

Biosurveillance

Partnering native wasps and local volunteers to monitor for EAB



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The Enemy



Emerald Ash Borer

- Killed tens of millions of trees since 2002
- Spread to 15 states and 2 provinces
- No effective natural enemies
- No tree resistance (100% death rate)

One of the biggest problems...

No good method of monitoring for EAB

Cooperative Emerald Ash Borer Project

EAB locations in Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin, West Virginia and Canada

September 16, 2010

Minnesota

Wisconsin

Iowa

MISSOURI

Minidoka

Ohio

West

A small map of the UK showing the location of Bedford in Bedfordshire. The map includes the surrounding areas of Bedfordshire, Hertfordshire, and Cambridgeshire, with a red dot marking the location of Bedford.

Landmarks

Virant

100



Maryland Department of Agriculture
Michigan Department of Agriculture
Datefile 2006-10-04_all_survey_data
Michigan Department of Agriculture data
Michigan Tech University School
of Forest Resources & Environmental
Health Department of Agriculture
Indiana Department of Natural Resources
Cable: During the period of the three

- available data:
 - 40 total E&B sites; Approximate E&B locations from OFIA map "E&B Survey Results as of May 17, 2008"; OFIA map "E&B Positive Sites in Linn/Polk County and Warren County" dated September 13, 2008; OFIA map "E&B Survey Results as of October 19, 2008"; OFIA press releases
 - All sites in Linn Co.
 - All sites in Polk Co.
 - All sites in Warren Co.
 - All sites in Keokuk, Dept. of Estuaries & Ecology
 - All sites in Iowa City, Dept. of Estuaries & Ecology

A map of the 12th Congressional District of Missouri, which includes counties such as Franklin, Benton, Cass, Marion, and Platte.

- EAB positive
- Site under evaluation
- ◆ Federal EAB quarantine
- State quarantine

Map K

- other (M)

USDA APHIS
September 2010
map by dropp

Trap Trees



Purple Traps



An Ally



Cerceris fumipennis

Family: Crabronidae
(hunting wasps)



- Native wasp
- Solitary ground-nester (in colonies)
- Non-stinging
- Provisions its nest with adult buprestids (metallic wood-boring beetles)
- Is capable of finding EAB at low levels

BIOSURVEILLANCE

What's involved in a biosurveillance program?



Finding Colonies

- Use knowledgeable, motivated volunteers (professionals):
 - entomologists / forest health professionals / field people
 - local Ent. Soc. members
- Combine search with regular field work
- Use Google Earth
- Showcase a ‘working’ colony in summer
 - field training
- **Don’t start looking too early!**

After You Find Colonies?

- Now use the less knowledgeable (local) volunteers:
 - Master gardeners, city arborists, scouts, naturalist groups, home schoolers, boys and girls clubs, families
- Recruit & educate during winter (1 group -1 colony)
 - target *local* volunteers
 - city arborists, tree wardens, town manager
- Get permission from landowners
- Have field training sessions when wasps emerge
- Ask them to look for other sites

What do volunteers do?

- ‘Steal’ 30-50 beetles from wasps at each site during the month of July (3-10 hours).
- Freeze them, then send them to me at end of summer for identification



Why Use Volunteers?

- Lots of travel time
- Short seasonal activity
(wasps actively hunt 4-6 weeks)
- Short daily activity period (afternoon only)
- Unpredictability of weather (and wasps!)
- Volunteers like this job!





Who are the volunteers?

- city arborists
- town Parks & Rec. staff
- Girl Scout troops
- amateur entomologists
- high school science teacher
- town councilors
- families
- interested individuals

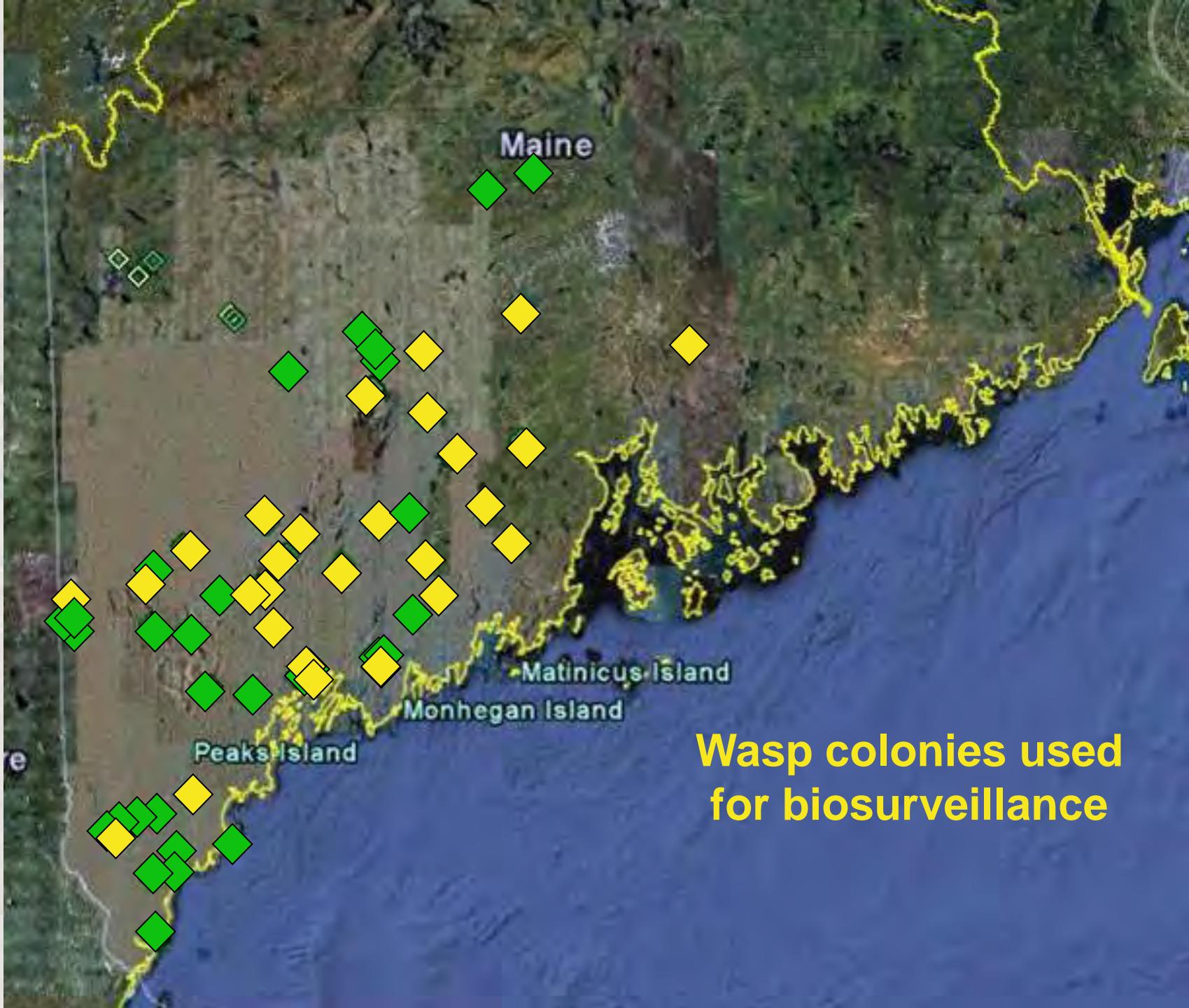
A photograph showing three volunteers working on a sidewalk. One man in a green t-shirt and cap stands on the left, looking down. Two other men, one in a blue shirt and another in a white shirt, are crouching on the sidewalk, working with a long tool. They are outdoors on a sunny day with trees in the background.

What motivates the volunteers?

- want to protect the trees
- want to do something for my town
- I can make real difference
- I feel like I'm doing something important

- it's fun
- it's rewarding, interesting
- something I can do with my family, get outdoors
- really elegant biology
- it's kind of cool

- my Dad made me



0 25 50 100 Miles

New England and New York 2009

242 colonies
1000+ buprestids collected
55 species, 11 genera



Map created by Rebecca Lilja, U.S. Forest Service, Northeastern Area
State & Private Forestry, Office of Knowledge Management, Durham, NH
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01/07/10

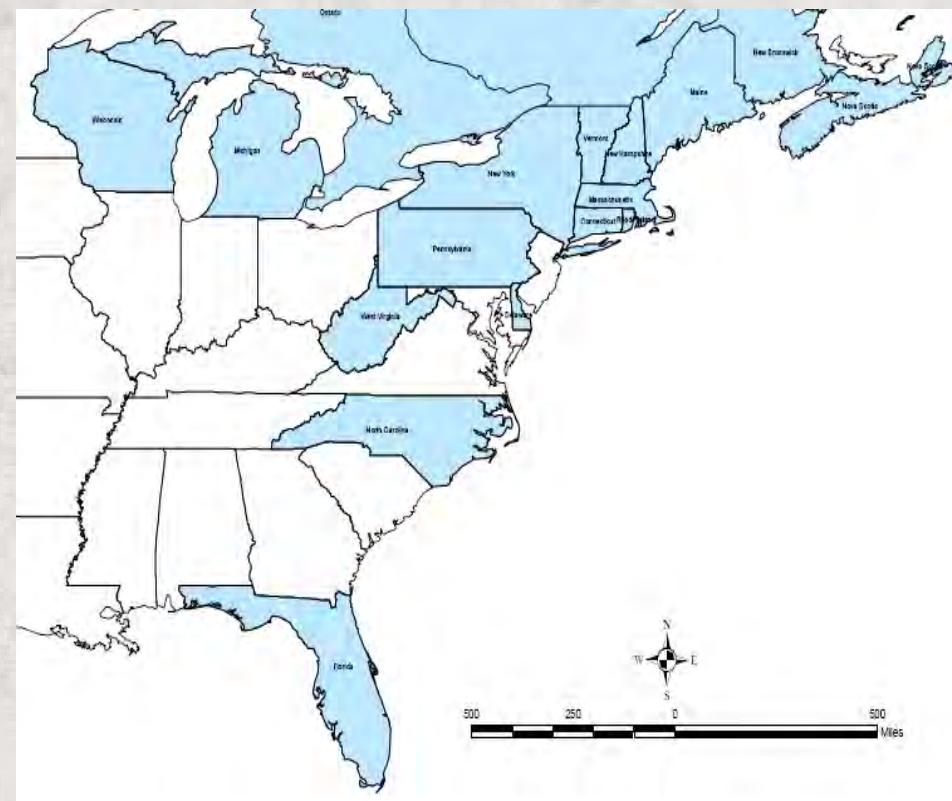
Key

- *Cerceris fumipennis* colonies - 2008
- ▲ *Cerceris fumipennis* colonies - 2009

What's happening beyond New England?

Connecticut:	67
Delaware:	6
Florida:	10
Maine:	66
Maryland:	17
Massachusetts:	6
Michigan:	6
New Hampshire:	7
New York:	12
North Carolina:	17
Rhode Island:	20
Pennsylvania:	7
Vermont:	19
W. Virginia:	6
Wisconsin:	19

Ontario:	23
Quebec:	3
New Brunswick	actively looking
Nova Scotia	actively looking



How Does Biosurveillance Compare with Purple Traps?

2008



(26 traps)

Caught 3 buprestids
- 2 genera, 3 species

2009

(26 traps)

Caught 0 buprestids



(2 sites, 2.5 hrs)

Caught 45 buprestids
- 6 genera, 11 species

(26 sites)

Caught 378 buprestids
- 7 genera, 21 species
- 2 species, 1 genus new to Maine

Pros and Cons



- Working with live insects can be fussy and difficult
- Working with volunteers is time-consuming



- *By far* the most sensitive and effective monitoring tool for EAB
- Also the best tool for monitoring other invasive buprestids (EDRR)
- Great public outreach
- Get people involved in protecting their community



check our websites:

Maine

- maine.gov/cerceris

Ontario

- cerceris.info

Many resources available!

Contact me: colleen.teerling@yahoo.com

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