

16th Annual Invasive Species Workshop

Invasive forest insects in Alaska: Where are they now?

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Invasive insects in our forests and urban environments can displace native insects, threaten the health of trees and shrubs and cause negative economic impacts. Non-native insects can arrive in Alaska via numerous pathways, including shipping containers, plant materials, unprocessed wood products such as firewood, weather currents and other means. Each year, the forests of the state are monitored through a variety of means for signs and symptoms of invasive insect activity. These monitoring and detection efforts include early detection rapid response (EDRR) trapping for invasive bark beetles, wood boring beetles and moths across the state; reports from concerned citizens who notice new pests in their forests; and yearly aerial detection surveys conducted by USDA Forest Service Forest Health Protection and Alaska Division of Forestry staff.

This year has been a productive one for some of the invasive forest insects in Alaska, while others appear to be at low levels. Spruce aphid (*Elatobium abietinum* Walker), for example, was documented causing damage on the Kenai Peninsula in 2015, far outside of its known range in the state. On the other hand, the green alder sawfly (*Monsoma pulveratum* Retzius), a major defoliator the past few years, was barely noticeable in some areas. The current status of major and emerging invasive forest insects in or near Alaska will be discussed.

Invasive Forest Insects in Alaska: Where are they now?

2015 Alaska Invasive
Species Workshop

Jason Moan
Alaska Division of Forestry

Elizabeth Graham & John Lundquist
USDA Forest Service – Forest Health Protection

October 29, 2015
Juneau, Alaska



- ▼ How we monitor
- ▼ Current invasive forest pests
- ▼ Potential future threats



Agenda





How we monitor





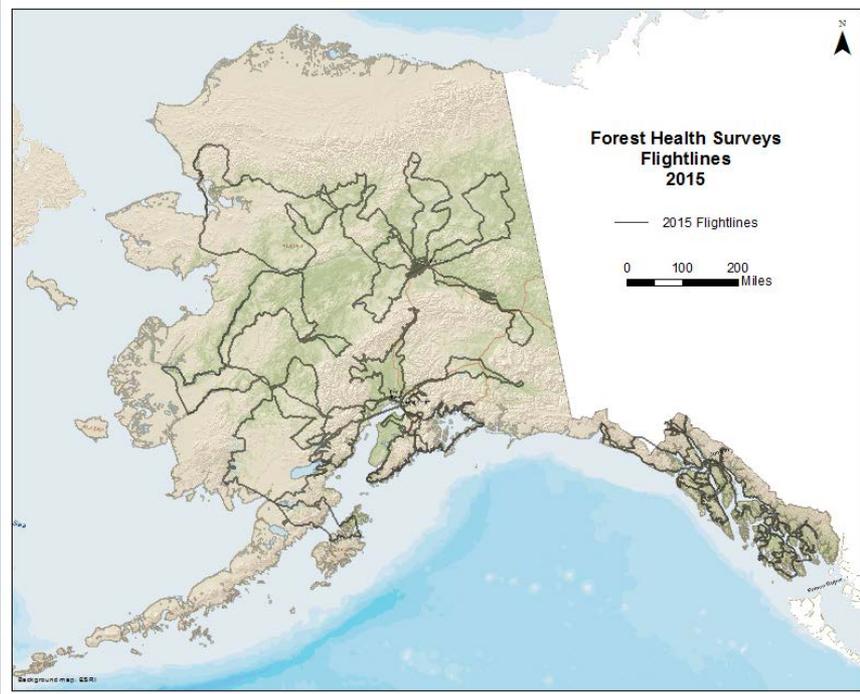
Aerial Surveys



Amber-marked birch leaf miner damage
USFS R10 FHP



Spruce aphid damage
J. Moan, Alaska DOF



How we monitor





Field Surveys and General Observations



Woolly alder sawfly
J. Moan
Alaska DOF



**Looking for birch
leaf miner damage**
S. Swenson
USFS R10 FHP

How we monitor



Early Detection Rapid Response Program

Exotic Bark and Woodboring Beetles

Target Species

Hylurgops palliatus

Hylurgus ligniperda

Orthotomicus erosus

Ips sexdentatus

Ips typographus

Tomicus minor

Tomicus piniperda

Trypodendron domesticum

Xyleborus and *Xylosandrus* Spp

* All non-native bark beetles
and woodborers are targets



Photo by P. Liedberg
EDRR Cooperator, Dillingham

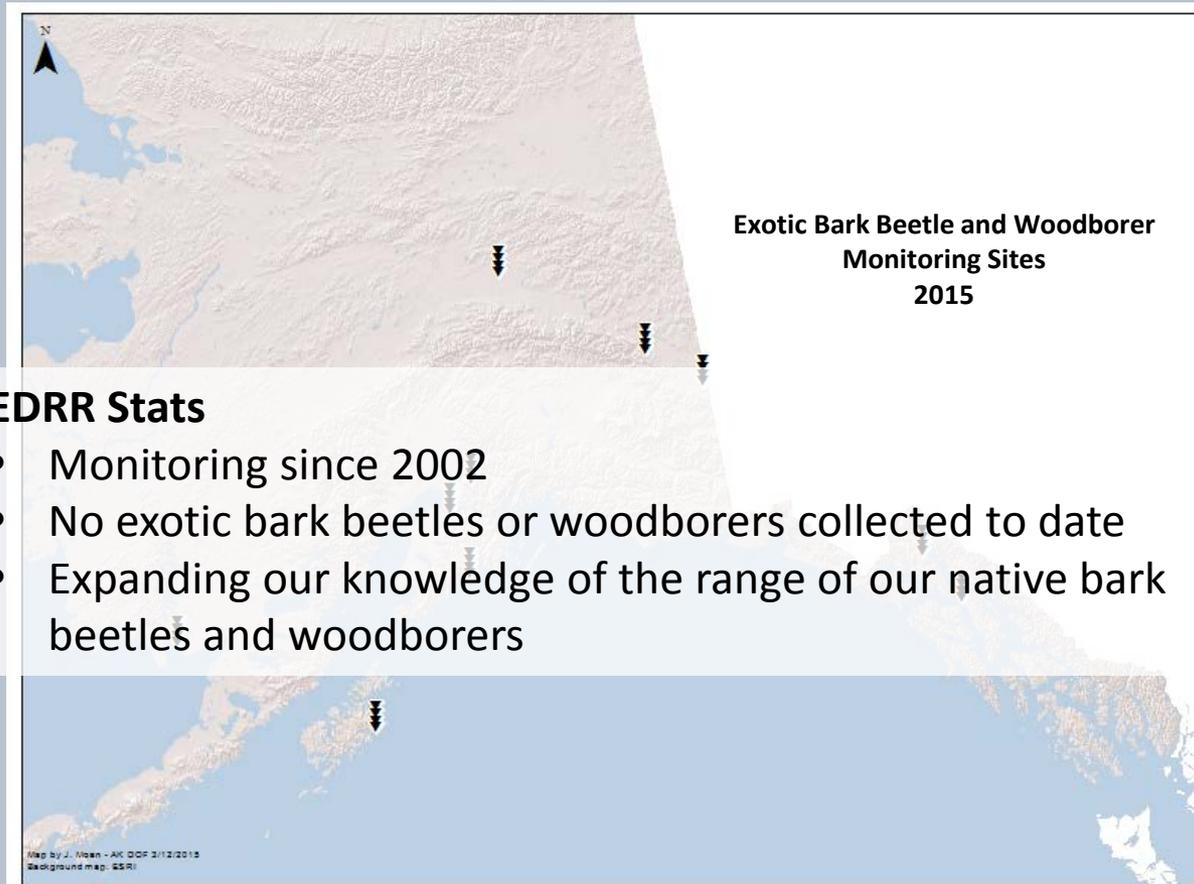


How we monitor



Early Detection Rapid Response Program

Exotic Bark and Woodboring Beetles



How we monitor



Cooperative Agriculture Pest Survey Program*

Exotic Moth Monitoring



C. Evans, Illinois Wildlife Action Plan
Bugwood.org



D. Parsons, University of Wisconsin
Bugwood.org

Target Species
European gypsy moth
Asian gypsy moth
Rosy gypsy moth
Nun moth
Siberian silk moth



* Program Administered by Alaska Division of Agriculture
State Survey Coordinator Jacquelyn Schade
Jacquelyn.schade@alaska.gov

How we monitor



Spruce aphid damage

J. Moan
Alaska DOF



Reports from the public

Sitka spruce weevil-infested tree
L. Livingston
Idaho Dept of Lands



How we monitor

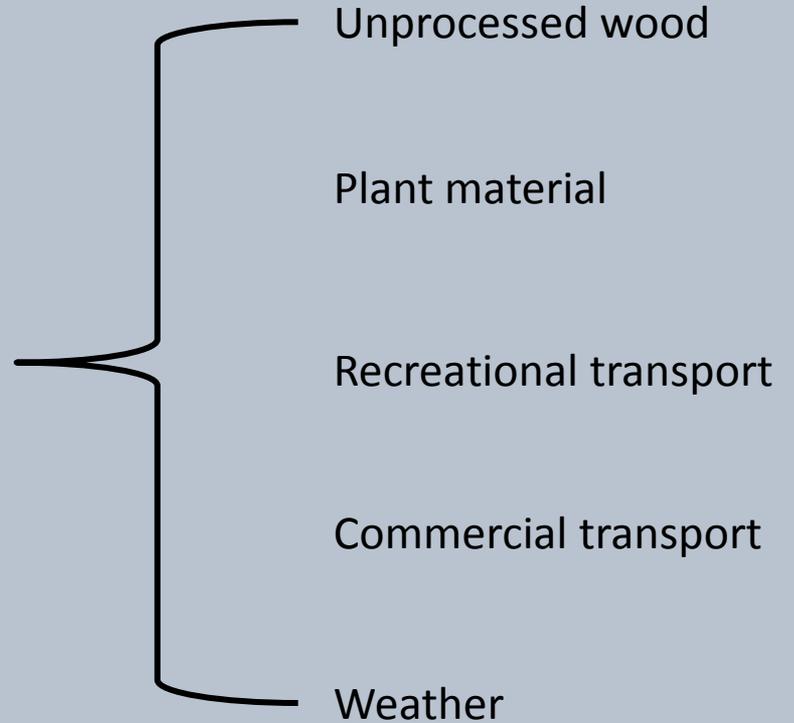




Current Invasive Forest Pests



- ▼ Background
- ▼ Pathways of introduction
- ▼ Current status



Current Invasive Forest Pests



Exotic sawflies established in Alaska

Internal leaf feeders

- Amber-marked birch leaf miner (*Profenusa thomsoni*)
- Birch leaf edge miner (*Heterarthrus nemoratus*)
- Birch leaf miner (*Fenusa pusilla*)

External leaf feeders

- Green alder sawfly (*Monsoma pulveratum*)
- Woolly alder sawfly (*Eriocampa ovata*)
- Larch sawfly (*Pristiphora erichsonii*)



Larch sawfly

S. Katovich, USFS, Bugwood.org



Current Invasive Forest Pests



Established in Alaska

Amber marked birch leaf miner (AMBLM) (*Profenusa thomsoni*)

- Native to Europe
- Introduced in North America in the early 1900's
- First report in Alaska – Haines in 1992
- Confirmed in Anchorage – 1996, Fairbanks - 2004
- Biological control program started in Southcentral and Interior Alaska in the mid 2000s



Profenusa thomsoni
University of Alberta

E.H. Strickland Entomological Museum

Birch leaf edge miner (*Heterarthrus nemoratus*)

- Native to Europe

Birch leaf miner (*Fenusa pusilla*)

- Native to Europe



Heterarthrus nemoratus
University of Alberta

E.H. Strickland Entomological Museum



Current Invasive Forest Pests





UGA1246047

Amber-marked birch leaf miner damage

W. Cranshaw, CSU

Bugwood.org

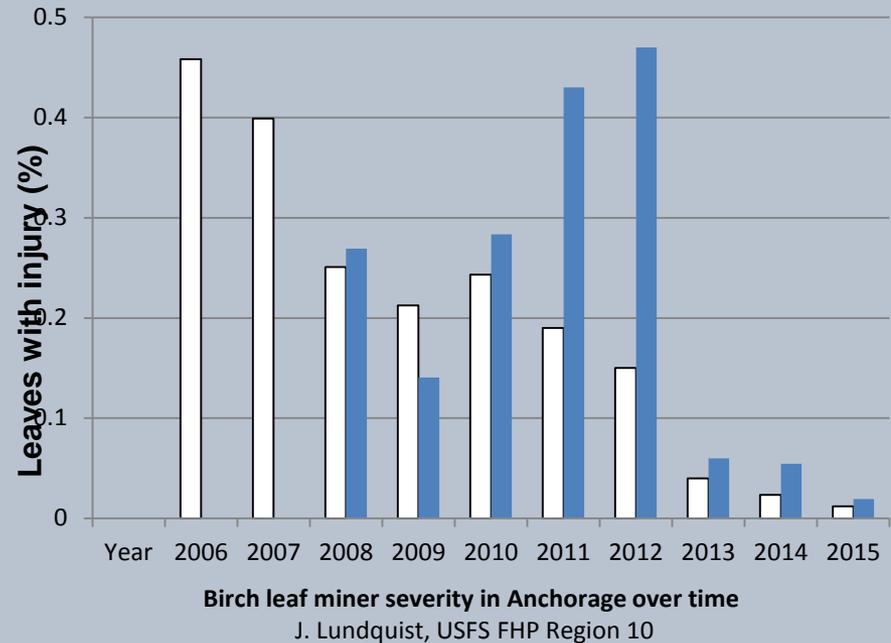


Amber-marked birch leaf miner damage

S. Swenson, USFS R10 FHP

Established in Alaska

Amber-marked birch leaf miner 
Birch leaf edge miner 



STATUS

- Active populations in many urban and suburban areas including Fairbanks, North Pole, Palmer, Wasilla, Soldotna, Haines
- Notably low in Anchorage in 2015



Current Invasive Forest Pests



Established in Alaska

Green alder sawfly (*Monsoma pulveratum*)

- Native to eastern Europe and north Africa
- First confirmed in AK in late 2000s, collected in Palmer in 2004
- Present in southcentral, Fairbanks area, and southeast
- Outbreaks in southcentral around 2006, more recently in southeast
- Overwinter in woody material



Green alder sawfly pupal niches and pre-pupae.
K. Zogas, USFS R10 FHP



Green alder sawfly larva
E. Graham, USFS R10 FHP

STATUS

Little observed defoliation in 2015



Current Invasive Forest Pests



Established in Alaska

Spruce aphid (*Elatobium abietinum*)

- Native to Europe
- First reported in North America in 1910s at Vancouver, BC
- Pest of Sitka spruce in coastal Alaska
- Feeds in late winter/early spring, before budbreak
- Increases tree susceptibility to other pests



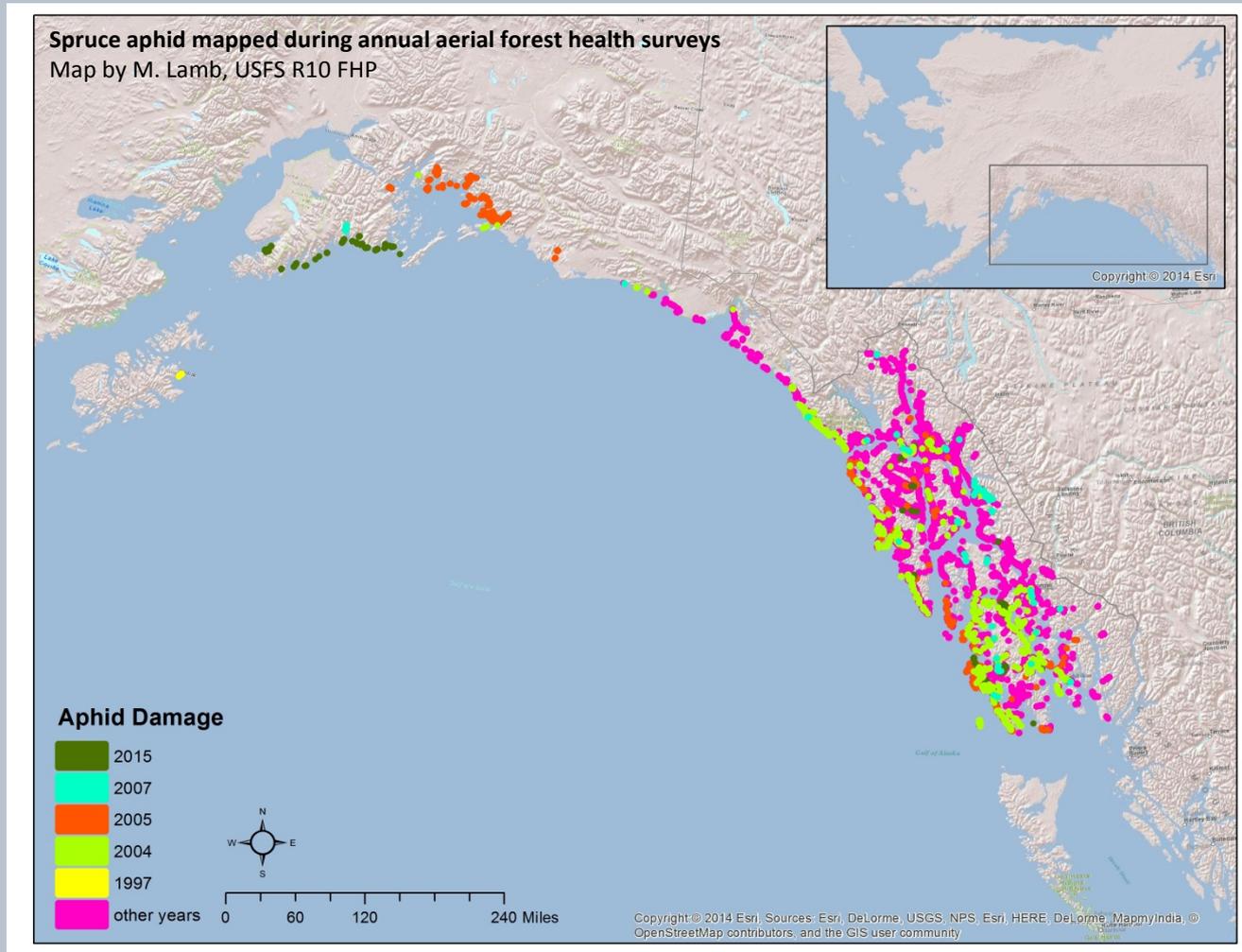
Spruce aphid nymphs
USFS R10 FHP



Current Invasive Forest Pests



Established in Alaska



Current Invasive Forest Pests



Established in Alaska



Spruce aphid-infested Sitka spruce
Kenai Peninsula
G. Dubois, USFS R10 FHP



Current Invasive Forest Pests



Not Established in Alaska

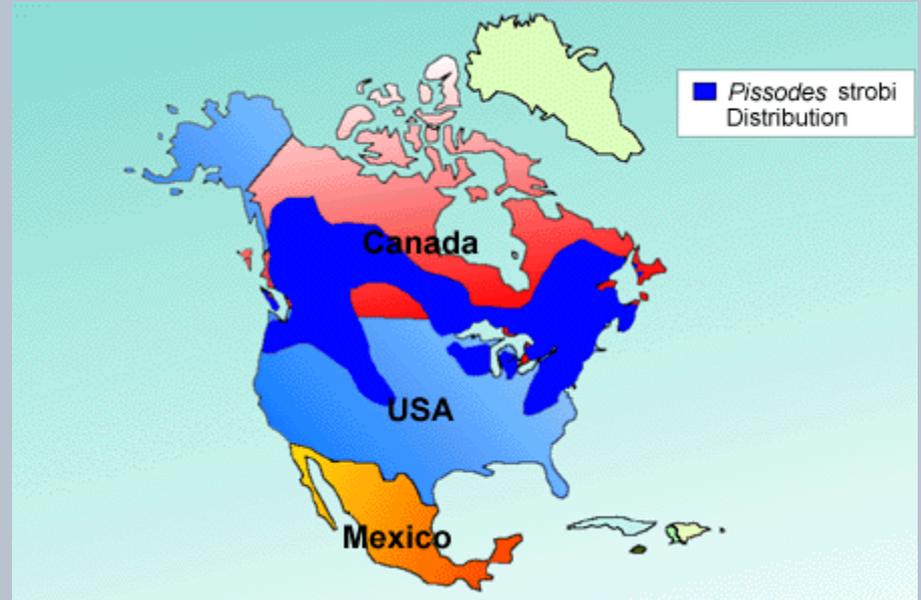
Future Threats



Not Established? in Alaska

Sitka spruce weevil (*Pissodes strobi*)

- Native to much of the northern U.S. and Canada, not Alaska
- Pest of young spruce and pines in native range
- Introduced into Anchorage area periodically, establishment status unknown
- Most recent detection 2015



Pissodes strobi range

Natural Resources Canada

<http://tidcf.nrcan.gc.ca/en/insects/factsheet/1847>



Current Invasive Forest Pests



Not Established? in Alaska



Pissodes strobi larvae in stem
D. Herms, OSU
Bugwood.org



Pissodes strobi (Jong) (Jong)
J. Moan, UAF CES



Pissodes strobi damage
T. Kimoto, Canadian Food Inspection Agency
Bugwood.org

STATUS

Detected in Anchorage in 2015.

Trace forward and monitoring are ongoing.



Current Invasive Forest Pests



Not Established in Alaska

Gypsy moth (GM) – European and Asian (*Lymantria spp*)

- European GM females don't fly; Asian GM females fly
- Hosts
 - + European GM feeds on roughly 250 species of trees and shrubs
 - + Asian GM feeds on > 500 species of trees and shrubs
 - + Larch, alder, willow, aspen, birch, poplar (among others)
- Have been detected in traps in Alaska (last in 2006)
- Occasionally intercepted on shipping vessels



Future Threats



Not Established in Alaska



European gypsy moth adults
USDA APHIS PPQ, Bugwood.org



European gypsy moth caterpillar
J. Yuschock, Bugwood.org



Future Threats



Not Established in Alaska

Gypsy Moth in the Pacific Northwest 2015

Feared Asian gypsy moths reappear in Washington



Don Jenkins
Capital Press

Published:
August 18, 2015 4

Last changed:
August 19, 2015 9



Don Jenkins/Capitol Press
from a tree at the mouth of the
Columbia River in
wind Aug. 18. For
Washington State
trapped Asian gypsy
destructive than European
[Buy this photo](#)

Capitol Press



Summer trapping nets 42 gypsy moths in Washington

OLYMPIA — The Washington State Department of Agriculture (WSDA) has completed its annual trapping for gypsy moths, finding 42 of the plant-eating invasive pests in six counties, compared to 27 trapped last year. Starting in June, WSDA employees placed 16,000 small, A-frame cardboard traps to catch male moths attracted to the traps because of a female-scent lure inside. The moths were captured in Clark County (3), Jefferson County (1), King County (26), Kitsap County (1), Pierce County (5) and Thurston County (6).

The last of the green colored traps were taken down this week.

Ten of the moths were Asian gypsy moth, not detected in this state since 1999. Although both European and the Asian species are damaging to forests and the overall environment, the Asian gypsy moth eats foliage from both deciduous and evergreen trees and shrubs. Also, the female Asian gypsy moth can fly, unlike her European counterpart, meaning Asian gypsy moth populations can spread much more quickly over a larger area.

WSDA, October 16, 2015

WSDA hadn't... Asian gypsy moth since

Future Threats





Western tent caterpillar
W. Cranshaw, CSU
Bugwood.org



Ips typographus
G. Csoka, Hungary Forest Research Institute
Bugwood.org

Not Established in Alaska



Brown spruce longhorn
S. Valley, ODA
Bugwood.org

Questions?

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