarica</i>	Tatarian honeysuckle	Established	High	None	Moderate	High	Low	None	Difficult

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<i>Lonicera x bella</i>	Bell's Honeysuckle	Established	High	None	Moderate	High	Low	None	Difficult
<i>Lonicera x heckrottii</i>	Goldflame honeysuckle	Not Present	Low	Low	Low	Low	Low	Low	Difficult
<i>Lonicera x minutiflora</i>	Honeysuckle hybrid of morrowii and xylosteoides	Not Present	Low	Low	Low	Moderate	Low	Low	Difficult
<i>Lonicera xylosteum</i>	European fly honeysuckle, Dwarf honeysuckle	Present, Not Established	High	Moderate	Low	High	Low	Low	Difficult
<i>Lotus corniculatus</i>	Birdsfoot trefoil	Established	High	None	None	High	None	None	Difficult
<i>Lupinus polyphyllus</i>	Bigleaf lupine	Established	High	Low	Low	Moderate	Low	None	Difficult
<i>Lysimachia nummularia</i>	Creeping yellow loosestrife, moneywort, creeping Jenny	Established	Moderate	Low	Low	Moderate	Low	Low	Difficult
<i>Lysimachia vulgaris</i>	Golden loostrife, yellow loosestrife	Present, Not Established	High	Low	Low	Moderate	Low	Low	Difficult
<i>Maclura pomifera</i>	Osage-orange	Not Present	Low	Moderate	Low	Low	Low	Low	Difficult
<i>Medicago lupulina</i>	Black medic	Established	High	None	None	Low	Low	None	Not Difficult
<i>Melilotus alba</i>	White sweetclover	Established	High	None	Moderate	High	None	None	Difficult
<i>Melilotus officinalis</i>	Yellow sweetclover	Established	High	None	Moderate	High	None	None	Difficult

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<i>Mentha spicata</i>	Spearmint	Present, Not Established	Low	None	None	Unknown	None	None	Not Difficult
<i>Mentha x piperita</i>	Peppermint	Present, Not Established	Low	None	None	Unknown	None	None	Not Difficult
<i>Microstegium vimineum</i>	Japanese stiltgrass	Not Present	High	None	Low	High	Moderate	None	Difficult
<i>Miscanthus sinensis</i>	Chinese maiden grass, Chinese silvergrass	Present, Not Established	Low	None	Low	Moderate	None	None	Not Difficult
<i>Miscanthus x giganteus</i>	Giant miscanthus	Present, Not Established	Low	None	Low	Moderate	None	None	Not Difficult
<i>Miscanthus sacchariflorus</i>	Amur silver grass	Established	Moderate	None	Low	Moderate	None	None	Not Difficult
<i>Morus alba</i>	White mulberry	Established	High	Moderate	Low	Low	Low	None	Difficult
<i>Myosotis arvensis</i>	Field forget-me-not	Present, Not Established	Low	Low	Low	Moderate	None	None	Difficult
<i>Myosotis scorpioides</i>	True forget-me-not	Established	High	Low	Low	Moderate	Moderate	None	Difficult
<i>Myosotis sylvatica</i>	Woodland forget-me-not	Established	High	Low	Low	Moderate	Moderate	None	Difficult
<i>Nandina domestica</i>	Heavenly bamboo	Not Present	Low	Moderate	Moderate	Moderate	Moderate	None	Difficult
<i>Nicandra physalodes</i>	Apple of Peru	Present, Not Established	Low	Low	None	Low	Low	None	Not Difficult
<i>Oenanthe javanica</i>	Java water-dropwort	Not Present	Moderate	Low	Moderate	Moderate	Low	None	Difficult
<i>Onopordum acanthium</i>	Scotch thistle	Present, Not Established	Moderate	Low	Low	Low	Moderate	None	Difficult
<i>Ornithogalum umbellatum</i>	Star of Bethlehem	Present, Not Established	Low	Moderate	None	Low	None	None	Difficult

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<i>Packera glabella</i> (<i>Senecio glabellus</i>)	Butterweed	Not Present	Low	None	None	Low	Moderate	None	Not Difficult
<i>Pastinaca sativa</i>	Wild parsnip	Established	High	Moderate	None	Moderate	Moderate	None	Difficult
<i>Paulownia tomentosa</i>	Princess tree	Present, Not Established	High	None	Moderate	Moderate	Low	None	Difficult
<i>Persicaria longiseta</i> (<i>Polygonum caespitosum</i>)	Oriental lady's thumb	Present, Not Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Persicaria perfoliata</i> (<i>Polygonum perfoliatum</i>)	Mile-a-minute vine	Not Present	Moderate	Low	Moderate	Moderate	Moderate	Low	Difficult
<i>Petasites hybridus</i>	Butterfly dock	Present, Not Established	Low	None	None	Low	None	None	Not Difficult
<i>Phalaris arundinacea</i>	Reed canary grass	Established	High	None	High	High	Moderate	None	Extremely Difficult
<i>Phalaris arundinacea</i> cultivar ' <i>Picta</i> '	Variiegated ribbon grass	Present, Not Established	Low	None	None	Low	None	None	Difficult
<i>Phalaris canariensis</i>	Canarygrass	Present, Not Established	Low	None	None	Unknown	None	None	Unknown
<i>Phellodendron amurense</i>	Amur corktree	Established	High	None	High	High	High	None	Difficult
<i>Phleum pratense</i>	Timothy	Established	High	Low	None	Low	Low	None	Unknown
<i>Pimpinella saxifraga</i>	Burnet saxifrage	Established	High	Low	Low	Moderate	Moderate	None	Difficult
<i>Pinus nigra</i>	Austrian pine	Present, Not Established	Low	None	Low	Low	None	None	Difficult
<i>Pinus sylvestris</i>	Scotch pine	Established	Moderate	None	Moderate	Moderate	None	None	Difficult

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<i>Plantago lanceolata</i>	Buckthorn plantain	Established	Moderate	Low	None	None	None	None	Not Difficult
<i>Poa compressa</i>	Canada bluegrass	Established	High	None	None	Low	None	None	Difficult
<i>Poa pratensis</i>	Kentucky bluegrass	Established	High	None	None	Low	Low	None	Difficult
<i>Polygonum convolvulus</i>	Black bindweed	Established	Moderate	Low	Low	Low	Moderate	None	Difficult
<i>Polygonum cuspidatum</i> (<i>Fallopia japonica</i>)	Japanese knotweed	Established	High	None	High	High	Low	Moderate	Extremely Difficult
<i>Polygonum sachalinense</i> (<i>Fallopia sachalinensis</i>)	Giant knotweed	Present, Not Established	Moderate	None	High	High	Moderate	Moderate	Extremely Difficult
<i>Polygonum x bohemicum</i> (<i>Fallopia x bohémica</i>)	Bohemian knotweed	Established	High	None	High	High	High	Moderate	Extremely Difficult
<i>Populus alba</i>	White poplar	Present, Not Established	Moderate	None	Moderate	Low	None	None	Difficult
<i>Populus nigra</i>	Lombardy poplar	Present, Not Established	Low	Low	Low	Low	Low	Low	Not Difficult
<i>Potentilla argentea</i>	Silver cinquefoil	Established	High	Low	Low	Low	Low	Low	Difficult
<i>Potentilla recta</i>	Sulphur cinquefoil	Established	High	Low	Low	Moderate	Low	Low	Difficult
<i>Pueraria montana var. lobata</i>	Kudzu	Not Present	Low	Low	Moderate	Moderate	Moderate	Moderate	Not Difficult
<i>Pyrus calleryana</i>	Callery pear	Present, Not Established	Unknown	None	Low	Low	Low	None	Difficult

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<i>Pyrus spp.</i>	Pear	Present, Not Established	Moderate	None	Low	Low	Low	Moderate	Difficult
<i>Quercus acutissima</i>	Sawtooth Oak	Not Present	Low	None	Low	High	Low	Low	Difficult
<i>Ranunculus acris</i>	Tall buttercup	Established	Moderate	None	Low	Moderate	Low	None	Difficult
<i>Ranunculus ficaria (Ficaria verna)</i>	Lesser celandine	Present, Not Established	Moderate	Moderate	Low	Moderate	Low	None	Difficult
<i>Rhamnus arguta</i>	Sharp-tooth buckthorn	Not Present	Unknown	Low	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rhamnus cathartica</i>	Common buckthorn	Established	High	None	High	High	High	None	Difficult
<i>Rhamnus davurica</i>	Dahurian buckthorn	Present, Not Established	Unknown	Low	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rhamnus japonica</i>	Japanese buckthorn	Not Present	Unknown	Low	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rhamnus utilis</i>	Chinese buckthorn	Not Present	Unknown	Low	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rhodotypos scandens</i>	Jetbead	Not Present	Unknown	High	Low	Moderate	Low	None	Unknown
<i>Robinia hispida</i>	Bristly locust, rose acacia	Present, Not Established	High	Low	Low	Low	Low	Low	Unknown
<i>Robinia pseudoacacia</i>	Black locust	Established	Moderate	Low	Moderate	High	Low	None	Difficult
<i>Robinia viscosa</i>	Clammy locust	Not Present	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rosa canina</i>	Dog rose	Present, Not Established	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
<i>Rosa multiflora</i>	Multiflora rose	Established	High	Low	Moderate	Moderate	Moderate	None	Difficult
<i>Rosa rugosa</i>	Rugosa rose	Present, Not Established	Low	None	Low	Low	Moderate	None	Difficult

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<i>Rubus armeniacus</i>	Himalayan blackberry, Armenian blackberry	Not Present	Low	Low	Low	Moderate	Moderate	Low	Difficult
<i>Rubus parvifolius</i>	Small leaf bramble	Present, Not Established	Moderate	Low	None	Moderate	Low	None	Difficult
<i>Rubus phoenicolasius</i>	Japanese wineberry, wine raspberry	Not Present	Moderate	Low	Low	Moderate	Low	Low	Difficult
<i>Rumex acetosella</i>	Sheep sorrel	Established	High	Low	None	Moderate	Moderate	None	Difficult
<i>Rumex crispus</i>	Sour dock	Established	High	Low	None	Low	Moderate	None	Difficult
<i>Salix alba</i>	White willow	Present, Not Established	Moderate	None	Low	Low	None	None	Difficult
<i>Salix fragilis</i>	Crack willow	Present, Not Established	Moderate	None	Low	Low	None	None	Difficult
<i>Salix x rubens</i>	Hybrid willow	Present, Not Established	Moderate	None	Low	Moderate	Low	None	Difficult
<i>Salsola kali</i>	Russian thistle	Not Present	High	Low	Low	Low	Moderate	Low	Difficult
<i>Salsola tragus</i>	Prickly Russian thistle	Established	High	Low	Low	Low	Moderate	Low	Difficult
<i>Saponaria officinalis (Lychnis saponaria)</i>	Bouncing bet, Soapwort	Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Schedonorus arundinaceus (Festuca arundinacea)</i>	Tall fescue	Established	High	None	None	Moderate	Low	None	Difficult
<i>Schedonorus pratensis (Festuca pratensis)</i>	Meadow fescue	Established	High	None	None	Low	None	None	Difficult

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<i>Securigera varia (Coronilla varia)</i>	Crown vetch	Established	Moderate	None	Low	High	Low	None	Difficult
<i>Setaria faberi</i>	Giant foxtail	Established	High	None	None	Low	Low	None	Difficult
<i>Setaria italica</i>	Foxtail millet	Established	High	None	None	Low	Low	None	Difficult
<i>Setaria verticillata</i>	Bristly foxtail	Established	High	None	None	Low	Low	None	Difficult
<i>Silene latifolia</i>	White campion	Established	High	None	None	Low	Low	None	Not Difficult
<i>Silene vulgaris</i>	Bladder campion	Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Silybum marianum (Carduus marianus)</i>	Milk thistle	Not Present	Low	None	None	Moderate	High	None	Not Difficult
<i>Sinapis arvensis (Brassica arvensis, Brassica kaber var. pinnatifida)</i>	Wild mustard	Established	High	Low	None	Low	Low	None	Not Difficult
<i>Solanum carolinense</i>	Horsenettle	Established	Unknown	Moderate	Unknown	Unknown	Unknown	None	Difficult
<i>Solanum dulcamara</i>	Bittersweet nightshade	Established	Moderate	Low	Low	Low	None	None	Difficult
<i>Solidago sempervirens</i>	Seaside goldenrod	Not Present	High	None	None	Moderate	Low	None	Difficult
<i>Sonchus arvensis</i>	Perennial sowthistle	Established	Moderate	None	None	Low	Low	None	Difficult
<i>Sorbaria sorbifolia</i>	False spiraea	Established	Low	None	None	None	None	None	Difficult
<i>Sorbus aucuparia</i>	European mountain-ash	Established	Low	None	None	Low	None	None	Not Difficult

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<i>Sorghum bicolor</i>	Shatter cane	Present, Not Established	Low	None	None	Low	Low	None	Not Difficult
<i>Sorghum halepense</i>	Johnson grass	Not Present	Moderate	None	Moderate	Moderate	Moderate	None	Difficult
<i>Sorghum x almum</i>	Columbus grass	Not Present	Low	None	None	None	Low	None	Not Difficult
<i>Spiraea japonica</i>	Japanese meadowsweet	Present, Not Established	Low	None	None	Low	None	None	Not Difficult
<i>Stellaria media</i>	Common chickweed	Established	High	None	None	Low	Low	None	Difficult
<i>Taeniatherum caput-medusae</i>	Medusahead	Not Present	Low	None	Low	Moderate	Moderate	None	Not Difficult
<i>Tamarix spp.</i>	Saltcedar	Present, Not Established	Moderate	None	High	High	High	Low	Difficult
<i>Tanacetum vulgare</i>	Common tansy	Established	High	Low	None	High	Moderate	None	Difficult
<i>Taraxacum officinale</i>	Dandelion	Established	Moderate	None	Low	Low	Low	Low	Not Difficult
<i>Torilis arvensis</i>	Spreading hedgeparsley	Not present	Low	Low	Low	Moderate	Low	Low	Not Difficult
<i>Torilis japonica</i>	Japanese hedgeparsley	Established	Moderate	Low	Low	Moderate	Low	Low	Not Difficult
<i>Tragopogon dubius</i>	Western salsify	Established	Moderate	None	None	Low	None	None	Difficult
<i>Tragopogon pratensis (Tragopogon lamottei)</i>	Meadow salsify	Established	Moderate	None	None	Low	None	None	Difficult
<i>Tribulus terrestris</i>	Puncturevine	Present, Not Established	Moderate	Low	Low	Moderate	Moderate	Low	Difficult
<i>Trifolium hybridum</i>	Alsike clover	Established	Moderate	Low	None	Low	None	None	Not Difficult
<i>Trifolium pratense</i>	Red clover	Established	Moderate	None	Low	Low	None	None	Not Difficult

Scientific name	Common name	Status in Minnesota	Risk of Spread	Human Health	Physical Environment	Ecological Impacts	Economies	Infrastructure	Management
<i>Trifolium repens</i>	White clover	Established	Moderate	None	Low	Low	None	None	Not Difficult
<i>Tussilago farfara</i>	Colt's foot	Present, Not Established	Moderate	None	None	Moderate	Moderate	None	Difficult
<i>Ulmus parvifolia</i>	Chinese elm	Not present	Low	None	None	Low	None	None	Difficult
<i>Ulmus pumila</i>	Siberian elm	Established	High	None	None	Moderate	Low	None	Difficult
<i>Valeriana officinalis</i>	Garden heliotrope	Established	High	None	None	Moderate	None	None	Difficult
<i>Verbascum thapsus</i>	Common mullein	Established	Moderate	None	None	Low	Low	None	Not Difficult
<i>Veronica beccabunga</i> var. <i>beccabunga</i>	European brooklime	Not present	Moderate	None	None	Low	None	None	Difficult
<i>Viburnum lantana</i>	Wayfaring tree	Present, Not Established	Moderate	Low	None	Low	Low	None	Difficult
<i>Viburnum opulus</i> var. <i>opulus</i>	European highbush cranberry	Established	High	None	Low	High	Low	None	Difficult
<i>Vicia cracca</i>	Cow vetch	Established	Moderate	None	Low	Low	None	None	Difficult
<i>Vicia sativa</i>	Common vetch	Established	Moderate	None	Low	Low	None	None	Difficult
<i>Vicia villosa</i>	Hairy vetch	Established	Moderate	None	Low	Low	None	None	Difficult
<i>Vinca major</i>	Large-leaved periwinkle	Not present	Low	None	Low	Moderate	Moderate	None	Difficult
<i>Wisteria floribunda</i>	Japanese wisteria	Not present	Low	Low	Low	Moderate	Low	Low	Difficult
<i>Wisteria sinensis</i>	Chinese wisteria	Not present	Low	Low	Low	Moderate	Low	Low	Difficult

Conclusions

The goal of this project was to consolidate multiple invasive species lists into one location and provide information on levels of threat of the various species. The intent is that these educational and informational lists will be used by managers, policy makers, researchers, and other interested parties. The information can be used in multiple ways, such as:

- Examining how prevention efforts can prevent species that are threat to Minnesota, but not known to be present in the state, from being introduced to the state.
- Species not known to be in the state could be targets of early detection efforts.
- Species present in the state, but not established, could be targets for additional management actions to prevent further spread.
- Researching impacts of species whose impacts are unknown.
- Encouraging mapping and reporting of species to better understand distribution.

This document provides an overview of the threats and status of invasive species to Minnesota as of 2019. The authors anticipate that the list will be updated over time. Minnesota has many individuals and organizations that work with invasive species and the intent is that this list will be a useful tool for them.

List of experts on taxa teams

The following lists name the experts that participated for a portion or all of the species rating process.

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- Kate Wyman-Grothem, US Fish and Wildlife Service
- Kelly Pennington, Minnesota Department of Natural Resources
- Nick Frohnauer, Minnesota Department of Natural Resources
- Tyler Kaspar, 1854 Treaty Authority

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- Ling Shen, Minnesota Department of Natural Resources
- Nick Phelps, University of Minnesota
- Paula Phelps, Minnesota Department of Natural Resources
- Sean Sisler, Minnesota Department of Natural Resources

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