

# Biosurveillance

Partnering native wasps  
and local volunteers  
to monitor for EAB



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# The Enemy



One of the biggest problems...

**No good method of  
monitoring for EAB**

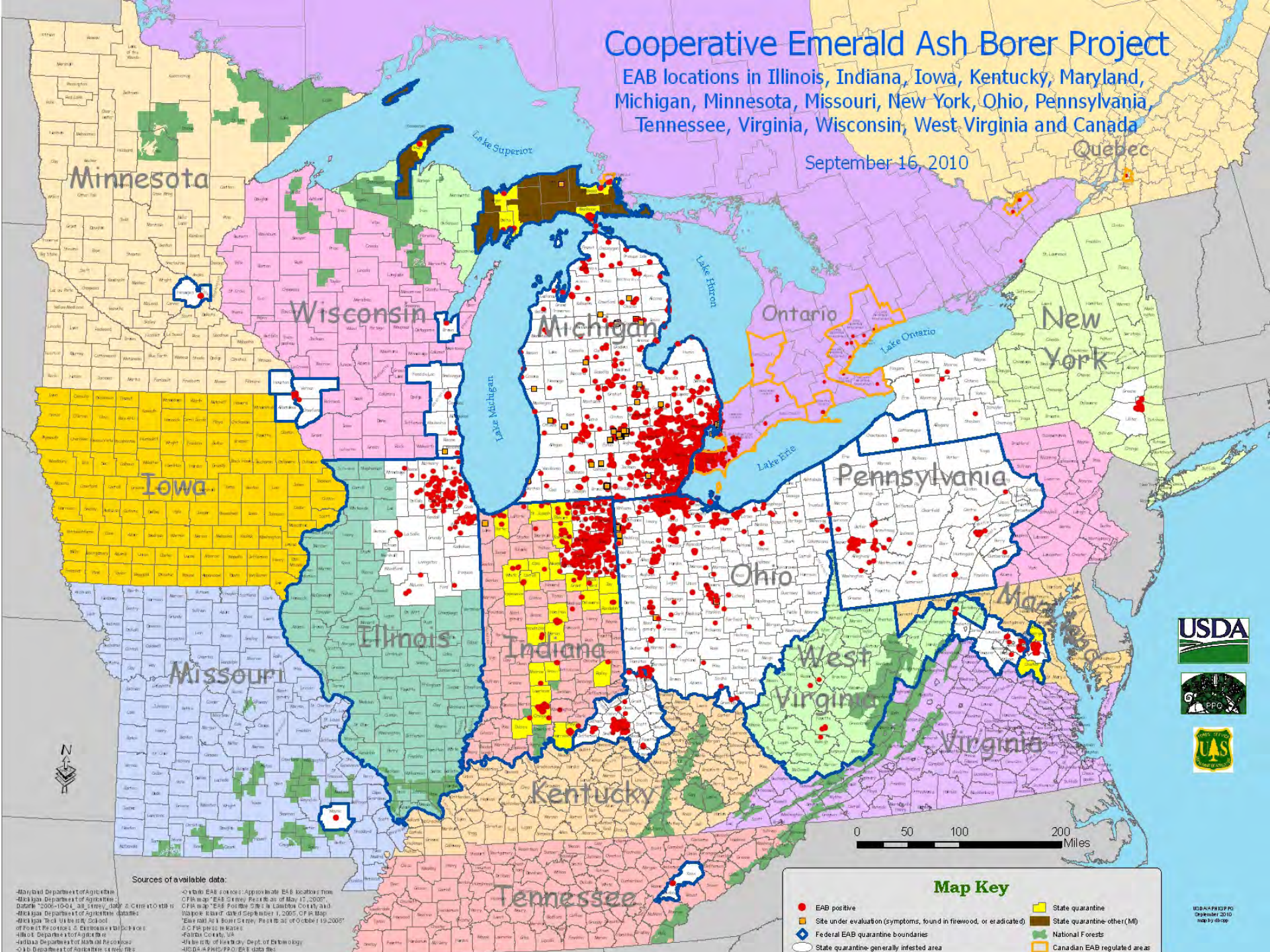
## **Emerald Ash Borer**

- 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)



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

Quebec



USDA APHIS PPD  
September 2010  
www.aphis.usda.gov

Sources of available data:

Ministry Department of Agriculture	©1986 EAB sources; Appendix B45 locusts from
Ministry Department of Agriculture	©1986 EAB survey; Report of May 17, 1900 <sup>2</sup>
Ministry 1900-1904, all survey, data & correspondence	©1986 Map "EAB From the East in Louisiana County and
Ministry Department of Agriculture statistics	Wagon Road dated September 1, 1905, C.F.R. Map
Ministry The University School	"EAB and I" Bonifant, Paris 2nd ed October 1920/2001
of Forestry & Environment Science	©5 photos in notes
Min. Department of Agriculture	©1986 C.F.R. 38
Ministry Department of Natural Resources	©1986 Ministry of the Dept. of Entomology
Min. Department of Forestry and Wildlife	©1986 A.P.H.I.S. 1900 EAB data files



# 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!





A photograph of three men in an outdoor setting. One man in a white shirt and glasses is crouching and using a long-handled tool to move a white cloth on the ground. Two other men, one in a green shirt and jeans, and another in a grey shirt, are standing and observing. The background features trees and a clear blue sky.

## Who are the volunteers?

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

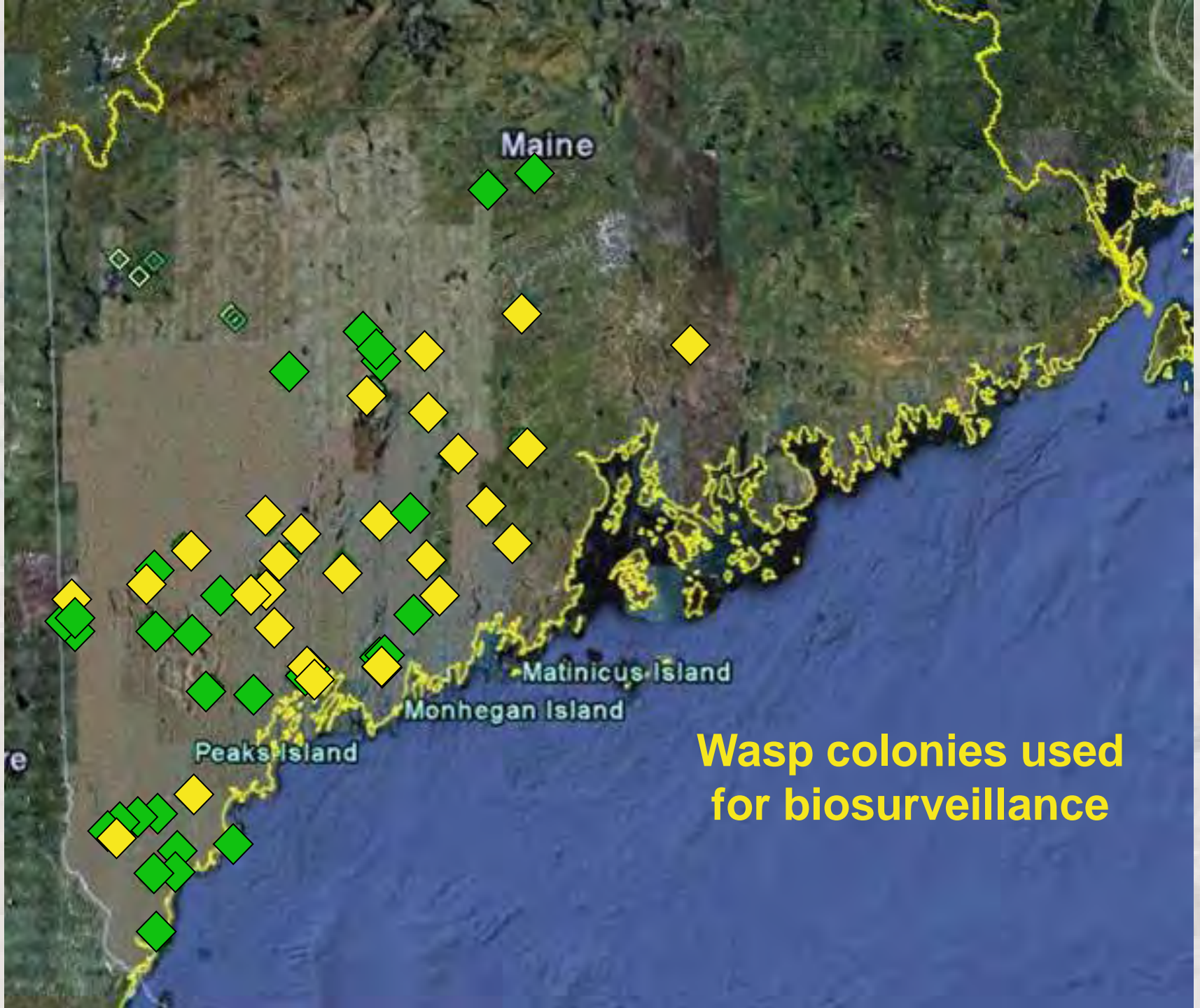




## **What motivates the volunteers?**

- 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**





**Wasp colonies used  
for biosurveillance**



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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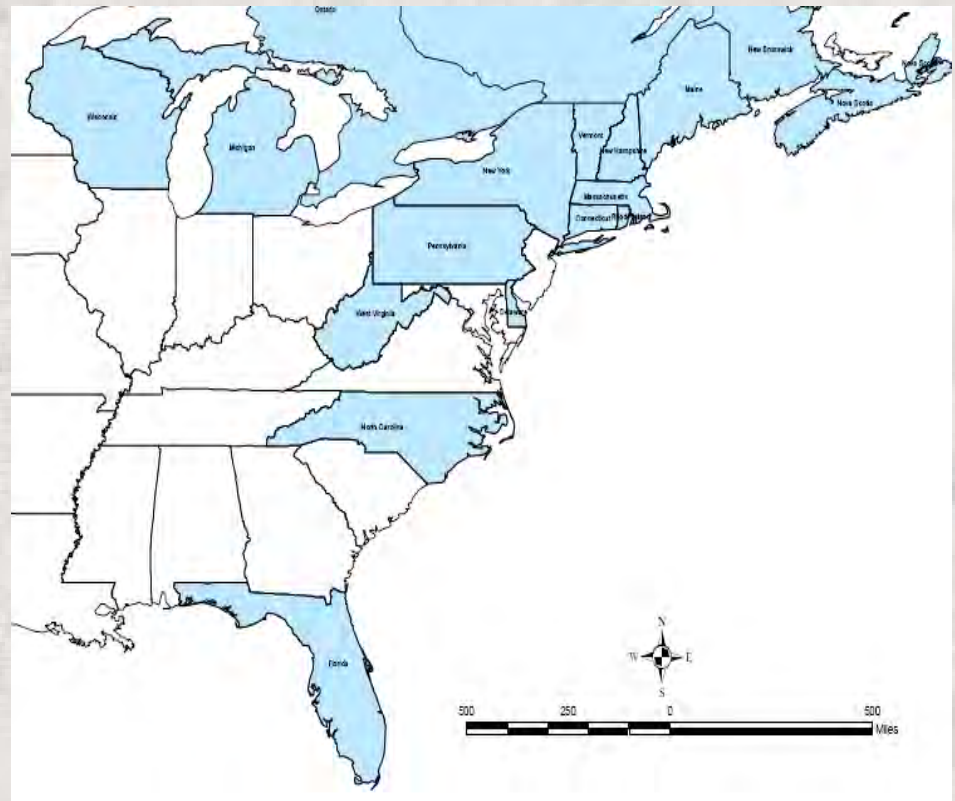
## Key

- *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**



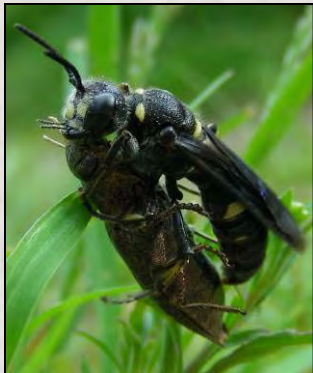
(26 traps)

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](http://maine.gov/cerceris)

Ontario

– [cerceris.info](http://cerceris.info)

Many resources available!

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