



Invasive Interceptions: Gypsy Moth and Invasive Moth Detection in Alaska

Key Message

Invasive pests (introduced exotic plants, animals, and microbes which spread aggressively and displace native species) are a serious threat to biological diversity and, consequently, have gained increased publicity both nationally and within Alaska. To date, none of the data from trapping throughout Alaska indicate that invasive moths targeted for sampling have established populations. Interagency cooperation and support in these survey efforts is essential to maintaining an early detection and rapid response network throughout the state. Forest Health Protection and its many cooperators continue to work hard to further develop the early warning system by widening the scope for detecting introductions of invasive pests.



European Gypsy Moth male, caught in sticky trap in 2006, Fairbanks, AK.

Issue

Introductions of exotic invasive insects have caused great concern and resulted in substantial control expenditures in the United States. The recent Asian long-horned beetle (*Anoplophora glabripennis* [Motschulsky]) and emerald ash borer (*Agilus planipennis* Fairmaire) introductions in the Lower 48 are two examples that have potentially devastating effects for native ecosystems and have resulted in control efforts costing tens of millions of dollars. Increased commercial activity and tourism in Alaska and climate warming trends in northern regions increase the probability that non-native organisms that are introduced into Alaska will establish breeding populations and begin to spread. Once established, invasive pest populations can be extremely difficult and expensive to manage. Non-native lepidopterans (moths and butterflies) such as the gypsy moth pose a serious hardwood defoliation threat to the forested ecosystems of Alaska. To address this threat, Alaska cooperators have maintained a detection monitoring system focused on the gypsy moth for several years.

Background

It is widely accepted that the most effective and lowest cost defense against exotic species introductions is to have an effective monitoring system designed to detect introductions early and allow cost effective, rapid response control actions. USDA Animal & Plant Health Inspection Service (APHIS), the State of Alaska Department of Natural Resources—Divisions of Agriculture and Forestry (ADNR DOA, DOF), University of Alaska Cooperative Extension Service (CES), National and Western Plant Diagnostic Network (NPDN, WPDN, both include insects), Customs and Border Protection (CBP), and the Forest Service, Forest Health Protection have programs in place to monitor and detect potential insect or plant introductions. Alaska residents, resource professionals, and land managers all have roles and responsibilities to address exotic invasive species prevention, early detection, and rapid response.

For several years, detection surveys have been conducted for European Gypsy Moth (*Lymantria dispar* [L.]), Asian Gypsy Moth (*Lymantria dispar dispar* [L.]), Rosy Gypsy Moth (*Lymantria mathura* Moore), Nun Moth (*Lymantria monacha* [L.]), and Siberian Silk Moth (*Dendrolimus superans sibiricus* Tschetverikov). If introduced, these species would pose a significant threat to Alaska's forested ecosystems from both an economic and biological perspective and are closely regulated and monitored by APHIS-PPQ and state agricultural agencies. Additionally, CES conducts nursery and greenhouse surveys each spring to detect and eliminate pests such as tent caterpillars (*Malacosoma* spp.).

Historically, only the European Gypsy Moth has been captured in Alaska. Genetic testing has revealed that gypsy moths found in Alaska to date represent European gypsy moth haplotypes that have been present in North America for many years and are therefore not new foreign introductions. All adult Gypsy Moth captures in Alaska have been single moth detections and appear to be associated with recreational vehicle traffic into the state or outdoor equipment shipped from infested areas. However, there is an increasing concern of a possible port introduction into Alaska. Alaska has approximately 44,000 miles of coastline, with ports dispersed throughout much of its southern latitudinal ranges (below 62° N). Alaska ports receive marine vessel traffic throughout the year from Asian ports. The potential for port introductions increase when outbreaks occur overseas. The Asian strain poses a much greater risk to Alaska's forested resources as the Asian female moths have the ability to fly, and the Asian moths have a much broader host range to include many conifer species (about 600 total species compared to roughly 250 species for the European).



Annual gypsy moth trapping by Cooperative Extension Service technicians.

Current Situation

Survey participants throughout the state representing CES, CBP, and USFS Forest Health Protection cooperated in 2008 to deploy 652 Lepidoptera monitoring traps, collect relevant data, and report findings. Survey data are reported into two national databases, the National Agricultural Pest Information System (NAPIS), and the Integrated Survey Information System (ISIS). The databases capture statewide and national pest survey information collected by APHIS-PPQ and Cooperative Agricultural Pest Survey (CAPS) cooperators. CAPS is a cooperative effort by federal and state

agricultural organizations to detect and monitor exotic plant pests of economic concern. The data, for Alaska, illustrates successful early detection efforts throughout the state and serves as baseline data should the exotic pests of concern be introduced in the future.

During the summer of 2008, there was an apparent increase in the number of Asian gypsy moth egg mass detections on marine vessels from Asian ports destined for ports along the West Coast. Several of these detections occurred in Alaska waters and were indicated to have occurred on vessels destined for Ketchikan and Kodiak. CBP intercepted one vessel destined for Ketchikan that contained Asian gypsy moth egg masses. The egg masses were confirmed by USDA-APHIS-PPQ national identifiers as the Asian strain of gypsy moth.

Summary

Although no targeted invasive moths were detected in traps deployed throughout Alaska, recent offshore vessel detections warrant a concern for the possibility of overwintering egg masses in or near Alaska's port communities. Interagency cooperation and support in these survey efforts is essential to maintaining an early detection, rapid response network throughout the state.

More Information

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