

Status Report

Japanese Beetle Eradication in Oregon



Oregon
Department
of Agriculture

IF JAPANESE BEETLE WERE TO BECOME ESTABLISHED

- It could cost an estimated \$45 million to Oregon crops annually¹
- Costly restrictions on export nursery plants and other agricultural products from Oregon would be implemented
- Landscapers and home gardeners would expect to see severe damage to ornamental plants, lawns, and fruit plants



THE ISSUE

In 2016, a population of Japanese beetle was detected by the Oregon Department of Agriculture (ODA) in unincorporated Washington County, Oregon. This is the largest population ever detected in Oregon.

ODA has embarked on a complex multi-year eradication project in order to protect Oregon's agricultural economy and conserve the state's natural resources.

Failure to eradicate the current population will result in a widespread population that will be impossible to stop from ultimately spreading throughout Oregon and the western United States.

¹ Estimated crop damage and quarantine costs to nurseries (B & B, container greenhouse), grapes, hops, canablis, raspberries, blueberries, pears (all varieties), sweet cherries, apples, snap beans (for processing), grasses (turf), and golf courses. Insect Pest Prevention and Management Program. Economic Risk Analysis: Oregon and the Japanese Beetle (Popillia japonica). Rev 2/1/2017.

Plant damage from Japanese beetles. Photo credits: Left: Bruce Watt, Right: Melissa Schreiner



Like other invasive pests, beetles are brought to Oregon by hitching a ride in planes, in cargo or in potted plants from infested areas. It is likely that Japanese beetle was brought to Oregon by a new resident with a potted plant from an infested state.

Find out if you are in the quarantine area and subscribe to the email notification list at:
www.JapaneseBeetlePDX.info • Email: japanesebeetle@oda.state.or.us

Oregon Department of Agriculture • 635 Capitol St NE, Salem, OR 97301 • 1-800-525-0137 • revised November 2018

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Current Status

Treatments in 2017 reduced the Japanese beetle populations by approximately 34%. The project is moving in the right direction—it is still a multi-year effort.

Japanese beetle “hot spots” were detected outside of the treatment area in 2018, likely as a result of beetles moving in high risk yard debris or on vehicles. The Oregon Department of Agriculture proposes continuing the treatment in 2019 and will need continued support from partners and residents.

What Oregon Department of Agriculture and Partners are doing

- Coordinating resident consent for treatment and year-round community outreach
- Maintaining yard debris quarantine on high risk materials
- Monitoring detection traps from May to October
- Annual treatment of Acelepryn G (granular larvicide) on over 5000 residences (2018) and targeted application of Btg (biological pesticide) on a select number of sites

What you can do

- Distribute materials about the threat of Japanese beetle to your organization and to your members or distribute materials about the yard debris quarantine.
- Prevent new introductions of beetles:
 - don't move plant material (such as potted plants) from infested states
 - keep high risk yard debris inside the quarantine area to prevent the spread of beetles in Oregon
 - support ODA's efforts to detect and respond to invasive pests
- Visit the website for the most up to date information: www.JapaneseBeetlePDX.info

Detections of Japanese beetles in 2018



Milestones

- **1989**
Over 100 beetles caught and eradicated in Cave Junction
- **2012**
Program budget cuts result in a 50–70% decrease in Japanese beetle detection traps deployed in the state
- **Prior to 2016:**
0–38 beetles caught each year in known risk areas (e.g. Portland International Airport)
- **2016**
369 beetles caught (late in season) in unincorporated Washington County near the Cedar Mill neighborhood
- **2017**
First year of treatment to reduce 2018 adult beetle population; over 23,000 beetles caught
- **2018**
Second year of treatment to reduce 2019 adult beetle population; over 17,000 beetles caught



Japanese beetle is a serious invasive insect pest that threatens Oregon. Japanese beetle feeds on roots, flowers and foliage of over 300 plants including roses, grapes, and turfgrass.



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635 Capitol St NE, Salem OR 97301 - www.japanesebeetlepx.info
created February 2017



If you think you have found Japanese beetle adults or grubs, contact ODA at 503-986-4636 or japanesebeetle@oda.state.or.us

ODA Invasive Pest Identification Tools

Japanese Beetle

Popillia japonica

Look for these features on Japanese beetle:

Metallic dark green body and copper wing-covers

Five light hair tufts on the sides & two on the end



Japanese beetle grubs live in soil



actual size:
3/8 in. (1 cm)



No common beetles in Oregon look like Japanese beetle

For more information

If you have questions, or would like to know more about gypsy moth, contact us:

**Oregon Department of Agriculture
Insect Pest Prevention & Management
Program**

635 Capitol St. NE, Ste. 100
Salem, OR 97301
503-986-4636 or 1-800-525-0137

For more information about the Insect Pest Prevention and Management program and the services it offers, please visit our website:
<https://ODA.direct/IPPM>

To learn more about the Oregon Invasive Species Council, visit
www.oregoninvasivespeciescouncil.org



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Revised 08/2018

**Gypsy
Moth**

A Destructive Pest of
Natural and Urban Forests



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What makes gypsy moth so destructive?

The gypsy moth is an exotic, highly destructive invasive species that has defoliated millions of acres of trees and shrubs in the northeastern United States. It is established in 19 states in the northeast and threatens new states each year. Gypsy

moths can spread rapidly if not controlled and will feed on hundreds of tree and shrub species. Preferred hosts include oak, apple, alder, hazelnut, willow, birch, madrone, cottonwood, and plum. When populations are high, they have been shown to also feed on firs and other coniferous species. There are two similar looking strains of gypsy moth that threaten Oregon: the European and the Asian. However, the European female does not fly and the Asian female does. The Asian gypsy moth also has a broader host range and will feed readily on pines and firs, allowing it to potentially spread rapidly in the Pacific Northwest.



Adult gypsy moths (Photo: USDA-APHIS PPQ).

Differences between the two strains

Unlike the European gypsy moth, female Asian gypsy moths can fly. The Asian gypsy moths tend to be attracted to lights, the caterpillars tend to develop more quickly and grow somewhat larger, and they feed on a wider range of host trees. These behaviors suggest that a small population will grow and spread more rapidly.

What kind of damage does it do?

Gypsy moths pose significant economic, ecological, and recreational costs as populations defoliate natural and urban areas. Tree defoliation along streams can result in higher water temperatures and increased loading of organic material. As areas are defoliated, the entire habitat is affected. Fish and other aquatic organisms, as well as terrestrial plants and animals, can suffer due to the damage that they cause.



Forest defoliation from larval feeding (Photo: Mark Robinson, USDA Forest Service, Bugwood.org)

Gypsy moths may prevent shipments of trees, lumber, and nursery plants by forcing quarantine restrictions, which will affect the economy of an infested area. Increased pesticide use often occurs once populations are established to keep their numbers from exploding. Caterpillars can induce rashes in those that suffer allergic reactions from contact with caterpillar hairs.



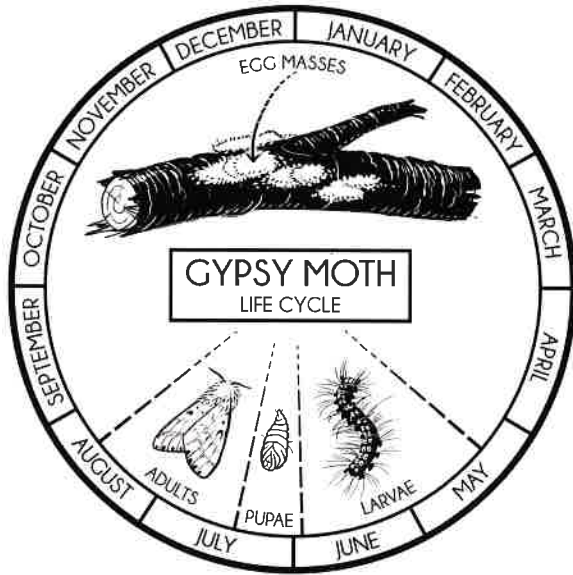
Photo: Didier Descouens, Wikipedia.org

Biology and life cycle

Gypsy moths produce one generation of offspring per year and lay 50-1000 eggs during the fall, depositing them in small fuzzy masses. Caterpillars hatch during the spring and begin to feed on host plants. In early July, the caterpillars transform into a non-feeding stage called the pupa and begin to develop into a moth. By mid- to late-July adult moths emerge, mate, and the life cycle begins again.



Gypsy moth larva (left) and egg mass. (Photos: Jon Yuschock, bugwood.org and USDA).



Get Involved

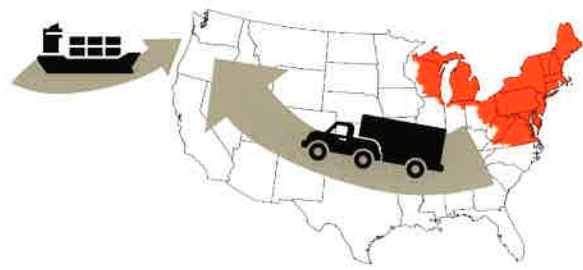
1. Report any suspected gypsy moth life stages to the Oregon Invasives Hotline (oregoninvasiveshotline.org/reports/new).
2. Do not move wood products, firewood, plant material, outdoor household articles, or recreational vehicles out of gypsy moth infested areas without proper certification.
3. Encourage anyone you know who has recently moved here or visited here from the northeastern US to contact ODA for a free inspection of outdoor household articles and recreational vehicles.
4. Volunteer to have a trap placed on your property during the summer.
5. Keep up to date with all invasive species issues in Oregon by visiting the Oregon Invasive Species Council website: oregoninvasivespeciescouncil.org



Larval feeding damage on oak leaves (Photo: L. Sachsen, Bugwood.org).

How does gypsy moth get to Oregon?

European gypsy moths mainly enter Oregon on infested items brought from eastern areas of the country where gypsy moth populations are established. The female lays her eggs on solid surfaces, such as outdoor furniture, recreational and other vehicles, firewood, birdhouses, and doghouses. As people travel from the eastern states, they often bring these contaminated items with them, allowing the moth to hatch and spread.



Invasive insects have many pathways into Oregon. The red area shows the range of gypsy moth in the US.

How are we managing gypsy moth?

Prevention is the best method to keep gypsy moths out of Oregon. The United States Department of Agriculture (USDA) requires inspections of all recreational vehicles, outdoor household articles, nursery stock, and other items that travel from infested areas of the eastern United States. USDA has established strict inspection and compliance procedures for ships that may be carrying Asian gypsy moths. In addition, state and federal agencies in those infested states conduct intensive treatment programs in an effort to suppress European gypsy moth populations and slow their spread.

Early detection and rapid response

The Oregon Department of Agriculture (ODA) and affiliated organizations have successfully protected Oregon's natural and agricultural areas from biological invaders, such as gypsy moth, for approximately 40 years. The success of these projects has largely been attributed to applying the Early Detection Rapid Response (EDRR) protocol for invasive species, which places a high priority on preventing introduction and establishment of any gypsy moths.



Oregon uses the delta trap to detect European and Asian gypsy moths.

To facilitate early detection of newly introduced gypsy moths, ODA has a yearly large-scale trapping program throughout the state. In 2015 alone, over 15,000 gypsy moth traps were deployed and monitored. The protocol states that the detection of a single gypsy moth will result in increased trapping and monitoring. If a breeding population of gypsy moth is discovered, or thought likely based on trapping data, eradication is necessary. Eradicating gypsy moth populations when they are small allows an overall decrease in pesticide use. If allowed to establish, controlling gypsy moth requires greater and wide spread use of pesticides.

For more information

If you have questions, or would like to have an insect identified, contact us:

**Oregon Department of Agriculture
Insect Pest Prevention &
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635 Capitol St. NE, Ste. 100
Salem, OR 97301
503-986-4636 or 1-800-525-0137
www.Oregon.gov/ODA/Plant/IPPM

IMPORTANT NOTICE!

Do not send photos of suspected injuries (bites and stings), biological samples, or other materials for insect identification or diagnosis!

Entomologists are not health care professionals. Oregon Department of Agriculture cannot identify an insect or spider from descriptions of symptoms or pictures of insect bites or stings. They will not offer any advice regarding injury diagnosis or health care. For information about insect bite treatment or other health concerns, please consult a health care professional.



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All photos by Oregon Department of Agriculture except *H. axyridis* larvae image by André Karwath via Wikimedia Commons (CC license 3 .0).
Created August 2018.



**Household
Insects &
Spiders**

Information about common arthropods found in and around homes in Oregon



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Multicolored ladybird beetle - *Harmonia axyridis*



The "M" pattern behind the head the best way to identify this species.



Ladybug larvae do not usually resemble their adult forms.

Notes: Introduced in the US in the early 1900s to feed on aphids. Often distinctive "M" behind head, wing covers variable.

Pest Status: Often invades homes in early fall to overwinter. Also considered a contaminant in winegrape harvest.

Management: Pesticide applications are not recommended. Exclusion via sealing of entry points (windows, doors, and vents) is currently the best recommendation.

Crushing or vacuuming can lead to surface stains and unpleasant odor.

Bed bug - *Cimex lectularius*

Notes: *C. lectularius* feeds on human blood. Bed bugs have become a problem recently presumably due to developing resistance to commonly used pesticides.

Pest Status: Usually feed at night and are found in mattresses or furniture. Do not transmit disease.

Management: Difficult. Professional management is recommended, and repeated efforts may be necessary.



Immature and adult bedbugs are very small, but evidence of them can be found in the form of rusty spots, dark spots on mattresses and furniture.

Western box elder bug - *Boisea rubrolineata*



Oval-shaped black body with red or orange lines on their body and forewing.

Notes: Native to western North America.

Pest Status: Nuisance pest. Adults and nymphs feed on seeds of maple trees, but do not cause damage to tree. Populations get very large in spring and summer, but infestations are relatively short.

Management: Pesticide applications are not recommended, as populations are widespread. Exclusion via sealing of entry points (windows, doors) is recommended.

Elm seed bug - *Arocatus melanocephalus*

Notes: First detected in Oregon in 2012, and are known from southern and eastern Oregon and the Portland area.

Pest Status: Nuisance pest. Adults and nymphs feed on elm seeds and do not cause plant damage. Home infestations can be large in midsummer.

Management: Pesticide applications are not recommended. Exclusion via sealing of entry points (windows, doors and vents) is currently the best recommendation.



Tiny red and black body, found in large numbers indoors during midsummer.

Brown marmorated stink bug - *Halyomorpha halys*

Notes: First detected in US in 1996, Oregon in 2004.

Pest Status: Severe invasive crop and urban nuisance pest

Management: Research is ongoing but some pesticides have been shown to be effective in crop systems. For homeowners, exclusion via sealing of entry points (windows, doors) is recommended. Research into the introduction of natural enemies is in progress.



Shield shaped body with white banding on antennae and along abdomen.

Tuxedo bug - *Raglius alboacuminatus*

Notes: First detected in Oregon in 2002. Feed on seeds of weedy plants.

Pest Status: Nuisance pest. Large populations invade homes in late summer and fall. Can produce a foul smell when crushed.

Management: Pesticide applications are not recommended. Exclusion via sealing of entry points (windows, doors, and vents) is currently the best recommendation.



Distinctive white spots on the tips of forewings and hindwings.

Garden cross spider - *Araneus diadematus*



Large abdomen with white cross pattern, very common in the summer months.

Notes: Common outside homes in Oregon. Introduced from Europe. They become very noticeable as adults in the late summer and fall. Size can vary from the pinhead sized spiderlings to mature females that have bodies half an inch long.

Pest Status: None.

Management: None. This species is very docile, non-aggressive, and poses little to no risk to people. Bites are possible but very unlikely.



Distinctive wing pattern of white and dark orange/brown areas with black banding.

Indianmeal moth - *Plodia interpunctella*

Notes: Indianmeal moth larvae feed on stored products such as grain products, cereals, dog food and other dried food products. They are very commonly in households and grocery stores. They are found worldwide.

Pest Status: Larvae damage food products by feeding, spinning silk cocoons, and leaving behind fecal matter and pupal cases.

Management: Keep containers of food tightly sealed, especially bagged products. Traps for adult moths are available.

About this guide

This guide was created to provide information about some common, but still unfamiliar, insects and spiders spotted in homes across Oregon. There are over 20,000 species of insects in Oregon, therefore this is not a complete guide. This guide is intended to help residents make informed decisions about pest control. We hope to reduce some of the unfounded fears and misconceptions about insects and spiders.

Giant house spider- *Eratigena atrica* Hobo spider - *Eratigena agrestis*

Notes: Introduced from Europe. Common in houses and basements. Usually seen when males search for females in late summers or fall. House spiders and hobo spiders look very similar. Hobo spider bodies range from 8-14mm, whereas giant house spiders have bodies as large as 18mm.

Much misinformation has been spread about the danger of these species to people. Studies of spider bites by OHSU found little or no evidence of harmful venom. Neither species is considered harmful.

Pest Status: None. These species pose little or no risk to people. Bites are possible but very unlikely.

Management: None. If spiders are found in homes, look for points of entry such as gaps under doors in garages or basements, or unscreened windows.

Hobo spiders and house spiders are not any more venomous than other common spiders in Oregon. Most spiders are considered harmless and are unlikely to bite people.



A note about insects and spiders



Jumping spiders are common, harmless, and fascinating.

Insects and spiders have a bad reputation for being dangerous, deadly, destructive or disgusting.

This is an unfair characterization

of the largest group of organisms on the planet. Of the more than one million known insects, only a very small percentage of these are considered “pests”, or species that cause problems for people. There are more myths about the threat of insects and spiders than can fit into this pamphlet, but you should know: **Most insects and spiders are completely harmless to people.** Insects enter homes looking for food (often in the form of other insects or food crumbs), for shelter, or completely by accident. Some insects are capable of causing very severe economic damage to crops and structures, and others can spread disease, but most insects and spiders are not problematic in any way.

If you find an insect that might be a pest, it's essential to know what it is before hiring exterminators or applying pesticides. The Oregon Department of Agriculture provides free insect identification for members of the public and for agriculture industry professionals. In many cases, no action is necessary because the insect is not a pest. There may be solutions besides pesticides that can help reduce insect populations. However, not every insect pest problem has a simple solution. In many cases, control methods are difficult, costly, or simply unknown.