

- Inside this brochure you will find a list of invasive species that are of concern to Idaho because they:
- Are currently regulated by state and/or federal law.
- Degrade natural ecosystems or negatively affect native species.
- Have significant economic impacts on agriculture, public infrastructure, or natural resources, including recreational activities.
- Could negatively affect human health (some).

Economic damage: Invasive species can cause economic problems. According to The Nature Conservancy, estimated damage from invasive species worldwide totals more than \$1.4 trillion (five percent of the global economy).

Ecological damage: Invasive species displace native species, reduce biological diversity and change native ecosystems. This includes changes in flood and fire regimes and food chains.

Invasive species can be plants, animals and other organisms (e.g., microbes), and they can come from anywhere - other continents, other countries, or even from parts of the same country. *Human actions* are the primary means of invasive species introduction and can be deliberate or accidental. Not all *introduced species* are harmful and not all of them become invasive. Most of our important food crops such as corn, wheat, barley, potatoes, and soybeans are not native to North America. Many of our domesticated animals such as cattle, pigs, sheep, chickens, dogs, and cats are also non-indigenous. An introduced species, whether it was brought deliberately or accidentally, could become *invasive* if it spreads aggressively, reproduces quickly, has short juvenile periods, tolerates a wide range of climatic conditions and habitats, and competes or out-competes with native species.

WHAT IS AN INVASIVE SPECIES?
As per the President's Executive Order 13112, an "invasive species" is defined as:
• A species that is non-native (or alien) to the ecosystem under consideration, and
• The introduction of which causes, or is likely to cause, economic or environmental harm or harm to human health.

- *Be on the lookout for invasive species.* Learn which plants and insects threaten Idaho and you are outdoors.
- *Help remove invasive species before they establish.* The best way to control invasive species is through Early Detection and Rapid Response. Pull, cut, spray, or deadhead problem plants before they spread. Report unusual insects, plants, and animals to your local University Extension Agent.
- *Do not introduce invasive species.* Check with sellers before you buy plants to make sure that, whether they are native or exotic, they will not become invasive. Ask about non-invasive alternatives for your garden and landscape.
- *Do not transport invasive species.* It is easy to move seeds and insects from place to place on boats, hiking boots, car tires, pants cuffs, and camping or recreational gear. Always check your vehicles, gear, and equipment before entering wild lands or natural areas or any bodies of water. Firewood is perhaps the worst offender. **BUY FIREWOOD LOCALLY AND BURN IT COMPLETELY BEFORE YOU LEAVE.**
- *Minimize disturbance.* Many invasive species, especially plants, find it easier to establish and spread on disturbed soil. Keep open areas on your property to a minimum and check disturbed areas frequently for signs of invasive species.
- *Spread the word!* Invasive species have environmental, economic, and social impacts on all of us. Report your observations to appropriate government agencies and university extension agents, or conservation groups. Educate your friends.

How can we keep invasive species from taking over Idaho?

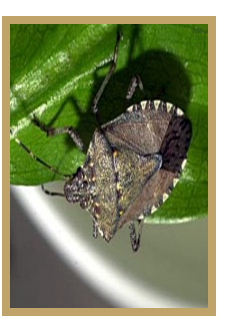
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that are already here by being an aware, responsible, and vocal citizen of Idaho.

Invasive species spread in many ways, usually through human activity. You can help prevent new invasions and slow the spread of invasive species

How can we keep invasive species from taking over Idaho?

- 1) Salt Cedar
- 2) Japanese Knotweed
- 3) Giant Hogweed
- 4) Pierce's disease of grapes
- 5) Brown Rot of potatoes
- 6) Sudden Oak Death
- 7) Golden Nematode
- 8) Brown Marmorated Stink Bug



For Further Information

- Insects**
Paul Castrovillo, Program Manager
Pest Survey and Detection
(208) 332-8620
- Invasive Species/Noxious Weeds**
Matt Voile, Program Manager
Noxious Weed Management
(208) 332-8620
- Plant Diseases**
Liz Vavricka, Program Manager
Plant Industry Lab
(208) 332-8644
- Other Cooperating Agencies**
Gina Davis, Forest Health & Stewardship Program manager, Entomologist
Idaho Dept. of Lands
(208) 769-1525
- Brian Marschman, State Plant Health Director
USDA, APHIS, Plant Protection and Quarantine
(208) 373-1600
- Additional Contacts**
Local County Extension Offices
County Weed Superintendents

- General Useful Web Sites:**
Idaho State Department of Agriculture
<http://www.agri.idaho.gov>
National Invasive Species Website
<http://www.invasivespecies.gov>
National Pest Information System (Pest Tracker)
<http://ceris.purdue.edu/napis>
USDA, APHIS Plant Protection and Quarantine
<http://www.aphis.usda.gov/ppq>

- Insect Web Sites**
The Bugwood Network
<http://www.bugwood.org/>
Invasive Species Insect Page
<http://www.invasive.org/insects.cfm>
Oregon department of Agriculture Insect Pest Prevention and Management Program
http://www.oregon.gov/ODA/PLANT/ippm_index.shtml

- Insect Web Sites (cont.)**
Oregon State University Ken Gray Insect Image Collection
<http://www.ent3.orst.edu/kgphoto/index.cfm>
Washington State Department of Agriculture Pest and Insect Program
<http://agr.wa.gov/PlantsINsects.default.htm>

- Plant Disease Web Sites**
Agri-Food Canada Pulse Crop Diseases
http://paridss.usask.ca/specialcrop/pulse_diseases/index.html
California Oak Mortality Task Force
<http://www.cnr.berkeley.edu/comtf/>
Cornell University Vegetable MD Online
<http://vegetablemdonline.ppath.cornell.edu/>
Plant Management Network Soybean Rust
<http://www.plantmanagementnetwork.org/infocenter/topic/soybeanrust/>
Plum Pox Virus, Symptoms Booklet
<http://ppvbooklet.cas.psu.edu/>
University of Idaho Wheat Disease Problems
<http://www.uidaho.edu/ag/plantdisease/wheat.htm>
West Virginia University Fruit Pathology
<http://www.caf.wvu.edu/kearneysville/pathology.html>

- Weed Web Sites**
Idaho Weed Awareness Campaign
<http://www.idahoweedawareness.org>
Idaho Weed Control Association
<http://www.idahoweedcontrol.org>
Center for Invasive Plant Management
<http://www.weedcenter.org>
North American Weed Management Association
<http://www.nawma.org>
Western Weed Society of America
<http://www.wsweedscience.org/Society/society.asp>

Invasive Species

Idaho State Department of Agriculture
2270 Old Penitentiary Road
Boise, Idaho 83712

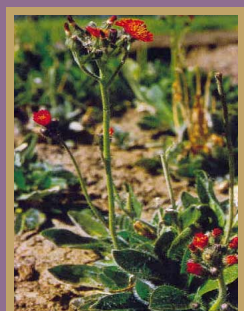
Office: 208-332-8620
Fax: 208-344-2283

Concerns of Idaho's Agriculture and Rangelands

Invasive Insects, Plant Diseases and Weeds



Gypsy Moth



Orange Hawkweed



Viper's Bugloss



Japanese Beetle



Common Name	Scientific Name	Description
AQUATIC PLANTS		
Brazilian Elodea	<i>Egeria densa</i>	Very bushy plant with dense whorls of bright green leaves.
Hydrilla	<i>Hydrilla verticillata</i>	Submersed perennial with branched stems and reproduces by rhizomes and turions.
Japanese Knotweed	<i>Polygonum cuspidatum</i>	Stems are stout, reddish-brown. Leaves are short-petioled and flowers are greenish white.
Parrotfeather Milfoil	<i>Myriophyllum aquaticum</i>	Bright green feathery stems that trail across water.
Salt Cedar (Riparian)	<i>Tamarix ramosissima</i>	Evergreen shrubs or small trees. Stems are reddish-brown, leaves are small and scale-like and flowers are pink.
Water Hyacinth	<i>Eichhornia crassipes</i>	Bright shiny green fleshy leaves and attractive mauve flowers.
TERRESTRIAL PLANTS		
Giant Hogweed	<i>Heracleum mantegazzianum</i>	Stems and stalks are hollow. Compound leaves. Each leaflet is deeply incised. Inflorescence is composed of many small white florets. Stems and leaves contain caustic sap.
Houndstongue	<i>Cynoglossum officinale</i>	Leaves are rough, hairy, and lacking teeth or lobes. Flowers are reddish purple, terminal.
Mediterranean Sage	<i>Salvia aethiopsis</i>	Stem white woolly and leaves broad, coarsely and sharply toothed. Flowers yellowish-white.
Orange Hawkweed	<i>Hieracium aurantiacum</i>	Leaves are basal and stems are bristly. Strap-shaped flowers are red-orange.
Ox-eye Daisy	<i>Chrysanthemum leucanthemum</i>	Leaves are dark green, simple, lobed. Stem smooth and has daisy-like flowers.
Viper's Bugloss	<i>Echium vulgare</i>	Stems covered in stiff hairs with swollen reddish to black spots on stem and blue flowers.
Yellow Hawkweed	<i>Hieracium pratense</i>	Leaves are basal and stems are bristly. Strap-shaped flowers are yellow.
INSECTS AND MITES		
Africanized honey bee	<i>Apis mellifera</i>	Similar to domestic breeds of honey bees but these bees have dangerously aggressive colony defense behavior.
Apple ermine moth	<i>Yponomeuta malinellus</i>	Adults have striking white forewings with rows of small black spots. The wingspan of the moth approaches ¾ inch.
Apple Maggot	<i>Rhagoletis pomonella</i>	A small black fly with a dorsal white spot on the thorax. The wings are broad and clear at the base. Four dark cross-bands traverse each wing. Adult length about ¼ inch.
Asian gypsy moth	<i>Lymantria dispar</i> spp.	Male moths are brown in color with irregular black wing markings and feathery antennae. Female moths are white in color. The female is not a strong flyer. Wing spans similar to European gypsy moth.
Asian longhorned beetle	<i>Anoplophora glabripennis</i>	Adults are large 1 to 1 ½ inches in length with very long black & white banded antennae. Body glossy black with irregular white spots.
Bee mite	<i>Tropilaelaps clareae</i>	Light reddish-brown and about 1.0 mm long x 0.6 mm wide. This is a serious mite parasite of honey bees.
Brown Marmorated Stink bug	<i>Halyomorpha halys</i>	They have a "shield" shaped body similar to other stink bugs. Adult bugs are about ½ inch long, mottled shades of brown on upper surface, pale gray beneath.
Citrus longhorned beetle	<i>Anoplophora chinensis</i>	Very similar to Asian longhorned beetles. Shiny black body with irregular white blotches on it's back. Long black and white banded antennae.
Emerald ash borer	<i>Agrilus planipennis</i>	Adults are flat-headed borers, dark metallic green in color. ½ inch in length and 1/16 inch wide.
European corn borer	<i>Ostrinia nubilalis</i>	Female moth has a robust body and is pale yellow to light brown. Dark zigzag lines on the outer third of the wing. Male moth is smaller, slender and darker than the female. Two zigzag streaks on the outer third of the wings.
European gypsy moth	<i>Lymantria dispar</i>	Male moths are brown in color with irregular black wing markings and feathery antennae. Female moths are white in color. This female cannot fly. Males have a wing span of 1- 1 ½ inches, female large with wing span of up to 3½ inches.
Haanchen barley mealybug	<i>Trionymus haancheni</i>	Small soft bodied insects related to aphids, they cover their bodies with a white waxy secretion appearing like a finely ground, powdery white meal.
Japanese beetle	<i>Popilla japonica</i>	Adult beetles are metallic green with copper-brown wing covers. 5 small white tufts project from below the wing covers on each side. Adult beetles are a little less than ½ inch long.
Khapra beetle	<i>Trogoderma granarium</i>	These beetles are brown to black, oval-shaped and approximately 1.6-3.2 mm long and 0.9-1.7 mm wide. Serious pest of stored grain and grain products worldwide.
Leek Moth	<i>Acrolepiopsis assectella</i>	A small reddish-brown moth with a white triangular mark near the middle of each wing. Wing span about 8mm.
Mexican bean beetle	<i>Epilachna varivestis</i>	Adult is oval shaped and copper colored, with 16 black spots on its back. They are one of the largest species in the ladybird beetle family, and one of only a few ladybird beetles that feed on plants instead of aphids.
Pine shoot beetle	<i>Tomicus piniperda</i>	Adult pine shoot beetles are 3 to 5 mm long, or about the size of a matchhead. They are brown or black and cylindrical.
Plum curculio	<i>Conotrachelus nenuphar</i>	Adult is a small, rough snout beetle, 4 to 6 mm long and mottled with black, gray and brown.
Red imported fire ants Black imported fire ant	<i>Solenopsis invicta</i> <i>Solenopsis richteri</i>	Adult red imported fire ants are reddish to dark brown and occur in five forms: (1) minor workers (2) major workers (3) winged males (4) females and (5) queens. The ants have a ferocious sting and protect their colonies aggressively.
Small hive beetle	<i>Aethina tumida</i>	Adults are dark brown to black oval-shaped beetles. This hive pest is 5-7mm long and 3-5 mm wide.
TERRESTRIAL INVERTEBRATES		
Brown garden snail	<i>Cryptomphalus aspersus</i>	Large terrestrial snail about 1- 1 ½ inches long. Shell is usually pale brown with dark spiral bands often flecked with white.
French escargot snail	<i>Helix pomatia</i>	Snail shell up to 50 mm in diameter globular with 5-6 convex whorls.
Giant African snail	<i>Achatina fulica</i>	This very large snail has a shiny conical shell with darker bands running across the spiral. They are usually around 7 cm in size, but can reach 20 cm.
Green garden snail	<i>Cantareus apertus</i>	Snail shell is thinner than the brown garden snail and maximum diameter is 26mm.
Milk snail	<i>Otala lactea</i>	Non-globular slightly depressed shell is white or brown with darker speckled stripes.
White Italian snail	<i>Theba pisana</i>	Maximum diameter of the shell is 25 mm. Shell color is variable white, ginger or rarely pink.
PLANT PATHOGENS AND PARASITIC NEMATODES		
Anthracnose of lentils	<i>Colletotrichum truncatum</i>	Fungal disease that causes brown, lens-shaped lesions on leaves and stems. Small bristle-like, spore-bearing structures are visible in the lesions.
Bean anthracnose	<i>Colletotrichum lindemuthianum</i>	Fungal disease that causes dark brown to black sunken lesions on cotyledons and seed pods. Leaf lesions are angular, red to purple to black. Spore masses, and bristle-like appendages may be visible in lesions.
Brown rot of potatoes	<i>Ralstonia solanacearum, race3, biovar 2</i>	Bacterial disease which causes a brown rot in potato tubers that renders them unmarketable. In the field, infested plants are noticeable by yellow or wilted leaves.
Brown stripe downy mildew of corn	<i>Sclerophthora rayssiae</i> var. <i>zeae</i>	Fungal disease typified by narrow yellow stripes running parallel with and between leaf veins.
Golden nematode	<i>Globodera rostochiensis</i>	Plants are stunted and yellow and may die off completely, usually in patches in the field. Potato tubers from affected plants are usually small but show no other symptoms.
Karnal Bunt	<i>Tilletia indica</i>	The diseased portion of kernels is dark in color and fishy smelling. The kernel usually remains whole, with only a part of the germ end converted into a black powdery spore mass, usually along the kernel groove.
Onion White Rot	<i>Sclerotium cepivorum</i>	Foliage symptoms include yellowing, leaf dieback and wilting. Older leaves are affected at first, followed by stunting of plants and death of all foliage. Small, round, black structures may be visible on affected tissues.
Pierce's disease of grapes	<i>Xylella fastidiosa</i>	Lethal bacterial disease of grapevines and other crops. Symptoms begin with leaf scorch and stunting, and eventually kill the plant.
Plum pox	<i>Plum pox Potyvirus</i>	Viral disease of stone fruit that causes ring spots, blotches and necrotic areas on fruit and leaves.
Potato wart	<i>Synchytrium endobioticum</i>	Fungal disease which causes wart-like symptoms on tubers and stolons (underground stems). Not usually noticed until the crop is lifted.
Soybean rust Asian soybean rust	<i>P. meibomiae</i> <i>Phakospora pachyrhizi</i>	Soybean rust forms two colors of lesions on leaves, tan and reddish brown. The tan lesions, when mature, consist of small pustules with masses of tan colored urediniospores on the surface.
Sudden oak death and Ramorum blight	<i>Phytophthora ramorum</i>	Symptoms vary from plant to plant, and may include leaf spots, needle and tip blight, shoot-tip dieback, and canker formations. Many other plant pathogens cause the same symptoms. The only way to confirm the presence of sudden oak death is through laboratory testing.