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EXOTIC PEST THREATS

UMD Entomology Fact Sheet, 2009

Asian Gypsy Moth

Lymantria dispar asiatica Wnukowsky (Lepidoptera: Lymantriidae)

Introduction:
The Asian Gypsy Moth (AGM) is an exotic invasive pest native to East Asia that attacks over 500 species of trees and shrubs. Closely related to the Gypsy Moth (GM), a serious exotic pest long established in the eastern U.S., AGM are not known to be established here, but instead are repeatedly introduced from infested international ships and shipping containers. AGM are considered a major threat to North American trees and forests, and early detection and eradication through cooperative programs are the primary goals of federal and state regulatory agencies.

North American Distribution/Spread:
AGM were first detected near Vancouver, Canada, in 1991, and have since been detected in the U.S. states of OR, WA, NC, CA, ID, and TX (OR, WA and CA have had multiple new introductions). Rapid initiation of emergency control programs has eradicated the pest each time.

AGM enter North America as egg masses or moths on ships and cargo from infested Asian and European ports. Natural spread is by moth flight of both sexes (unlike GM, whose females can not fly), and through "ballooning" of 1st instar larvae, which drop down on silken threads and are blown to new locations, averaging less than ½ mile (0.80 km). People can inadvertently spread AGM by transporting egg masses and pupae attached to vehicles, camping equipment and other outdoor articles, or on logs and firewood.

Host Plants:
AGM larvae are polyphagous, and are known to feed on the foliage of more than 500 species of trees and shrubs, about twice as many as GM. AGM feed on hardwoods, conifers, and on some trees not favored by GM (larch). Newly hatched AGM larvae prefer oak, but as they age they will attack conifers such as hemlock, pine, spruce, Douglas fir, and southern white cedar.

Biology and Damage:
There is some belief that AGM is hybridizing with European GM. The biology is essentially the same for both species. There are four stages to the gypsy moth life cycle, producing one generation per year: egg, larvae (caterpillar), pupae (cocoon), and adult (moth). Gypsy moth eggs overwinter in protected egg masses which hatch in spring, usually at the same time as bud break of preferred hosts (early spring-May). Larvae cause all of the feeding damage done to host plants; adult moths do not feed.

Newly hatched larvae begin feeding in tree crowns immediately, or "balloon" to a new location. Older larvae feed in tree tops at night and then crawl down the trunks during the day, but when populations are large they may feed day and night. The caterpillar stage lasts 8-12 weeks (May-July). Pupation occurs from late-June to early-August and lasts 10-14 days. Adult moths emerge from July-September and live 1 to 3 weeks, during which time they mate and lay eggs.

Adult Asian gypsy moths: female (top), male (bottom). USDA APHIS PPQ Archive, Bugwood.org

AGM females may lay eggs in sheltered spots on trees, buildings, vehicles, wood piles and other outdoor objects, or they may fly to other locations (including cargo ships) to lay egg masses. Up to 1,000 or more individual eggs are laid in a single mass then covered with a dense protective layer of buff colored hairs from the female's body. Eggs hatch in the spring, completing the cycle.

Identification:
AGM and GM are nearly identical and can only be accurately differentiated with laboratory tests.

- Adult AGM moths are slightly larger (male wingspan 1½" or 3.8 cm; female wingspan 3½" or 8.9 cm) than GM (male wingspan about 1" or 2.5 cm, female wingspan up to 2" or 5 cm).
- Male moths are tan or grayish-brown to dark-brown with blackish wavy bands across the forewings, and large, wide, feather-like oblong antennae.
- Female moths are creamy white with faint, dark wavy bands on the forewings and long, narrow antennae.
- Notable trait of AGM females is the ability to fly.
- Egg masses range from dime sized up to ~1½" long by ¾" wide (3.8 cm x 1.9 cm).
- Egg masses are covered with velvety, buff colored hairs from the abdomen of the female; color may bleach out over the winter.

- The AGM caterpillar is hairy and body color may vary from tan, to black, gray or yellow, with 5 pairs of raised blue dots and 6 pairs of raised red dots along the back.
- Mature caterpillar is about 1-2” long (2-5 cm).

There may be great variation in body color of AGM larvae.
USDA APHIS PPQ Archive, Bugwood.org

- Dark brown pupal cases may be attached to trees or other structures by silken threads (below).

What to Look For:

AGM is a regulated pest and citizens should be alert to signs of their presence. Suspected sightings should be promptly reported. The U.S. Department of Agriculture requires that federal and state quarantines and eradication programs be implemented as soon as possible when AGM is detected.

Symptoms of AGM infestation include:

- Buff to parchment colored velvety egg masses, ~ 1½ x ¾” (3.8x1.9 cm) in sheltered spots on almost any sort of surface.

Adult female AGM and egg masses. Manfred Mielke,
USDA Forest Service, Bugwood.org

- Dark or tan colored hairy caterpillars up to 2” long (5 cm) with a double row of 5 blue and 6 red spots down the back.
- Shothole feeding damage from early instar caterpillars; defoliation of many plants species by older caterpillars.
- Unremarkable, moderate sized brown moths or larger white moths that fly and are most active during daylight hours.

UGA5081068 (pupae, to left):
Ferenc Lakatos, University of
West-Hungary, Bugwood.org

Adult AGM Actual Size:

How to Report a Possible Sighting/Infestation

In Maryland:

University of Maryland Cooperative Extension Exotic Pest Threats Website:
http://hgic.umd.edu/faq/sendAQuestion.cfm

Maryland Department of Agriculture: call 410-841-5920 to report suspect pests; visit http://www.mda.state.md.us/plants-pests/invasive_species.php for information.

Nationally: USDA-Animal and Plant Health Inspection Service (APHIS) at
http://www.aphis.usda.gov/services/report_pest_disease/report_pest_disease.shtml

Where to Get More Information:

UMD Cooperative Extension Exotic Pest Threats Website: http://www.PestThreats.umd.edu/index.cfm

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