

Prohibited and restricted species as defined in the Natural Resources and Environmental Protection Act 451 of 1994, Section 324.41301.

Sec. 41301. (1) As used in this part:

(a) “Genetically engineered” refers to an organism whose genome, chromosomal or extrachromosomal, is modified permanently and heritably, using recombinant nucleic acid techniques, or the progeny of such an organism.

(b) “Introduce”, with reference to an organism, means to knowingly and willfully stock, place, plant, release, or allow the release of the organism in this state at any specific location where the organism is not already naturalized.

(c) “Prohibited species”, subject to section 41302, means any of the following:

Any of the following prohibited aquatic plant species, including a hybrid or genetically engineered variant of the species or a fragment, including a seed or other propagule, of the species or of a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
African oxygen weed	<i>Lagarosiphon major</i>	<ol style="list-style-type: none"> 1. Have recurved leaves, with a spiral leaf arrangement, and the leaves have downward-curving stems towards the apex. 2. They are found in temperate, cool and quite waterways; you’ll find them in slow-moving streams, ponds and lakes. 3. Only female plants are found growing outside their native range. You can identify them by there white tiny flowers that are seen raised above the water by long tubes. 	http://www.invasive.org/browse/subinfo.cfm?sub=4653 http://plants.ifas.ufl.edu/node/220
Brazilian elodea	<i>Egeria densa</i>	<ol style="list-style-type: none"> 1. More robust then the native, waterweed (<i>Elodea canadensis</i>). Unlike, the Brazilian edolea, the native waterweed typically has 3 leaves per whorl. 2. Have 3 to 6 leaves per whorl, but is typically found with 4 leaves per whorl. 	http://www.invasivespeciesinfo.gov/aquatics/brazwaterwd.shtml http://www.ppws.vt.edu/scott/weed_id/eldde.htm http://www.invasivespecies.wa.gov/priorities/brazilian_elod

		<p>3. Have relatively large, showy flowers that consist of 3 white petals and 3 green sepals. Flowers can be found right above the surface of the water and is about 1/3 inch long.</p>	<p>ea.shtml</p> <p>http://www.ecy.wa.gov/programs/wq/plants/weeds/aqua002.html</p>
Cylindro	<i>Cylindrospermopsis raciborskii</i>	<p>1. Species of cyanobacterium (blue-green algae) that is composed of chained filaments known as trichomes that are solitary and straight.</p> <p>2. They have tube-shaped cells</p> <p>3. They also have Akinetes which as thick-walled spore-like structures. These structures are cylindrical to oval-shaped, found singly or in pairs, near the terminal heterocysts.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=2651</p> <p>http://www.glerl.noaa.gov/res/Centers/HABS/cylindro_fact_sheet.html</p>
European frogbit	<i>Hydrocharis morsus-ranae</i>	<p>1. Have leathery, heart-shaped leaves that are about 1 to 2 inches thick.</p> <p>2. They are free-floating plants and don't typically anchor into a substrate; float freely</p> <p>3. Are dioecious (male and female reproductive parts are found on separate plants). Both sexes have flowers with an outer whorl of 3 greenish-red sepals and a whorl of 3 white petals.</p>	<p>http://nas.er.usgs.gov/taxgroup/plants/default.aspx</p> <p>http://www.sleloinvasives.org/about-invasives/target-species/european-frogbit/</p> <p>http://www.seagrant.sunysb.edu/ais/pdfs/Frog-bitFactsheet.pdf</p> <p>http://www.misin.msu.edu/</p>
Fanwort	<i>Cabomba caroliniana</i>	<p>1. Rooted multi-branched submerged plant that has floating and submerged leaves.</p> <p>2. Submerged leaves resemble that of a fan, which are about 2-inch across. These leaves are mostly found with divided and arranged oppositely or in whorls.</p> <p>3. Floating leaves have more of a diamond shape to them. They also, have pink to purplish colored flowers.</p>	<p>http://plants.ifas.ufl.edu/node/76</p> <p>http://www.mass.gov/dcr/watersupply/lakepond/factsheet/Fanwort.pdf</p> <p>http://www.ecy.wa.gov/programs/wq/plants/weeds/aqua006.html</p>
Giant hogweed	<i>Heracleum mantegazzianum</i>	<p>1. Have numerous small flowers that form a cluster that bloom during June and July. This cluster can reach lengths of 2 ½ feet</p>	<p>http://www.invasivespeciesinfo.gov/plants/hogweed.shtml</p>

		<p>across.</p> <p>2. Can reach heights of 8 to 14 feet tall with hollow stems with a diameter between 2 and 4 inches.</p> <p>3. Have coarse white hairs that originate themselves around the stem in a circular motion. Hairs are found at the base of the leaf stalks along with purple blotches on the stem.</p>	<p>http://mipn.org/MDA_Hogweed_Brochure.pdf</p> <p>http://www.dec.ny.gov/animals/72766.html</p> <p>http://www.misin.msu.edu/</p>
Giant salvinia	<i>Salvinia molesta, auriculata, biloba, or herzogii</i>	<p>1. Leaves are green, large, oval, folded and covered in arching hairs.</p> <p>2. Hairs form what looks to be a cage like structure. This makes them look like mini “egg-beaters” which is very distinctive for giant salvinia.</p> <p>3. Floating, rootless aquatic plant that has a horizontal third leaf that dangles in the water. These leaves can get very long which makes some people believe they are roots.</p>	<p>http://www.invasivespeciesinfo.gov/aquatics/salvinia.shtml</p> <p>http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=298</p>
Hydrilla	<i>Hydrilla verticillata</i>	<p>1. Rooted, submersed plant that can grow to the surface and form dense mats.</p> <p>2. It has slender roots that can grow up to 25 feet long. They also contain potatoe-like tubers attached to the roots.</p> <p>3. Leaves are strap-like and pointed. Here they have a very distinct saw-toothed look to them and grown in whorls of 4 to 8 around the stem.</p>	<p>http://www.invasivespeciesinfo.gov/aquatics/hydrilla.shtml</p> <p>http://plants.ifas.ufl.edu/node/183</p> <p>http://dnr.wi.gov/invasives/fact/hydrilla.htm</p> <p>http://www.misin.msu.edu/</p>
Japanese knotweed	<i>Fallopia japonica</i>	<p>1. Leaves simple, broad and have an alternating pattern to them. They are blunt at the base and pointed tip.</p> <p>2. Resembles bamboo and has hollow stalks that can survive the winter. These stalks can reach heights from 3 to 10 feet tall.</p> <p>3. Flowers arrange in a spike like manner near the ends of the</p>	<p>http://www.invasivespeciesinfo.gov/plants/knotweed.shtml</p> <p>http://www.misin.msu.edu/</p>

		stem. These flowers have a creamy white color to them.	
Parrots feather	<i>Myriophyllum aquaticum</i>	<ol style="list-style-type: none"> 1. This aquatic plant has elongated stems that are suspended in the water column and/or float there. 2. The leaves have a feathery look to them and are bright green. 3. These fine leaves form whorls of about 5 around the stem 	http://invasions.si.edu/ http://plants.ifas.ufl.edu/node/276 http://plants.usda.gov/java/profile?symbol=MYAQ2 http://dnr.wi.gov/invasives/fact/parrot_feather.htm
Starry stonewort	<i>Nitellopsis obtusa</i>	<ol style="list-style-type: none"> 1. Has long, uneven branches. These branches look slightly angular. 2. Cream-colored bulbs may be seen at the base of each cluster of branches. 3. Can form gynogonites (calcified, spiral-shaped fructifications). 	http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=1688
Water chestnut	<i>Trapa natans</i>	<ol style="list-style-type: none"> 1. Rooted aquatic plant that has cord-like, spongy and buoyant stems. These stems can reach lengths up to 16 feet but you will typically find them ranging from 6 to 8 feet in length. 2. They have glossy green triangular shaped leaves that have toothed-like edges. 3. Have a small single white flower that has 4 petals. 	http://www.invasivespeciesinfo.gov/aquatics/waterchestnut.shtml http://www.fws.gov/r5crc/water_chestnut.htm
Yellow floating heart	<i>Nymphoides peltata</i>	<ol style="list-style-type: none"> 1. This is a rooted aquatic invasive species that can be found in depths of 2-13 feet. 2. Leaves are circular to heart shaped and resemble that of lily pads. On the underside of these leaves you typically find them to have a purplish color as compared to the green color on the other side. 3. Have very distinctive bright yellow flower that is composed of 5 fringed petals. Plants typically have 2 to 5 flowers per peduncle. 	http://plants.usda.gov/java/nameSearch?keywordquery=yellow+floating+heart&mode=comname http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=243

The following prohibited bird species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:

Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Eurasian collared dove	<i>Streptopelia decaocto</i>	<ol style="list-style-type: none"> 1. Has a thin black collar with a white upper border on the back of its neck. 2. Are found to be larger than Morning doves but thinner. 3. They have a squared broad tail, which is different then that of a Mourning dove's. 	http://www.invasive.org/browse/subinfo.cfm?sub=18361#pubs http://www.allaboutbirds.org/guide/Eurasian_Collared-Dove/id

The following prohibited crustacean species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:

Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Killer shrimp	<i>Dikerogammarus villosus</i>	<ol style="list-style-type: none"> 1. Body length up to 1" and laterally compressed. 2. Occupies substrate habitats. 3. Prominent antennae. 	http://el.ercdc.usace.army.mil/ansrp/dikerogammarus_villosus.pdf http://www.nwf.org/pdf/Great-Lakes/Exhibit_25_NWF_Killer_Shrimp_Fact_Sheet.pdf
Red swamp crayfish	<i>Procambarus clarkia</i>	<ol style="list-style-type: none"> 1. Raised bright red spots cover body and claws. 2. Did chimney-like burrows into sediment. 3. 2 to 5" in length. 	http://www.seagrant.umn.edu/ais/redswampcrayfish http://animaldiversity.ummz.umich.edu/accounts/Procambarus_clarkii/
Yabby	<i>Cherax destructor</i>	<ol style="list-style-type: none"> 1. Smooth shell that can vary widely in color. 2. Large, body length up to 8 inches. 3. Can tolerate a wide variety of habitats. 	http://www.fws.gov/injuriouswildlife/pdf_files/Cherax_destructor_WEB_9-15-2014.pdf http://www.dpi.nsw.gov.au/fisheries/aquaculture/publications/species-freshwater/freshwater-yabby

Any of the following prohibited fish species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:

Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Bighead carp	<i>Hypophthalmichthys nobilis</i>	<ol style="list-style-type: none"> 1. Have a very large body and a large head with an upturned mouth. 2. Scales are relatively small and have scattered dark blotches covering the entire body. 3. Eyes are located on the underside of the head looking down. 	http://nas.er.usgs.gov/ http://fl.biology.usgs.gov/Carp_ID/html/hypophthalmichthys_nobilis.html http://mdc.mo.gov/discover-nature/field-guide/bighead-carp
Bitterling	<i>Rhodeus sericeus</i>	<ol style="list-style-type: none"> 1. Very small species in the minnow family (rarely exceeds 7 cm) and has moderately large scales. 2. Have a small head and mouth. Lacks barbels. 3. Has pharyngeal teeth that are hooked and found in a single row. 	http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=643 http://fl.biology.usgs.gov/Carp_ID/html/rhodeus_sericeus.html
Black carp	<i>Mylopharyngodon piceus</i>	<ol style="list-style-type: none"> 1. Has large scales with black tips that give it a cross-hatching look to it. 2. Has pharyngeal teeth. They are fairly large and resemble that of human molars. 3. Slightly darker coloration than that of a Grass carp and have a somewhat pointed snout. 	http://www.in.gov/dnr/files/BLACK_CARP.pdf http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=573 http://www.fws.gov/blackcarp-b.pdf http://el.erdc.usace.army.mil/ansrp/mylopharyngodon_piceus.pdf
Eurasian ruffe	<i>Gymnocephalus cernuus</i>	<ol style="list-style-type: none"> 1. Is a relatively small fish that ranges between 5 to 6 inches in long and it rarely exceeds 10 inches in length. 2. Has a slightly downward curving mouth and doesn't have scales on its head. 3. Has rows of dark spots between its spines. 	http://www.seagrant.umn.edu/ais/ruffe http://www.invasivespeciesinfo.gov/aquatics/ruffe.shtml http://www.glsc.usgs.gov/main.php?content=research_invasive_ruffe&title=Invasive%20Fish0&menu=research_invasive_fish http://dnr.wi.gov/invasives/fact/ruffe.htm
Grass carp	<i>Ctenopharyngodon</i>	<ol style="list-style-type: none"> 1. Doesn't have teeth in the jaw area but do have pharyngeal teeth. 	http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=51

	<i>on idellus</i>	<p>These are comb-like throat teeth.</p> <p>2. Has an oblong shaped body, with a rounded belly and broad head with the absence of barbels.</p> <p>3. Scales are moderately large and resemble a chain link fence. Coloration of the scales is silver to olive-like.</p>	<p>4</p> <p>http://www.tpwd.state.tx.us/huntwild/wild/species/gcarp/</p> <p>http://www.in.gov/dnr/files/GRASS_CARP.pdf</p>
Ide	<i>Leuciscus idus</i>	<p>1. Medium-sized fish that have small mouths with blunt snouts and no barbels.</p> <p>2. They have conic, smooth (not serrated) pharyngeal teeth that are arranged in 2 rows. These are usually 3-5, 5-3.</p> <p>3. Usually have 8 branched dorsal rays and lateral-line scales (55-63).</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=557</p> <p>http://fl.biology.usgs.gov/Carp_ID/html/leuciscus_idus.html</p>
Japanese weatherfish	<i>Misgurnus anguillicaudatus</i>	<p>1. Have an eel-like body with brown and greenish grey brown marble markings.</p> <p>2. Mouth is relatively small and narrow that is surrounded by 6 to 10 barbels (4 of which are very small).</p> <p>3. On the base of the tail you can find a prominent black spot.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=498</p> <p>http://www.issg.org/database/species/ecology.asp?si=1537&fr=1&sts=&lang=EN</p>
Round goby	<i>Neogobius melanostomus</i>	<p>1. Is a small, bottom-dweller that have a soft body and large round head.</p> <p>2. They have fused pelvic fins, unlike that of the native sculpins.</p> <p>3. During the earlier years, gobies are a solid grey color and adults are found to be blotchier with brown and black colors. They also have a white to greenish dorsal fin and has a posterior base with a black spot on it.</p>	<p>http://www.glsc.usgs.gov/main.php?content=research_invasive_goby&title=Invasive%20Fish0&menu=research_invasive_fish</p> <p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=713</p>
Rudd	<i>Scardinius erythrophthalm</i>	<p>1. Somewhat stocky fish that has a forked tail with reddish-brown colored fins.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=648</p>

	<i>us</i>	<p>2. Have very distinctive steep angled mouths with a protruding lower lip. They also, don't have any barbels around the mouth.</p> <p>3. Scales have an olive-like color to them at the back and a brassy yellow-brown color on there sides. The belly of the fish is a silvery-white color.</p>	
Silver carp	<i>Hypophthalmichthys molitrix</i>	<p>1. Have a very large body with very small scales. No scales are on the head. There eyes are located on the underside but have their eyes higher on the head then Bighead carp.</p> <p>2. They have a very large mouth with no teeth in the jaw area but have pharyngeal teeth.</p> <p>3. Unlike Bighead carp, Silver carp don't have any dark blotches. They have more of a silvery look to them.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=549</p> <p>http://mdc.mo.gov/discover-nature/field-guide/silver-carp</p>
Any fish from the snakehead family	<i>family Channidae</i>	<p>1. Have elongated, cylindrical bodies; most species in this family also have moderately flattened heads with large scales.</p> <p>2. Pelvic fins are closer to the head and they have a long anal fin that is almost the same length as its dorsal fin.</p> <p>3. They have a very large mouth with a protruding lower lip. Most species have toothed jaws and have canine-like teeth.</p>	<p>http://www.invasivespeciesinfo.gov/aquatics/snakehead.shtml</p> <p>http://www.fws.gov/snakeheadfstotal.pdf</p>
Stone Moroko	<i>Pseudorasbora parva</i>	<p>1. Small (< 4 inches) and similar to various minnow species.</p> <p>2. Three dorsal spines and superior mouth.</p> <p>3. Most abundant in vegetated stream channels, ponds and small lakes.</p>	<p>http://www.fws.gov/injuriouswildlife/pdf_files/Pseudorasbora_parva_WEB_9-15-2014.pdf</p>
Tench	<i>Tinca tinca</i>	<p>1. Bodies have small and elongated scales that are typically a dark green color on their back and a greenish-brown to dark brown on the sides. Usually the belly is a yellowish color.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=652</p>

		<ol style="list-style-type: none"> 2. They have a triangular shaped head with a relatively long snout. Mouth is small with one barbell at each corner of the jaw. 3. Have pharyngeal teeth that are arranged in a single row, which usually consist of 4 or 5 teeth on each side. 	http://fl.biology.usgs.gov/Carp_ID/html/tinca_tinca.html
Tube-nose goby	<i>Proterorhinus marmoratus</i>	<ol style="list-style-type: none"> 1. Has fused pelvic fins, like that of the round goby. 2. Unlike the round goby, Tube-nose goby have long anterior nostrils and lack the black spot on the posterior base of their dorsal fin. 3. Is a brown color and has two dorsal fins. 	http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=714 http://www.seagrant.wisc.edu/Home/Topics/InvasiveSpecies/Details.aspx?PostID=654
Wels catfish	<i>Silurus glanis</i>	<ol style="list-style-type: none"> 1. Very large with a scale-less, eel shaped body. 2. Six barbules or whiskers. 3. Weight can exceed 400 lbs. 	http://www.fws.gov/injuriouswildlife/pdf_files/Silurus_%20glanis_WEB_9-15-2014.pdf
Zander	<i>Sander lucioperca</i>	<ol style="list-style-type: none"> 1. Very similar in appearance and behavior to native walleye. 2. Do not have white tips on fins like walleye. 	http://www.fishbase.us/summary/Sander-lucioperca.html http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=830
Any of the following prohibited insect species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Asian longhorned beetle	<i>Anoplophora glabripennis</i>	<ol style="list-style-type: none"> 1. Have shiny black with white spots on their body along with blue tinted legs. 2. As an adult they have antennae that are longer than their body. These are black and white striped. 3. Can reach lengths between 0.75 to 1.5 inches without including 	http://www.invasivespeciesinfo.gov/animals/asianbeetle.shtml http://www.dnr.state.oh.us/health/asianlonghorned/tabid/5197/Default.aspx

		their antennae.	
Emerald ash borer	<i>Agrilus planipennis</i>	<ol style="list-style-type: none"> 1. Most have a bright metallic emerald green color to them. 2. Only one of the species <i>Agrilus</i> that has a bright red metallic dorsal surface on the abdomen. 3. Are typically larger than other <i>Agrilus</i> species and range in length from less than 10.0 to 13.0 mm. 	http://www.michigan.gov/mdard/0,4610,7-125-1568_2390_18298---,00.html http://www.emeraldashborer.info/
The following prohibited mammal species, including a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Feral Swine	<i>Sus scrofa Linnaeus</i>	<ol style="list-style-type: none"> 1. Feral swine are a combination of our domestic pigs and that of the non-native Eurasian boar. Due to varying ancestral lineages feral swine are found to have a wide range of colorations, from gray to black or light to dark brown. They can also be found with spots and stripes. 2. Michigan's feral swine typically range in size from 100 to 200 pounds. 3. Piglets have stripes that fade as they get older. 4. Underfur is lighter in coloration as compared to the rest of the body. 5. They also have dark distal portions which are found on their snout, tail, legs, and ears. 	http://www.michigan.gov/dnr/0,1607,7-153-10370_12145_55230---,00.html http://www.dec.ny.gov/animals/70843.html http://dnr.wi.gov/org/land/wildlife/PUBL/wlnotebook/Pig.htm http://www.invasivespeciesinfo.gov/animals/wildboar.shtml
Nutria	<i>Myocastor coypus</i>	<ol style="list-style-type: none"> 1. Have large yellow to orange colored incisors. 2. They have thick rat-like tails that are covered in bristly hairs. 3. Have long white whiskers that are found on both sides of their noses. 	http://www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/fs_nutria10.pdf http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=1089
Any of the following prohibited mollusk species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:			

Common Name	Common Name	Common Name	Common Name
Brown garden snail	<i>Helix aspersa</i>	<ol style="list-style-type: none"> 1. The Brown garden snail has a brown body. 2. Their shell is also found to be brown, tan, and yellow in coloration. 3. Shell can grow up to 1.25 inches in diameter. 	http://www.ipm.ucdavis.edu/PMG/r8500111.html http://www.agf.gov.bc.ca/cropprot/ebgsnail.htm http://www.sierrapotomac.org/W_Needham/BrownGardenSnail_061218.htm
Carthusian snail	<i>Monacha cartusiana</i>	<ol style="list-style-type: none"> 1. Shell is about 6 to 10 mm high and 9-17 mm high. 2. Their shells have a pale white or yellow color to them and may even have brown stripes. 3. The main aperture (opening of the shell where the body comes out of) typically is darker here than the rest of the shell. 	http://idtools.org/id/mollusc/factsheet_index.php
Giant African snail	<i>Achatina fulica</i>	<ol style="list-style-type: none"> 1. Easily identified due to its large size and long, narrow shell. 2. Coloration can vary but their mostly seen as being light brown, with alternating brown and cream colored bands on younger snails and seen more as upper whorls on adult snails. Here you can find 6 to 9 whorls. 3. Coloration lightens to almost white towards to tip of the shell. 	http://www.invasivespeciesinfo.gov/animals/africansnail.shtml http://www.aphis.usda.gov/plant_health/plant_pest_info/gas/index.shtml
Girdled snail	<i>Hygromia cinctella</i>	<ol style="list-style-type: none"> 1. Has a brown to yellowish colored shell. Also, you will see a white band that is on the widest part of the shell. 2. Their shells have more of a pyramid shape or triangular to them. 3. Shell also has 5 to 6 whorls on it. 	http://www.open2.net/survey/snails/html_download/snail_download.htm http://idtools.org/id/mollusc/factsheet.php?name=Hygromia%20cinctella
Golden mussel	<i>Limnoperna fortune</i>	<ol style="list-style-type: none"> 1. Shell is golden or yellowish in color. 2. Shell length commonly 1 inch but can be over 2 inches. 	http://www.michigan.gov/dnr/0,4570,7-153-10370_59996-305409--,00.html

		3. Establishes dense colonies similar to zebra/quagga mussels.	http://el.erdc.usace.army.mil/ansrp/ANSIS/html/limnoperna_fotunei_golden_mussel.htm
Heath snail	<i>Xerolenta obvia</i>	<p>1. Has a chalky white colored shell along with dark spiral bands on it.</p> <p>2. It has a flattened like shell with a relatively large umbilicus (hole on the underside of the shell – not all snails have them).</p> <p>3. The aperture (mouth) of the shell has an oval shape to it.</p>	<p>http://www.open2.net/survey/snails/html_download/snail_download.htm</p> <p>http://idtools.org/id/mollusc/factsheet_index.php</p>
New Zealand Mudsnail	<i>Potamopyrgus antipodarum</i>	<p>1. These snails have an elongated shell that consists of 7 to 8 whorls that are separated by deep grooves.</p> <p>2. They are found with various morphs, ranging from grey and dark brown to light brown.</p> <p>3. Snails are fairly small and found to be between 4 to 6 mm in length here in the Great Lakes area.</p>	<p>http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=1008</p> <p>http://www.invasivespeciesinfo.gov/aquatics/mudsnail.shtml</p>
Wrinkled dune snail	<i>Candidula intersecta</i>	<p>1. The color of their shells is found to be a pale white or yellow with brown bands or spots on it.</p> <p>2. The snails body is a pale yellow or blue-gray color.</p> <p>3. Shell size varies from 7 to 13 mm in length and 5 to 8 mm in height.</p>	<p>http://idtools.org/id/mollusc/factsheet_index.php</p> <p>http://www.cabi.org/isc/?compid=5&dsid=11164&loadmodule=datasheet&page=481&site=144</p>
Any of the following restricted aquatic plant species, including a hybrid or genetically engineered variant of the species or a fragment, including a seed or other propagule, of the species or of a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Curly leaf pondweed	<i>Potamogeton crispus</i>	<p>1. Leaves are stiff and have a crinkly look to them. They are oblong, rounded at the tip, and alternate around the stem at its base. Leaf margins are wavy with fine teeth.</p> <p>2. Have flowers that rise above the water during late spring/early summer.</p>	<p>http://plants.usda.gov/java/</p> <p>http://aquaplant.tamu.edu/management-options/curly-leafed-pondweed/</p> <p>http://www.dnr.state.mn.us/invasives/aquaticplants/curlylea</p>

		<ol style="list-style-type: none"> 3. Appears to have a reddish-brown color when in the water but is actually green. 	f_pondweed.html
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	<ol style="list-style-type: none"> 1. Stems have a reddish-brown to whitish-pink look. They are smooth and branch several times near the surface of the water. 2. Leaves are soft, feather-like, and divided along with having an olive-green color to them. 3. Leafs are arranged in whorls of 3 to 6 leaves, but are on average 4 leaves per whorl. 	http://www.invasivespeciesinfo.gov/aquatics/watermilfoil.shtml http://plants.ifas.ufl.edu/node/278
Flowering rush	<i>Butomus umbellatus</i>	<ol style="list-style-type: none"> 1. Leaves are linear and have a triangular cross-section. They have a slight sword-like shape to them. 2. Have pale pink and white flowers, white 3 petals and 3 petal-like sepals. 3. Flowers form umbrella like clusters at the top of the stem. 	http://plants.usda.gov/java/ http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/floweringrush.html
Phragmites or common reed	<i>Phragmites australis</i>	<ol style="list-style-type: none"> 1. After stem dies, the leaf sheaths (tight) of invasive subspecies stay attached unlike the native. 2. Have hollow, rough, upright stems that are dull and have a tan-like color. 3. The invasive subspecies tends to be more dense and taller (up to 15 feet tall) as compared to the native subspecies. 	http://www.invasivespeciesinfo.gov/aquatics/commonreed.shtml http://www.invasiveplants.net/phragmites/phrag/morph.htm http://www.watershedcouncil.org/learn/aquatic%20invasive%20species/phragmites/
Purple loosestrife	<i>Lythrum salicaria</i>	<ol style="list-style-type: none"> 1. Stems are 4-sided without stalks. Stems range in color from green to purple. 2. Leaves are either opposite or whorled and almost linear. Near the base the leaves are larger. 3. During July and October purple loosestrife have showy purple 	http://www.invasivespeciesinfo.gov/aquatics/loosestrife.shtml http://dnr.wi.gov/invasives/fact/loosestrife.htm

		(can be white to light pink) flowers. These flowers typically have between 5-7 petals and found in clusters of two or more.	
Any of the following restricted crustacean species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Rusty crayfish	<i>Orconectes rusticus</i>	<ol style="list-style-type: none"> 1. Claws are generally larger than that of native crayfish. They are usually found without wart-like white bumps. 2. Usually have dark, dusty-colored spots on their carapace. 3. On the tips of the s-shaped moveable claws you will find black bands. 	http://www.seagrant.umn.edu/ais/rustycrayfish http://michigan.gov/dnr/0,1607,7-153-10370_12145_12203-33021--,00.html http://www.anstaskforce.gov/spoc/rustycrayfish.php
Any of the following restricted mollusk species, including a hybrid or genetically engineered variant of the species or an egg of the species or of a hybrid or genetically engineered variant:			
Common Name	Genus Species	Key Characteristics	Educational links to learn more about the species
Quagga mussel	<i>Dreissena bugensis</i>	<ol style="list-style-type: none"> 1. Has a rounded angle between the ventral and dorsal surfaces. 2. If you place quagga mussel on its side it will topple over, unlike that of the zebra mussel. 3. Has various morphs (colorations) which vary from black, cream, or white bands. The primary morph in Lake Erie is a light off-white or completely white. 	http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=95 http://www.invasivespeciesinfo.gov/aquatics/quagga.shtml http://dnr.wi.gov/invasives/fact/quagga.htm
Zebra mussel	<i>Dreissena polymorpha</i>	<ol style="list-style-type: none"> 1. Have very free variations in their shell color. Ranges from dark or light colored shells, with or without stripes on them. 2. If you place a zebra mussel on its side it won't topple over because of its flat underside, unlike that of the quagga mussel. 3. Shells are bilaterally symmetrical and join together in the midventral line. 	http://www.gls.usgs.gov/main.php?content=research_invasive_zebramussel&title=Invasive%20Invertebrates0&menu=research_invasive_invertebrates http://www.invasivespeciesinfo.gov/aquatics/zebramussel.shtml http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=5

Definitions for the prohibited and restricted species list

- **Apex** – the tip or top of a plant
- **Barbel** – a slender, whiskerlike appendage often located near the mouths of certain fish (i.e. carp and catfish)
- **Calyx** – outer series of perianth parts; consists of all the sepal
- **Corolla** – the inner series of the perianth parts
- **Dioecious** – male and female flowers are found on separate plants; i.e. all the flowers on a single plant are either staminate or pistillate
- **Node** – this is the point at which a leaf or branch comes from on the plant
- **Peduncle** – a stalk that supports a single or cluster of flowers
- **Perennial** – a plant that lives 3 or more years
- **Perianth** – consists of all the calyx and corolla on a plant
- **Pistil** – One of the female or seed-producing structures of a flower, whether composed of a single carpel or two or more carpels; usually consisting of one ovary and one or more styles and stigmas.
- **Recurved leaves** – leaves curved inward or outward towards the stem
- **Sepal** – is one part of the calyx
- **Stamen** – One of the male or pollen-producing structures of a flower, usually consisting of a filament and an anther.
- **Submersed** – Found normally/adapted to living under water
- **Sepal** – is one part of the calyx
- **Toothed** – with teeth, this means in the margin of the leaf
- **Tuber** – this is a thicker part of the root or rhizome (i.e. seen a lot in potatoes), usually stores starch
- **Whorl** – consists of 3 or more similar structures around a stem or other axis (i.e. around the same node), this is typically seen as a ring

References

Aquaplant: A Pond Manger Diagnostics Tool – Curly-Leafed Pondweed. Department of Wildlife & Fisheries Sciences Texas AgriLife Extension Service. 2012. Web. 31 May 2012. <http://aquaplant.tamu.edu/management-options/curly-leafed-pondweed/>

Aquatic Invasive Species: Black Carp. Indiana Department of Natural Resources, Division of Fish and Wildlife. Print. 2009.

Asian Longhorned Beetle. Ohio Department of Natural Resources, Division of Forestry. Web. 31 May 2012. <http://www.dnr.state.oh.us/health/asianlonghorned/tabid/5197/Default.aspx>

Benson, A. J., D. Raikow, J. Larson, and A. Fusaro. *Dreissena polymorpha*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 15 February 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=5>

Benson, A. J., M. M. Richerson, E. Maynard, J. Larson, and A. Fusaro. *Dreissena bugensis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 19 March 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=95>

Benson, A.J., R.M. Kipp, J. Larson, and A. Fusaro. *Potamopyrgus antipodarum*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 11 June 2012. Web. 1 July 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=1008>

Black Carp: Invasive Species Program. U.S. Fish and Wildlife Service. 2002. Web. 31 May 2012. <http://www.fws.gov/blackcarp-b.pdf>

Blossey, Bernd. *Phragmites: Common Reed – Morphological differences between native and introduced genotypes*. Cornell University. 2002. Web. 31 May 2012. <http://www.invasiveplants.net/phragmites/phrag/morph.htm>

C.C. Jacono. 2012. *Hydrocharis morsus-ranae*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 19 September 2011. Web. 30 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=1110>

Department of Agriculture and Rural Development: *What's HOT with the EAB*. State of Michigan. 2012. Web. 31 May 2012. http://www.michigan.gov/mdard/0,4610,7-125-1568_2390_18298---,00.html

Emerald Ash Borer. USDA Forest Service and Michigan State University. Web. 31 May 2012. <http://www.emeraldashborer.info/index.cfm>

Field Guide: Bighead Carp. Conservation Commission of Missouri. 2012. Web. 31 May 2012. <http://mdc.mo.gov/discover-nature/field-guide/bighead-carp>

Field Guide: Silver Carp. Conservation Commission of Missouri. 2012. Web. 31 May 2012. <http://mdc.mo.gov/discover-nature/field-guide/silver-carp>

Fuller, Pam. *NAS – Nonindigenous Aquatic Species*. U.S. Geological Survey. 19 August 2009. Web. 31 May 2012. <http://nas.er.usgs.gov/>

Fuller, P., A. Benson, E. Maynard, M. Neilson, J. Larson, and A. Fusaro. *Neogobius melanostomus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 27 February 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=713>

Fuller, P., L. Nico, E. Maynard, M. Neilson, J. Larson, and A. Fusaro. *Proterorhinus semilunaris*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 8 March 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=714>

Giant Hogweed, *Heracleum mantegazzianum*: An attractive but dangerous noxious weed-Have you seen this plant? Michigan: Department of Agriculture and U.S. Department of Agriculture Animal and Plant Health. Print.

Global Invasive Species Database: Misgurnus anguillicaudatus. National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG). 15 April 2012. Web. 31 May 2012. <http://www.issg.org/database/species/ecology.asp?si=1537&fr=1&sts=&lang=EN>

Hagood, Scott. *Weed Identification Guide*. Virginia Tech. Web. 30 May 2012. <http://www.ppws.vt.edu/weedindex.htm>

Hamel, Kathy. *Non-native, Invasive, Freshwater Plants*. Department of Ecology, State of Washington. Web. 30 May 2012.
<http://www.ecy.wa.gov/programs/wq/plants/weeds/index.html>

Hong, Y., A. Steinman, B. Biddanda, R. Rediske and G. Fahnenstiel. 2006. Occurrence of the toxin-producing cyanobacterium *Cylindrospermopsis raciborskii* in Mona and Muskegon Lakes, Michigan. *Journal of Great Lakes Research* 32:645-652
<http://www.invasive.org/>

How to Manage Pests, UC Pest Management Guidelines: Avocado Brown Garden Snail. The Regents of the University of California. 1 July 2010. Web. 31 May 2012. <http://www.ipm.ucdavis.edu/PMG/r8500111.html>

Invasive Aquatic Plants. Minnesota Department of Natural Resources. 2012. Web. 31 May 2012.
<http://www.dnr.state.mn.us/invasives/aquaticplants/index.html>

Invasive.org: Center for Invasive Species and Ecosystem Health. The University of Georgia - Warnell School of Forestry and Natural Resources and College of Agricultural and Environmental Sciences - Dept. of Entomology. 5 April 2012. Web. 30 May 2012.
<http://www.invasive.org/>

Invasive Species. Wisconsin Department of Natural Resources. 27 February 2012. Web. 30 May 2012.
<http://dnr.wi.gov/topic/Invasives/>

Invasive Species Compendium – Datasheets: Lissachatina fulica (giant African land snail). CABI. CABI is a registered EU trademark. 2012. Web. 31 May 2012. <http://www.cabi.org/isc/?compid=5&dsid=2640&loadmodule=datasheet&page=481&site=144>

Invasive Species Control & Management. St. Lawrence-Eastern Lake Ontario PRISM of New York State. 2011. Web. 30 May 2012.
<http://www.sleloinvasives.org/>

Invasive Species Program. U.S. Geological Survey: Great Lakes Science Center. 31 January 2012. Web. 31 May 2012.
http://www.glsc.usgs.gov/main.php?content=research_invasive&title=Invasive%20Species0&menu=research_invasive_fish

Invasive Species Program Snakeheads – The Newest Aquatic Invader. U.S. Fish and Wildlife Service. 2002. Web. 31 May 2012.
<http://www.fws.gov/snakeheadfstotal.pdf>

Leo Nico. 2012. *Hypophthalmichthys molitrix*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 15 March 2012. Web. 31 May 2012.

<http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=549>

Leo Nico, Pam Fuller, and Matt Neilson. *Tinca tinca*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 15 March 2012. Web. 31 May 2012.

<http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=652>

MICHIGAN FLORA ONLINE. A. A. Reznicek, E. G. Voss, & B. S. Walters. February 2011. University of Michigan. Web. 11 May 2012. <http://michiganflora.net/home.aspx>.

Minnesota Sea Grant: Eurasian Ruffe (Gymnocephalus cernuus). University of Minnesota. 2012. Web. 31 May 2012.

<http://www.seagrant.umn.edu/ais/ruffe>

National Invasive Species Information Center. United States Department of Agriculture: National Agricultural Library. 24 May 2012. Web. 30 May 2012. <http://www.invasivespeciesinfo.gov/index.shtml>

National Oceanic and Atmospheric Administration, United States Department of Commerce. Center of Excellence for Great Lakes and Human Health. Web. 30 May 2012. <http://www.glerl.noaa.gov/res/Centers/HumanHealth/ceglhh.html>

Nico, Leo and Pam Fuller. *Rhodeus sericeus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 5 December 2003. Web. 31 May 2012.

<http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=643>

Nico, Leo, Pam Fuller, and Matt Neilson. *Leuciscus idus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 19 January 2012. Web. 31 May 2012.

<http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=557>

Nico, L., P. Fuller, G. Jacobs, J. Larson, and A. Fusaro. *Scardinius erythrophthalmus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 8 March 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=648>

Nico, L., P. Fuller, M. Neilson, J. Larson, and A. Fusaro. *Misgurnus anguillicaudatus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 29 May 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=498>

Nico, L.G., P.L. Fuller, P.J. Schofield, and M.E. Neilson. *Ctenopharyngodon idella*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 15 March 2012. Web. 31 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=514>

Nuisance & Invasive Species. New York State Department of Environmental Conservation. 2012. Web, 30 May 2012. <http://www.dec.ny.gov/animals/265.html>

O'Neill, Charles R. Jr. *European Frog-Bit (Hydrocharismorsus-ranae) – Floating Invader of Great Lakes Basin Waters NYSG Invasive Species Factsheet Series: 07-1*. New York Sea Grant. February 2007. Web. 30 May 2012. <http://www.seagrant.sunysb.edu/ais/pdfs/Frog-bitFactsheet.pdf>

Plants Database. United States Department of Agriculture: Natural Resources Conservation Service. 29 May 2012. Web. 30 May 2012. <http://plants.usda.gov/java/>

Phragmites. Tip of the Mitt Watershed Council. 2012. Web. 31 May 2012. <http://www.watershedcouncil.org/learn/aquatic%20invasive%20species/phragmites>

Rebekah M. Kipp. 2012. *Cylindrospermopsis raciborskii*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 19 February 2007. Web. 30 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=2651>

Rebekah M. Kipp. 2012. *Nitellopsis obtusa*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 7 April 2011. Web. 30 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=1688>

Schofield, Pamela. *Ecophysiology of Non-Native Fishes*. U.S. Geological Survey: Southeast Ecological Science Center. 4 January 2012. Web. 31 May 2012. <http://fl.biology.usgs.gov/projects/ecophysiology.html>

Smithsonian Environmental Research Center. Smithsonian Institute. 19 March 2012. Web. 30 May 2012. <
<http://www.serc.si.edu/index.aspx>>

The Cornell Lab of Ornithology: All About Birds. Cornell University. 2011. Web. 30 May 2012. <
<http://www.allaboutbirds.org/Page.aspx?pid=1189>>

Center for Aquatic and Invasive Plants. University of Florida, IFAS. 2012. Web. 30 May 2012. <http://plants.ifas.ufl.edu/>

The Great Snail Hunt. BCC and The Open University. Web. 31 May 2012.
http://www.open2.net/survey/snails/html_download/snail_download.htm

Vanessa Howard. 2012. *Nymphoides peltata*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 4 April 2007. Web. 30 May 2012.
<http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=243>

V. Howard. 2012. *Salvinia molesta*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. 12 February 2008. Web. 30 May 2012. <http://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=298>

Washington Invasive Species Council. Washington State Recreation and Conservation Office. 2012. Web. 30 May 2009. <
<http://www.invasivespecies.wa.gov/index.shtml>>

Water Chestnut. U.S. Fish and Wildlife Service: Connecticut River Coordinator's Office. 7 September 2010. Web. 30 May 2012.
http://www.fws.gov/r5crc/water_chestnut.htm

White-McLean, J.A. *Terrestrial Mollusc Tool*. USDA/APHIS/PPQ Center for Plant Health Science and Technology and the University of Florida. September 2011. Web. 31 May 2012. <http://idtools.org/id/mollusc>

Wildlife Service Factsheet: Nutria, an Invasive Rodent. U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 2010. Web. 31 May 2012. http://www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/fs_nutria10.pdf

Ziegler, Amos. *Midwest Invasive Species Information Network*. Michigan State University Board of Trustees. 2009. Web. 30 May 2012. <http://www.misin.msu.edu/>