

Animal Invasive Species Field Guide

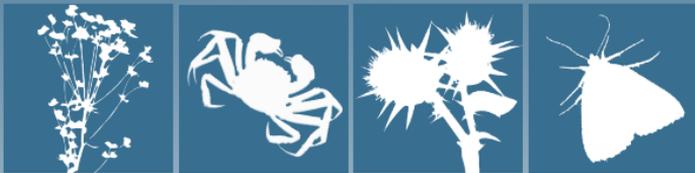
Washington Invasive Species Council



Emerald Ash Borer Damage

Stop the invasion

Protect Washington from invasive species



To report invasive species, call

1-877-9-INFEST

Report online or find out more at

www.InvasiveSpecies.wa.gov



WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE

Washington Invasive
Species Council

Cover photograph: Emerald Ash Borer damage; David Cappaert, Michigan State University, Bugwood.org



Feral Swine

Sus scrofa



Feral Swine

Sus scrofa

Where is it found?

Feral swine are found predominantly in lowlands with adequate understory vegetation and water sources. Unlike other large invasive mammals, swine have a high reproductive capacity and are omnivorous, which makes for a quick assimilation into most habitats.

Are they here Yet?

Feral swine have been reported on the Olympic Peninsula and in southwest Washington, but not recently detected there. They are abundant in many parts of California, Oregon, and Idaho.

Identifying characteristics

- Hair is coarse with long bristles and is generally black, but can be brown, blond, white, red, or spotted.
- Females can weigh between 80-330 pounds, and males from 130-440 pounds.
- The tail is moderately long, with sparse hair.
- Males have four tusks that grow continually and can be extremely sharp. The upper tusks are as much as 3" to 5" long, and are usually worn or broken from use.
- Feral swine have cloven feet and flat elongated snouts.

Photographs top: Lloyd Loope, U.S. Geological Survey, Bugwood.org; left: Texas Wildlife Services; right: Billy Higginbotham, Texas AgriLife Extension Service, Bugwood.org

Nutria

Myocastor coypus



Nutria

Myocastor coypus

Where is it found?

Nutria live in freshwater wetlands.

Are they here Yet?

Yes, nutria were originally introduced into Washington for the fur-farming industry in the 1930s. By 1943, there were feral populations. They are prolific breeders, capable of producing two litters a year. Populations are spreading rapidly throughout western Washington and are beginning now to appear in central Washington.

Identifying characteristics

- Large aquatic rodent with thick, yellowish-brown to dark-brown fur and white whiskers.
- Has an arched, rat like body about 18" to 2' long, with a scaly tail 1' to 1.5' long.
- Prominent orange-ish front teeth and long whiskers.
- Front paws are clawed and back feet are webbed.
- Females have mammary glands located high on their sides, allowing their young to nurse in the water.

Photographs *top*: Washington Department of Fish and Wildlife; *left*: U.S. Fish and Wildlife Service; *right*: Washington Department of Fish and Wildlife

Emerald Ash Borer

Agrilus planipennis



Emerald Ash Borer

Agrilus planipennis

Where is it found?

Adult emerald ash borers feed on ash tree foliage, and larvae feed on the inner bark of ash trees. These beetles are known to feed on four major ash species found in the northeast United States, but all species of North American ash appear to be susceptible.

Are they here yet?

No. However, emerald ash borer can be found in 13 eastern states. This species can easily spread to new areas because adults can fly at least half a mile from the trees in which they emerge, and many infestations occur when people move infested ash nursery trees, logs, or firewood into uninfested areas.

Identifying characteristics

- Adults are typically a bright, metallic, emerald green color. There also might be hints of brassy, coppery or reddish reflections.
- They average 0.5" in length
- In general this species is somewhat larger in size and more brightly metallic green than other U.S. *Agrilus* species.
- The upper side of the abdomen is coppery red.

Photographs *top and left*: David Cappaert, Michigan State University, Bugwood.org; *middle*: Howard Russell, Michigan State University, Bugwood.org; *right*: Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org

Green Alder Sawfly

Monsoma pulveratum



Green Alder Sawfly

Monsoma pulveratum

Where is it found?

Green alder sawflies are generally found feeding on alder leaves as caterpillars. They have been found overwintering in rotten stumps, branches and live trees. Adults emerge in early spring and lay eggs on the alder leaves. The larvae feed on leaves during spring and early summer, then generally drop to the ground and pupate beneath the soil surface.

Are they here yet?

Yes, the first detection was in 2010 at a park in Vancouver, on shrubs beneath red alders. Sawflies since have been detected in eleven counties, predominantly in western Washington.

Identifying characteristics

- Newly emerged larvae are pale green and about 0.1" in length. Larvae turn a vibrant green as they develop and can grow to 0.7" in length.
- An adult female green alder sawfly's head, antennae, and upper body are black, sometimes with a yellow or brownish coloration.
- Their legs are reddish brown to black and the lower body is black with the margins of the segments white to yellow.
- Adults are approximately 0.35" in length.

Photographs *top and middle:* Andrei Karankou; *left and right:* Ken Zogas, U.S. Department of Agriculture, Forest Service



Gypsy Moth

Lymantria dispar



Gypsy Moth

Lymantria dispar

Where is it found?

The gypsy moth is known to feed on the foliage of hundreds of species of plants, but its most common hosts are oaks and aspen.

Are they here yet?

Not on an established basis. Gypsy moths are trapped in western Washington each year; however the Washington Department of Agriculture's detection and eradication efforts have prevented gypsy moths from becoming established.

Identifying characteristics

- Gypsy moth adult females are white with dark zigzags on the wings and do not fly. Adult males are light brown.
- Adults have a wing span of about 1" to 1.5".
- Buff-colored egg masses of a hundred or more are laid on branches or other sheltered places.
- Larvae grow to 2.5" to 3" inches long and are covered in light colored tufted hairs with five pairs of blue dots followed by six pairs of red dots down the back.
- The pupae (or resting stage between the caterpillar larva and adult moth) is a dark brick-red and usually found under tree bark and crevices or other protected areas.

Photographs *top*: Washington State Department of Agriculture; *left and right*: U.S. Department of Agriculture APHIS PPQ Archive, Bugwood.org

Longhorned Beetles



Anoplophora chinensis &
Anoplophora glabripennis



Longhorned Beetles

Anoplophora chinensis &
Anoplophora glabripennis

Where is it found?

Longhorned beetles spend much of their lives as larvae inside healthy trees. The majority of damage is caused by the larval stages which feed and tunnel on the woody portion of the host plant trunk.

Are they here yet?

In 2001 citrus longhorned beetles were detected in nursery trees in Tukwilla, but there have been no new reports since. There are no reports of the Asian longhorned beetle in Washington.

Identifying characteristics

Citrus & Asian Longhorned Beetles

- 0.75" to 1.5" long, with black and white antennae, longer than the insect's body.
- Body is glossy black with irregular white spots.
- Citrus longhorned beetles have two pairs of white, rounded outgrowths at the base of their forewings. These are visible with a 10x hand lens and are not present on Asian longhorned beetles.

Signs of infestation

- Dime-sized (0.25" or larger), perfectly round exit holes in the tree.
- Sawdust-like materials, called frass, on the ground and branches.



Native look-alike:
Banded Alder Borer

Photographs *Citrus Longhorned Beetle* top: Pests and Diseases Library; *Asian Longhorned Beetle* left: Kenneth R. Law, USDA APHIS PPQ; *wood damage* middle: Dennis Haugen, USDA Forest Service, Bugwood.com; *Citrus Longhorned Beetle* right: Pest and Diseases Library; *back*: Sean McCann

American Bullfrog

Lithobates catesbeianus



American Bullfrog

Lithobates catesbeianus

Where is it found?

Bullfrogs are found in wet areas such as ponds, marshes, sloughs, reservoirs, irrigation ditches, wetlands, and stormwater ponds, and tolerate a wide range of water temperatures.

Are they here yet?

Yes. Bullfrogs have been found throughout lower elevations in Washington. The most documented sites are in the Puget Trough, Columbia Plateau, and Canadian Rocky Mountain ecoregions.

Identifying characteristics

- Egg masses are black on top and white underneath. They start as a round, basketball-size mass that flattens over time.
- Tadpoles are dark green with black dots, orange or bronze eyes, and opaque yellow underbellies, and are up to 6" long.
- Juveniles are green to brown with small black spots, orange or bronze eyes, and a fold of skin from the eye around the eardrum.
- Adults are 3" to 8", with large, exposed eardrums the size of their eyes, and are green, tan, or dark brown with dark spots and gold eyes.

Photographs top: Russ Ottens, University of Georgia, Bugwood.org; left: Jay Viola, Northeastern University, Bugwood.org; right: Washington State Noxious Weed Control Board



Green Crab

Carcinus maenas



Green Crab

Carcinus maenas

Where is it found?

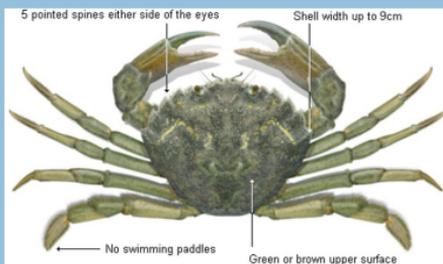
Green crabs typically are found in high intertidal areas and marshes in coastal estuaries and wave-protected embayments. They can live on a variety of substrates including sand, mudflats, shells, cobble, algae, and rock.

Are they here yet?

Yes. Green crabs have been found on the Pacific coast of Washington, as well as on the southern tip of neighboring Vancouver Island, Canada.

Identifying characteristics

- Juveniles are speckled with green, black, white, and rust.
- Adults vary in color from reddish to dark green, and are often olive-brown with black and yellow spots.
- Five pointed spines are located on either side of the eyes.
- The adult male's carapace grows 3" to 4" across.



Photographs top: U.S. Geological Survey; left: *Young green crab* - Luis Miguel Bugallo Sanchez; middle: Luis A. Solorzano; right: Andrew N. Cohen; back: Pat Tully



Mitten Crab

Eriocheir sinensis



Mitten Crab

Eriocheir sinensis

Where is it found?

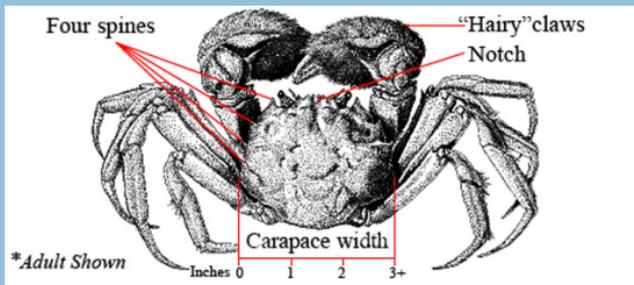
Mitten crabs spend most of their lives in freshwater, but migrate downstream to reproduce in the brackish waters of estuaries. They are skilled walkers on land, and if blocked by dams during their migration, can cross banks or levees to bypass them.

Are they here yet?

In 1997 a mitten crab was discovered in the Columbia River at the Port of Ilwaco. No other reports in Washington have been made since. Mitten crabs are present in the San Francisco Bay.

Identifying characteristics

- Brown, hairy patches resembling mittens on white-tipped, equal-sized claws.
- Light brown to green in color. Deep notch between the eyes.
- Juvenile's claws may not be hairy if the carapace is less than an inch wide.



Photographs top: U.S. Fish and Wildlife Service; left and right: New York State Department of Environmental Conservation; back: U.S. Fish and Wildlife Service

New Zealand Mud Snail

Potamopyrgus antipodarum



New Zealand Mud Snail

Potamopyrgus antipodarum

Where is it found?

New Zealand mud snails can tolerate a wide range of habitats, including fresh and brackish water, and many different substrates such as rock, gravel, sand, and mud.

Are they here yet?

Yes. New Zealand mud snails were first discovered in Washington in the lower Columbia River in 2002, and also have been found on the Long Beach peninsula. Most recently, in 2009, they were found in Olympia.

Identifying characteristics

- New Zealand mud snails have five or six spiral turns (whorls).
- They generally are light to dark brown, but can appear black in color, especially when wet.
- Adults are less than 0.25" long and about half as wide, about the size of a grain of rice.
- The shell opening is on the snail's right side and is sealed by a horny disc attached to the top of the rearward-facing part of the foot.

Photographs *top*: Allen Pleus, Washington Department of Fish and Wildlife; *left*: Mikhail O. Son; *middle*: Mohammed El Damir, Pest Management, Bugwood.org; *right*: U.S. Geological Survey

Northern Crayfish

Orconectes virilis



Northern Crayfish

Orconectes virilis

Where is it found?

Northern crayfish are freshwater crustaceans and prefer permanent, well-oxygenated ponds, lakes, rivers, and streams with substrates of silt to cobble. They can be found in water as shallow as a few inches to as deep as 100 feet.

Are they here yet?

Yes, northern crayfish have been identified in three lakes in western Washington - Spanaway, Ballinger, and Big Lake. Additional recent discoveries have expanded the known distribution of this species to include several sites in the Columbia River basin.

Identifying characteristics

- Adults can reach 5" in length.
- Males usually grow larger than females.
- Overall reddish brown or olive brown coloring.
- Pincers are green to greenish blue with orange or orange-red tips.
- Dark specks are often found on pincers.
- Abundant orange-yellow bumps on the medial (sides closest to the head) sides of the pincers.
- Paired blotches run lengthwise along the abdomen, especially visible in the young.

Photographs top: Casey D. Swecker; left: Dr. Keith A Crandall; middle: juvenile northern crayfish; right: Premek Hamr

Red Swamp Crayfish

Procambarus clarkii



Red Swamp Crayfish

Procambarus clarkii

Where is it found?

Red swamp crayfish are freshwater crustaceans and are usually found in lakes, brooks, and streams where there is running water and shelter against predators. They are most active at night, leaving the protection of the rocks or other cover to forage in the dark.

Are they here yet?

Yes. Red swamp crayfish have been discovered in ten different lakes in western Washington; in King, Klickitat, Pierce, and Cowlitz counties.

Identifying characteristics

- Adults range from 2" to 5" in length.
- Coloring is dark red bordering on black (or, rarely, blue) with raised, bright red spots covering their upper body and claws.
- Pincers are narrow and long.
- The rostrum (spike like protrusion over the head) has lateral spines or notches near its tip.
- A black wedge shaped stripe is visible on the top of the abdomen.
- Juveniles are gray and without spots, but are sometimes overlain by dark wavy lines.

Photographs *top*: Chris Hameria; *left*: Duloup; *middle*: Chris Lukhaup; *right*: Mike Murphy

Rusty Crayfish

Orconectes rusticus



Rusty Crayfish

Orconectes rusticus

Where is it found?

Rusty crayfish are freshwater crustaceans and usually are found in lakes, brooks, and streams, preferring areas with rocks, logs, and other debris. They typically inhabit permanent pools and fast-moving streams of fresh, nutrient-rich water.

Are they here yet?

No, although in 2005 rusty crayfish were discovered in the John Day River in Oregon.

Identifying characteristics

- Adults typically have a brown body and can reach 4" in length.
- Claws are larger than other crayfish species and have black bands on the tips.
- Their claws are generally smooth, grayish-green to reddish-brown in color.
- Rusty-colored spots on the shell look as though the crayfish was picked up by someone with paint on their forefinger and thumb.
- Depending on where the crayfish is located, spots may not always be well developed.

Photographs top: Jeff Gunderson, Minnesota Sea Grant ; left: U.S. Geological Survey; middle: Matt Sell; right: Chris Hameria

Quagga Mussel

Dreissena bugensis



Quagga Mussels

Dreissena bugensis

Where is it found?

Quagga mussels are freshwater mollusks that colonize lakes and rivers. Their preferred habitats include calm waters upstream of dams. They can colonize to depths greater than those achieved by zebra mussels and are more tolerant of colder temperatures.

Are they here yet?

No, but they are only a days drive away - present in Arizona, Utah, Nevada, and California waters. Quagga mussels attach to boats and can be spread to new habitats.

Identifying characteristics

- Shell usually has dark concentric rings and is usually paler in color near the hinge.
- Adults are slightly larger than zebra mussels. They can be up to 0.8" wide and more than 2" in length.
- Shell is more rounded and fan shaped than a zebra mussel, and will not sit flat.

Zebra and Quagga Mussel Comparison



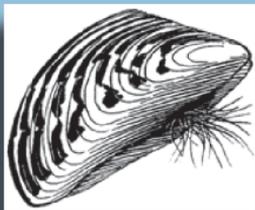
Zebra Mussel,
Dreissena Polymorpha

Quagga Mussel,
Dreissena Bugenis

Photographs top: Amy Benson, U.S. Geological Survey; left & middle: Washington Department of Fish and Wildlife; back: Myriah Richerson

Zebra Mussel

Dreissena polymorpha



Zebra Mussel

Dreissena polymorpha

Where is it found?

Zebra mussels are freshwater mollusks that colonize lakes and rivers. Their preferred habitats include calm waters upstream of dams. They are most abundant on hard, particularly rocky surfaces.

Are they here yet?

No, but they are only a days drive away - present in Arizona, Utah, and California waters. Zebra mussels attach to boats and can easily spread to new habitats.

Identifying characteristics

- Adults range from 0.125" to 2" in length.
- Mostly white or cream-colored with jagged brown or black stripes across the shell. Shell is D-shaped.
- Byssal threads (or ropes) are on the hinge edge of its shell. These threads are unique to zebra and quagga mussels, and are not found on native mussels.



Photographs top & left: Washington Department of Fish and Wildlife; middle: Minnesota Sea Grant; back: Amy Benson, U.S. Geological Survey