



Washington  
State Department of  
Agriculture

# GYPSY MOTH IN WASHINGTON STATE

## The pest, the problem and our promise

The gypsy moth is one of the most destructive forest pests ever introduced into the United States. It has defoliated millions of acres in the Eastern United States – killing trees and shrubs in its path.

Gypsy moths pose a tremendous threat to the health of Washington's forests, parks and even neighborhood trees. The Washington State Department of Agriculture's Pest Program has prevented the gypsy moth from gaining a foothold in our state since 1974. We are committed to protecting our environment from this devastating pest.





## EUROPEAN GYPSY MOTH

The European gypsy moth is an invasive insect that devours over 300 different types of trees and shrubs. The European gypsy moth was brought to the United States by an amateur entomologist, Leopold Trouvelot, in the late 1860's in Massachusetts. He hoped to start a silk industry by breeding gypsy moth with the silk worm.

Unfortunately, some gypsy moths escaped.

No action was taken to eradicate this initial introduction of gypsy moths to U.S. forests. The European gypsy moth is now permanently established in more than 20 states, with quarantines established as far west as Minnesota.

## ASIAN GYPSY MOTH

Although the European gypsy moth is extremely bad, the Asian gypsy moth is even worse for two reasons: they consume even more varieties of trees and shrubs – over 600 – and the Asian female gypsy moth can fly. Their ability to fly long distances makes it a high-risk of spreading quickly through the United States.

Multiple detections of Asian gypsy moth have occurred in the U.S. since 1991 including 10 in Washington State as recent as 2015. Due to early detection and rapid implementation of an eradication program, the Asian gypsy moth is not known to be established anywhere in the United States.

# THE PEST

**Asian and European gypsy moths look identical and can cross-breed.**

**Only genetic testing can determine whether a gypsy moth is of the Asian or European variety.**



# IDENTIFYING GYPSY MOTH



## GYPSY MOTH EGG MASSES

Females lay distinct, fluffy egg masses that can range in color from brownish orange to off-white. Each egg mass can contain up to 1,000 eggs. Egg masses are laid in late summer and hatch the following spring when trees have leafed out.



## GYPSY MOTH CATERPILLARS

Gypsy moth caterpillar (larva) starts out extremely tiny but rapidly grows up to 3 inches long. As it grows, it can be readily identified by its yellow head, long body hairs, and distinct markings on its back: five pairs of blue dots followed by six pairs of red dots



## PUPAE

After feeding on host shrubs and trees for several weeks as a caterpillar, the gypsy moth larva pupates – forms a cocoon – where it transforms from a caterpillar into a moth. This process takes approximately two weeks and then an adult moth emerges. The adult moths only mate and then die; they do not feed on vegetation.



## FEMALE ADULT GYPSY MOTHS

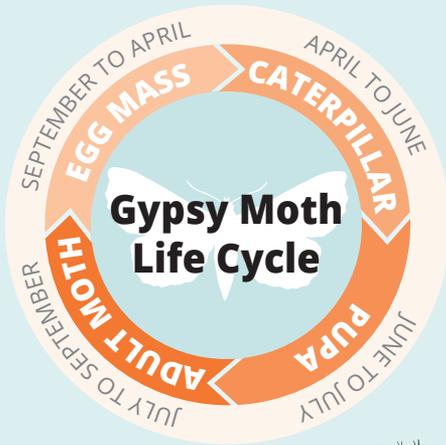
Female gypsy moths are a light cream color with wide abdomens and short, thin antennae. Their wings have brown zigzag stripes. European females do not fly, while Asian gypsy moth females can.



## MALE ADULT GYPSY MOTHS

Male gypsy moths are darker and smaller than the females. They are a tan brown color and have dark zigzag markings on their wings. They also have distinct, feathered antennae which they use to locate females by scent.

**Gypsy moth looks different at various stages of its life. It can be an egg, caterpillar, pupa or adult moth.**



### **GYPSY MOTH IMPOSTERS**

Each year, WSDA's gypsy moth program receives many false reports of gypsy moth sightings. Most commonly, people see webs in trees and mistake these for gypsy moth caterpillar nests. However, gypsy moths do not create web nests in trees.

A nest made of webbing in a tree is likely one of two native caterpillars. In the spring, tent caterpillars will make web nests in trees. In the summer and early fall, the fall webworm will also make these nests. Neither of these insects are a major concern. They may defoliate a tree or branch in your yard but seldom defoliate more than that.

Management tips for tent caterpillars and fall webworm can be obtained through your local Master Gardener program and Washington State University Extension.

### **WHAT IF I FIND A GYPSY MOTH?**

If you believe you have found a gypsy moth in any life stage or aren't sure, take a picture and email it to [gypsymoth@agr.wa.gov](mailto:gypsymoth@agr.wa.gov). We will be happy to identify it for you. Be sure to identify the location where you found the moth.

If you find gypsy moth egg masses, please do not remove or destroy them yourself. Contact our agency for proper removal and destruction of the egg masses.



WSDA STAFF REMOVING EGG MASSES

# THE PROBLEM

While they can strip over 500 species of trees and shrubs bare, it's not only the plants that suffer. Gypsy moth infestations also cause a host of other problems where they are permanently established.

Gypsy moths are a high-risk threat to the environment. In 2015, gypsy moth damage was so bad in Rhode Island that it could be seen from space. In 2016, one-third of the entire state of Massachusetts was defoliated by gypsy moths.

## GYPSY MOTH INFESTATION IMPACTS

### Environmental impacts

When trees die from gypsy moth caterpillars eating all their leaves, there is a chain reaction of environmental effects. These include:

- Increased risk of forest fires
- Decreased food and shelter for birds
- Decreased food and shelter for deer and other mammals
- Lack of shade resulting in poor stream quality for salmon and other fish
- Increased forest diseases and erosion

### Health impacts

- Allergic reactions to caterpillar hairs, including itchy rashes that can last up to two weeks

### Economic impacts

- Decreased value of homes
- Increased cooling costs from loss of shade
- Reduced revenue from recreational uses such as camping
- Costly quarantines on Christmas tree exports
- Quarantines on other agricultural products

### Quality of life impacts

- Inability to use yards and neighborhood parks
- Difficulty cleaning/removing caterpillar feces



## RAPID REPRODUCTION

Besides the devastation that gypsy moths cause, another reason gypsy moths are such a problem is that they reproduce very rapidly. A single female can lay up to 1,000 eggs. This means that a gypsy moth population can be permanently established in only a few years.

## GYPSY MOTHS ARE HITCHHIKERS

### European gypsy moths

European gypsy moths are permanently established in 20 states. Most of the gypsy moth introductions in Washington likely come from people moving here from one of the states with permanent infestations. The gypsy moths often lay eggs on outdoor items – such as bikes, campers, deck chairs, etc. – and then are unwittingly transported to our state during a move.

### Asian gypsy moths

Asian gypsy moths like to hitchhike as well, but on ships, laying eggs on items that are then transported to our ports. Inspections of ships at both the port of origin and U.S. ports are required to reduce the risk of Asian gypsy moth introductions in Washington.

In addition to their ability to hitchhike, Asian gypsy moth females can also fly, unlike their European cousins. This means that the populations of Asian gypsy moths can spread even faster than European gypsy moths.



GYPSY MOTH CATERPILLAR EATING WHITE PINE NEEDLES



# 13 REASONS TO UNFRIEND THE GYPSY MOTH



## 13 You Aren't Made of Money

Infestations cost billions: expensive control programs, reduced tourism, replacing trees in forests and at home, and restrictions on exports.



## 12 Not a Walk in the Park

Gypsy moths destroy large swaths of national and state parklands.

## 11 Creepy Crawlies

Millions of caterpillars can cover trees and your car, house, lawn, playground equipment, and can even fall on you.



## 10 Stowaways

They hitch rides on ships, motor homes, and even patio furniture to relocate to a new home.

## 9 They Don't Share

Caterpillar feeding reduces food and shelter for other birds and wildlife, including threatened species like the Northern Spotted Owl.

## 8 Overstaying Their Welcome

Once gypsy moth becomes established, as they have in almost half of US states, you can't get them to leave. They stick around FOREVER.



## 7 Freeloaders

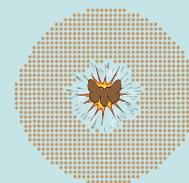
Caterpillars feast on your trees and shrubs, without even leaving a thank you note.

## 6 Allergies

Caterpillar hairs can irritate the skin and leave rashes on susceptible adults and children.

## 5 Population Explosion

Gypsy moths can lay up to 1000 eggs each year, so their population can rapidly explode.



## 4 Stress Management

Defoliating trees stresses them out, jeopardizing their health.

## 3 Environmental Wrecking Balls

The ecological damage left by gypsy moth destruction includes: damaged tree canopies, dead trees that fuel forest fires, degraded stream quality, and warmer water temperatures which causes fish decline or death.



## 2 Caterpillar Poop

Lots and LOTS of caterpillar poop. In areas with infestations, what sounds like a steady rain outside for several weeks each year is really thousands of caterpillars defecating in people's yards.



## 1 Tree Killers

Evergreen trees, which Asian gypsy moths eat, can die from one gypsy moth infestation. Even deciduous trees can die from multiple years of caterpillar feeding.



# OUR PROMISE

**Because of the threat that gypsy moths pose to our environment, health and economy, the Washington State Legislature tasked WSDA with preventing gypsy moths from becoming established in the Evergreen State. We are committed to protecting our environment from this invasive and destructive pest.**

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## MONITORING FOR GYPSY MOTHS

Early each summer, WSDA installs thousands of gypsy moth detection traps throughout the state and regularly monitors them for gypsy moth. An artificial lure that mimics the scent of a female gypsy moth is used to attract the male moth to the trap. Once the male lands inside the trap, it sticks to the surface, which is covered in a glue-like substance.

If a trapper finds a moth when checking a trap, the moth is collected and sent to WSDA's molecular diagnostics lab as well as a USDA facility. There the moth undergoes DNA testing to determine whether it is a European or Asian gypsy moth.

Trappers collect all traps at the end of the season – usually in September and October. After the traps are gathered, WSDA may conduct searches for gypsy moth egg masses in areas where they have trapped multiple moths.



## PLANNING TO ERADICATE GYPSY MOTHS

At the end of each trapping season, WSDA reviews the trapping results to determine if an eradication project is necessary. Catching a single moth does not necessarily mean that WSDA will conduct an eradication.

Before proposing an eradication, WSDA considers many factors, including:

- Type of moth(s) trapped (European or Asian)
- Number of moths in a single trap
- Number of trapped moths in a geographic area
- Presence of other life stages (egg masses, caterpillars, pupae)
- Terrain and host plants present
- Environmental impacts

When eradication becomes necessary, WSDA drafts an eradication proposal. The proposal is created using the unique factors of each site and involves consultation with national gypsy moth experts.

Once an initial eradication proposal is completed, it is then evaluated for potential environmental impacts. The public is also informed of the proposal and given the opportunity to comment on the environmental review. Extensive outreach is conducted to those who live in a treatment area so that they are aware of the eradication proposal.

After the environmental review and after public comments have been accepted, WSDA will use this information to finalize the eradication plan.



## ERADICATION

Eradication takes place in the late spring, when the gypsy moth caterpillars are emerging from eggs and beginning to feed on trees and shrubs.

WSDA most often uses a biological insecticide, Btk, for its eradication projects, owing to its decades-long safety record for people, pets, bees, birds, fish, etc. Btk only affects caterpillars present at the time of application or shortly thereafter. Btk also breaks down rapidly in the environment.

Please visit our website at [agr.wa.gov/gypsymoth](http://agr.wa.gov/gypsymoth) for more information about Btk and other eradication methods that WSDA considers.

GYPSY MOTH TREATMENT IN APRIL 2016



# KEEPING WASHINGTON EVERGREEN

Since 1974, WSDA has been monitoring for gypsy moths and eradicating introductions of the pest when necessary. Thanks to these efforts and the cooperation and support of the public, there are no established populations of gypsy moth in our state.

For decades, we have been committed to protecting our environment from this devastating pest. Here's how you can help keep Washington gypsy moth-free:

- Allow WSDA trappers to place traps on your property when needed.
- If you just moved from an infested area, inspect your belongings for evidence of gypsy moths.
- Educate yourself and your neighbors about gypsy moths and the threat they pose to our state.
- When eradication becomes necessary, support WSDA's eradication efforts.

We invite you to visit our website at [agr.wa.gov/gypsymoth](http://agr.wa.gov/gypsymoth) or call our hotline at 1-800-443-6684 for more information about WSDA's gypsy moth program.



# HISTORIC DISCOVERY

In August of 2017, WSDA discovered a live, actively reproducing infestation of gypsy moths for the first time in state history. The discovery included never-before-seen live female moths as well as spent and viable pupa casings, caterpillar sheddings, viable egg masses, and caterpillar frass (poop).



23 GYPSY MOTHS IN TWO TRAPS



REMOVING EGG MASSES



EGG MASSES ON TREE  
WITH CATERPILLAR FRASS



FEMALE GYPSY MOTH ON BRANCH



**FEMALE GYPSY MOTH  
WITH EGG MASS ON A TWIG**



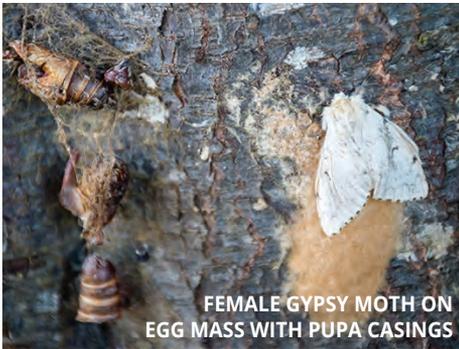
**SAMPLE OF AN INFESTED TWIG**



**FEMALE GYPSY MOTH IN PUPA CASING**



**FEMALE GYPSY MOTH  
LAYING EGGS ON LEAVES**



**FEMALE GYPSY MOTH ON  
EGG MASS WITH PUPA CASINGS**



**MALE GYPSY MOTH CAUGHT IN MID-AIR**



**PUPA CASINGS AND  
CATERPILLAR SHEDDINGS**



**REMOVAL OF BUSH AT SITE OF INFESTATION**



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## PEST PROGRAM

**AGR PUB 809-325 (R/3/18)**

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