

Balsam Woolly Adelgid

Compliance Agreement Training



Michigan Department of Agriculture & Rural Development

Pesticide and Plant Pest Management Division



Introduction

- Balsam woolly adelgid (BWA)
- European forest pest accidentally introduced into North America in the early 1900's
- Attacks all true fir species
- BWA quarantine effective June 24, 2014



BWA Life Cycle

- Adults lay 100-250 eggs in spring
- Eggs hatch into crawlers (mobile form)
- Disperse by wind & branch to branch contact
- Insert mouthparts into tree & are permanently attached
- Typically 2 generations per year



Quarantine requirements

- Recipient cannot sell or distribute incoming fir commodities until released by MDARD – OR – Firm has compliance agreement
- All regulated fir must be accompanied by certificate
- Regulated articles are prohibited from BWA infested counties in regulated states



Prohibited Fir Articles

- The following are absolutely prohibited from infested areas of the US & Canada:
 - Boughs, branches, logs & lumber with bark
 - Firewood with bark
 - Uncomposted & unshredded bark
 - Nursery stock except seedlings & transplants grown under approved pest management program



Fir Seedling & Transplants from Regulated Areas

- Allowed when grown under active pest management program
- This means the grower must:
 - Perform bi-weekly monitoring April 1 – Nov. 1
 - Maintain pesticide treatment records
 - Have a documented training program
 - Treat seedlings & transplants within 7 days of shipment
- Age limit: no more than 3 years old



Exempt Fir Articles

- Christmas trees, wreaths & boughs during Oct 15-Dec 31 window
- Treated logs, bark, lumber & firewood
 - Heat treatments
 - Wood preservative treatments
- Logs, lumber & firewood with bark removed
- Seeds and cones



Balsam woolly adelgid symptoms at base of needles



BWA close up – white cottony masses at the base of needles



BWA feeding on twigs and branches causes a swelling or “gouting” reaction.



Balsam woolly adelgid crawler (magnified)



- When BWA feed, they inject toxic saliva into the wood which causes changes in plant cell structure
- Heavy feeding by BWA disrupts the conduction of water and nutrients
- Heavy infestations result in crown dieback, needle loss and eventual death of the tree



Widespread loss of balsam fir caused by BWA



Balsam Woolly Adelgid Host Range

- Attacks true firs
- North American species most susceptible
- European species tolerant - will harbor population
- Asian species intermediate



BWA Host Range, cont'd.

- Balsam fir *Abies balsamae*
- Fraser fir *Abies fraseri*
- subalpine fir *Abies lasiocarpa*
- Pacific silver fir *Abies amabilis*
- bracted balsam fir *Abies balsamae* var. *phanerolepis*



BWA Host Range, cont'd.

- grand fir *Abies grandis*
- Shasta fir *Abies magnifica*
- white fir *Abies concolor*
- noble fir *Abies procera*

BWA Distribution in the U.S.

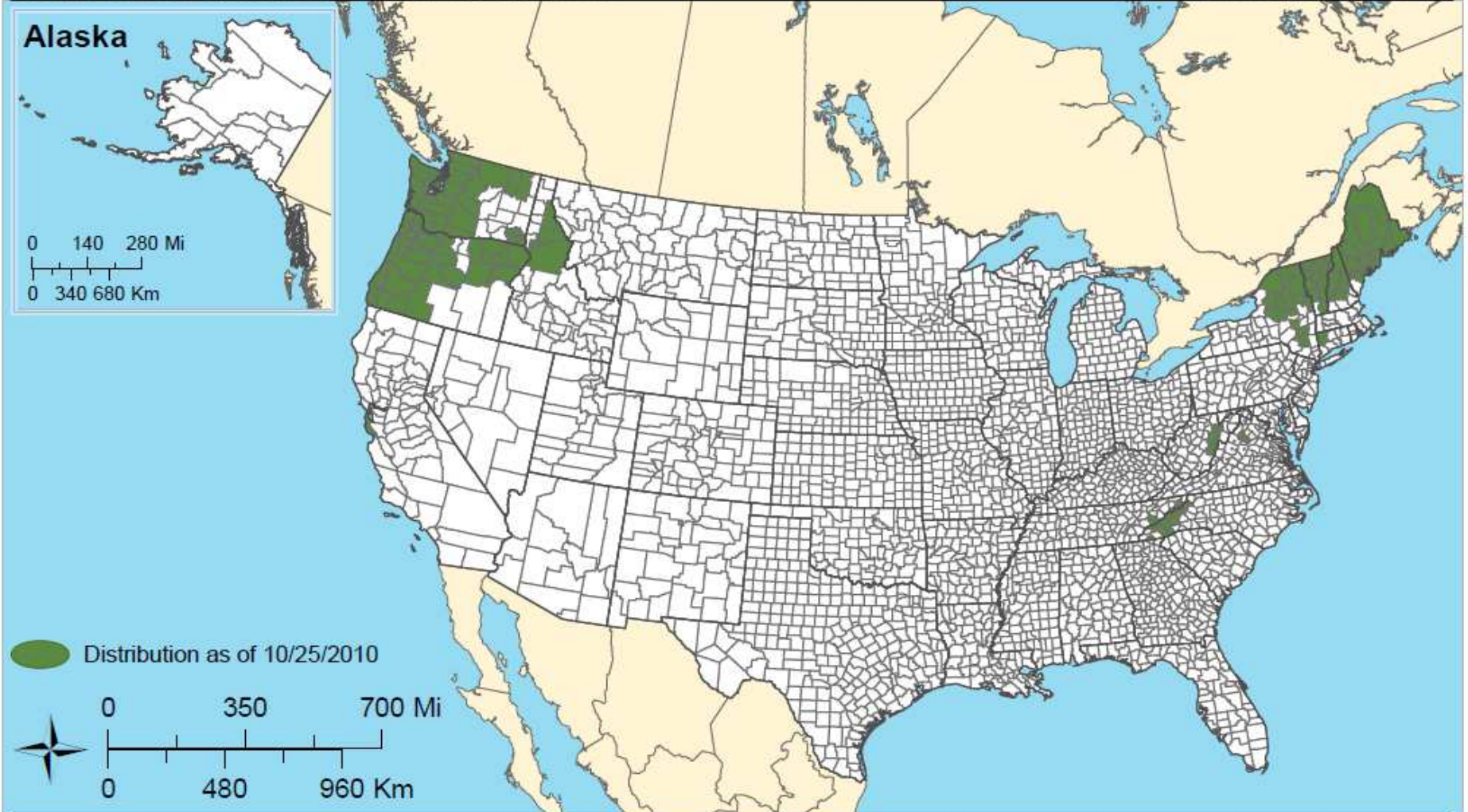
- California
- Idaho
- Maine
- New York
- North Carolina
- Oregon
- Tennessee
- Vermont
- Virginia
- Washington



Alien Forest Pest Explorer

Pest Distribution Map Balsam Woolly Adelgid *Adelges piceae*

www.fs.fed.us/ne/morgantown/4557/AFPE/



USDA
Forest
Service



Northern
Research
Station



Eastern Forest
Environmental Threat
Assessment Center



Forest Health
Technology
Enterprise Team

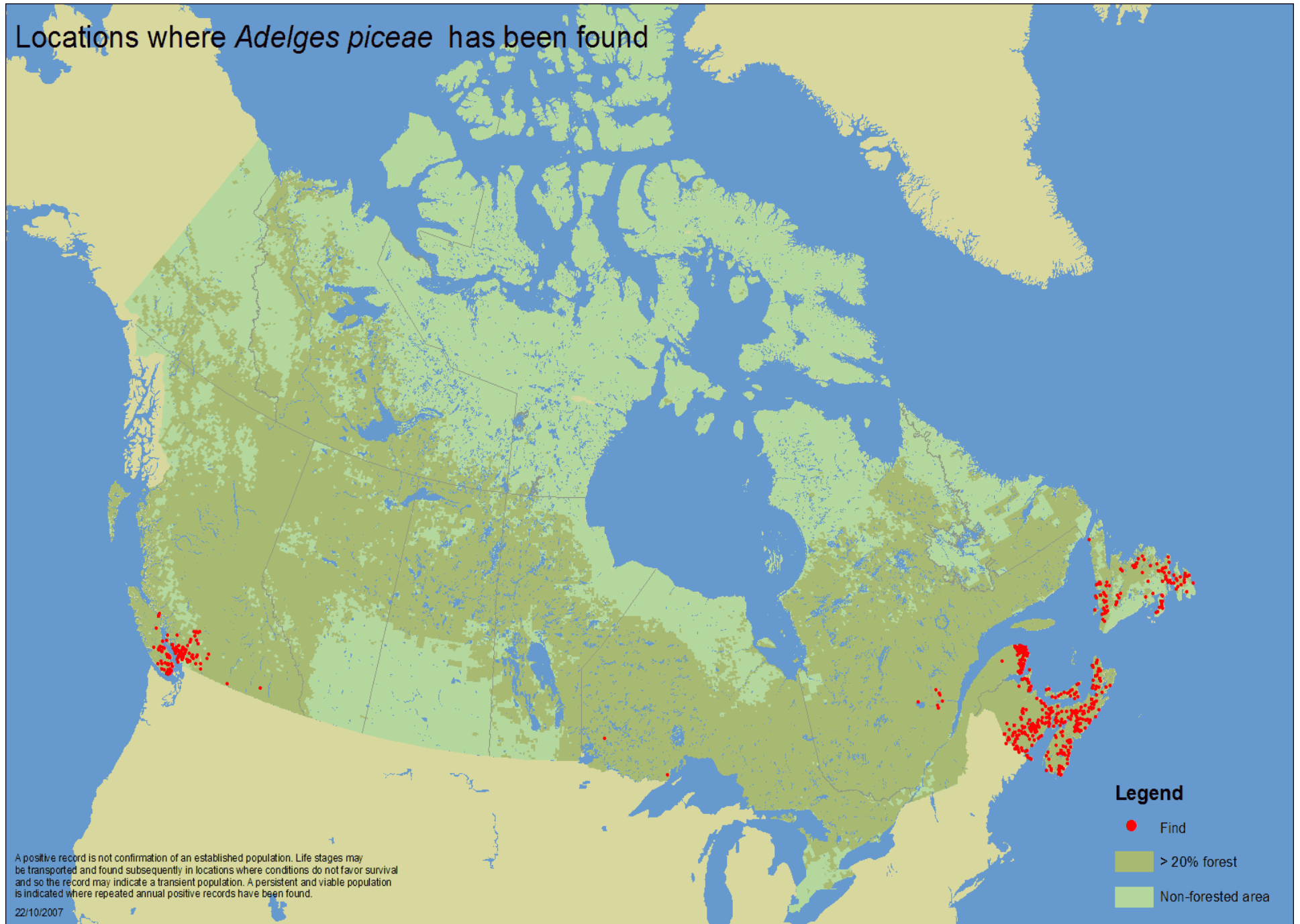


RSAC
Remote Sensing
Applications
Center

BWA Distribution in Canada

- British Columbia
- Nova Scotia
- New Brunswick
- Prince Edward Island
- Newfoundland
- Quebec

Locations where *Adelges piceae* has been found



A positive record is not confirmation of an established population. Life stages may be transported and found subsequently in locations where conditions do not favor survival and so the record may indicate a transient population. A persistent and viable population is indicated where repeated annual positive records have been found.

22/10/2007



Additional Information

- **MDARD quarantine information**
 - www.michigan.gov/pestquarantines
- **Nursery Program Desk 517-284-5648**