



Using Biosurveillance to Detect the Emerald Ash Borer in New York and New England.

Michael Bohne and Dennis Souto, U.S. Forest Service; Colleen Teerling, Maine Forest Service; Bruce Payton and Ryan Vasquez, RI Department of Environmental Management; Claire Rutledge, Connecticut Agricultural Experiment Station; Charlie Burnham, MA Department of Conservation and Recreation; Kyle Lombard, NH Division of Forests and Lands; Trish Hanson, VT Division of Forestry; Jason Denham, NY Department of Environmental Conservation; Philip Careless, University of Guelph.

ABSTRACT

The solitary parasitoid wasp *Cerceris fumipennis* has the potential to detect low levels of the emerald ash borer (EAB), *Agrilus planipennis*, in the early stages of an infestation. A cooperative monitoring system for early detection of EAB using *C. fumipennis* colonies was initiated in New England and New York in the summer of 2008.

90 colonies of *C. fumipennis* were located in 5 states. Eight different genera of Buprestidae were collected from a handful of colonies.

While no EAB were located, biosurveillance was very successful at detecting Buprestidae and will continue in 2009.

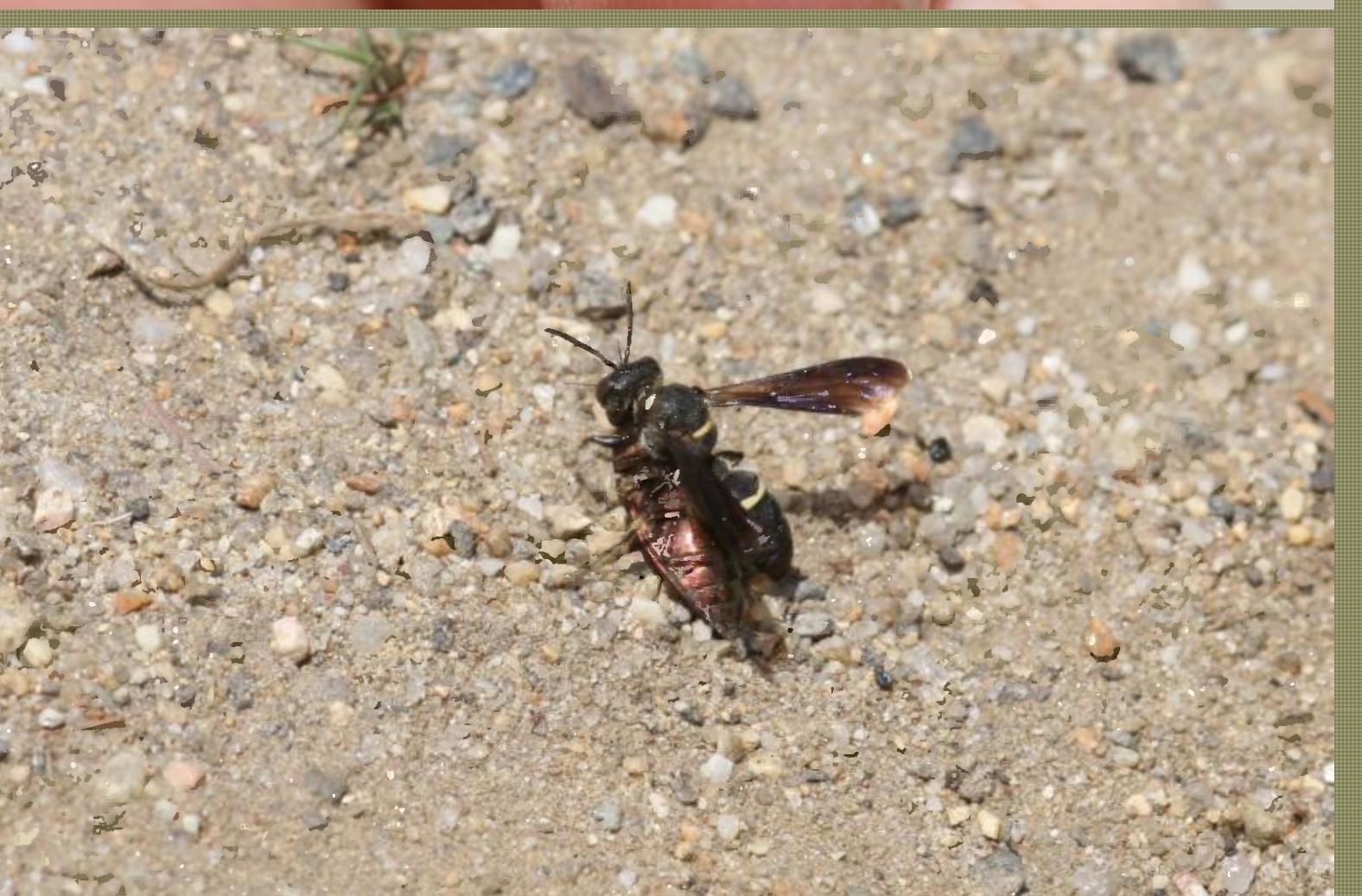


Fig. 1. *Cerceris fumipennis* with prey.

CONTACT

Michael Bohne
U.S. Forest Service
mbohne@fs.fed.us
(603) 868-7708

INTRODUCTION

Management of Emerald Ash Borer (EAB) depends largely on successful detection and monitoring. However, no efficient, reliable method of monitoring exists for EAB. Recent research suggests that a wasp, *Cerceris fumipennis* (Fig. 1), may be a powerful tool for 'biosurveillance' of EAB (Marshall *et al.* 2005). This solitary wasp lives in loose colonies of up to 500 nests and provisions its nest with buprestid beetles, including EAB when present.

Although EAB has not yet been found in New England or New York, it is spreading rapidly, primarily through human activity and will likely reach the region in the next few years.

To be most effective, a monitoring system should be in place before EAB spreads to New England and New York. *C. fumipennis* has the potential to detect low levels of EAB in the early stages of an infestation. Consequently, a cooperative effort to locate and describe potential *C. fumipennis* colonies in areas of high risk for EAB in New England and New York was initiated in the summer of 2008.

Goals and Objectives

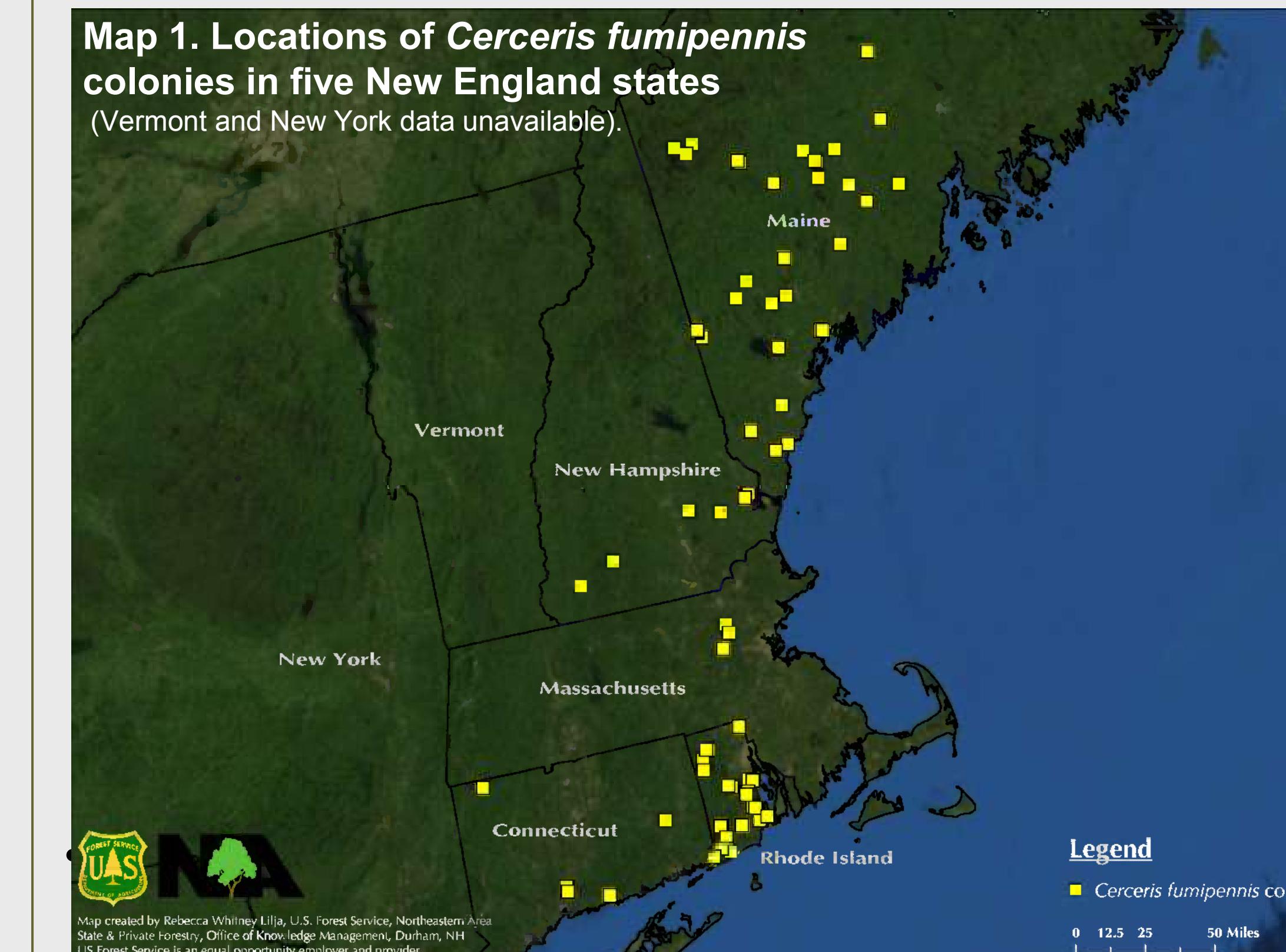
- Transfer biosurveillance methods to regional forest health specialists and surveyors.
- Locate *C. fumipennis* colonies in areas of high risk for emerald ash borer in New England and New York.
- Observe selected *C. fumipennis* nests and identify prey items.
- Monitor *C. fumipennis* colonies for the presence of EAB.

Fig. 2. Biosurveillance training at Foss Farm in Carlisle, MA.



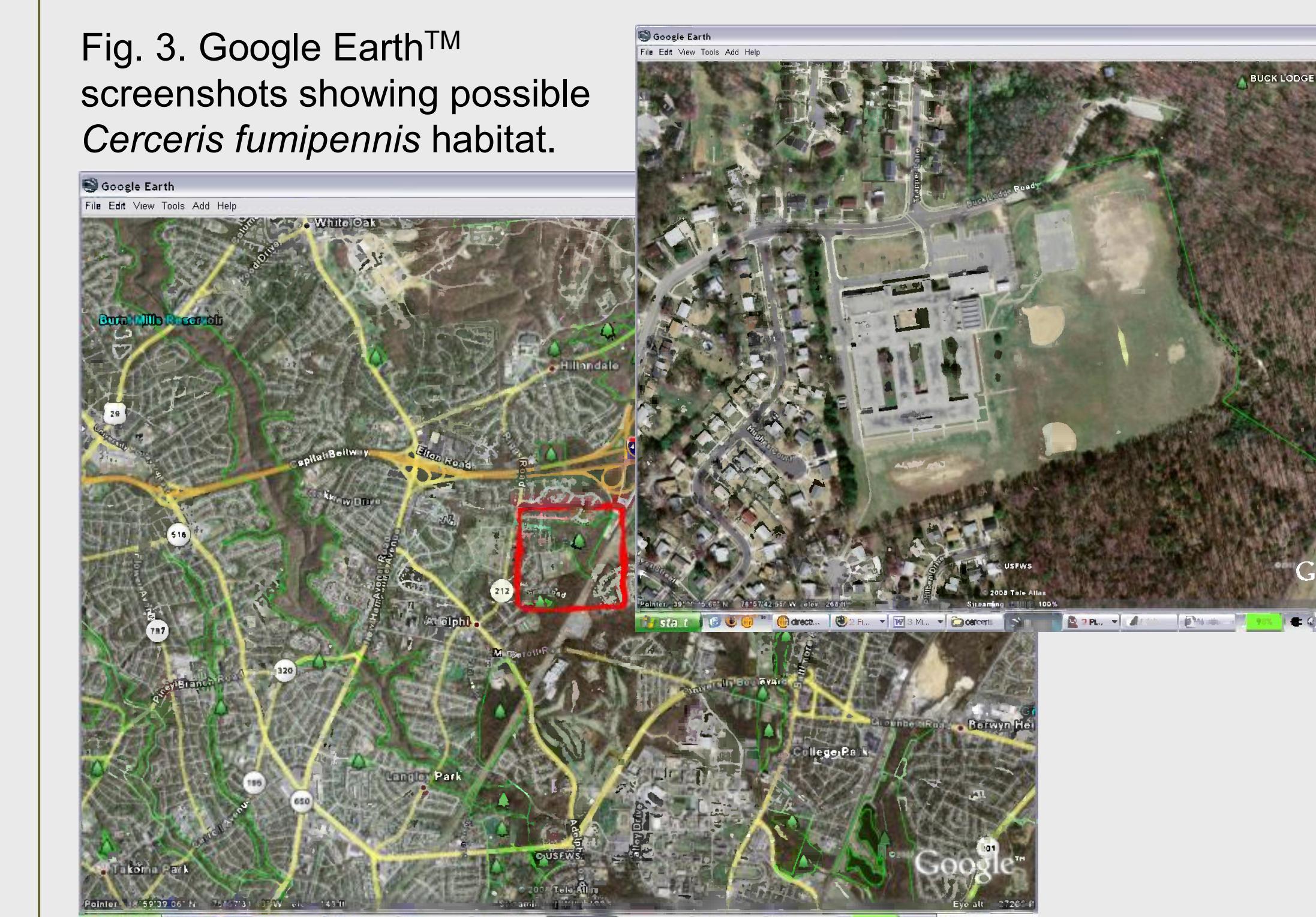
RESULTS

- Biosurveillance training was held in Lincoln, Massachusetts on July 30, 2008 (Fig. 2). Attendees included representatives from New York and New England, the US Forest Service and USDA APHIS.
- 90 active *C. fumipennis* colonies were detected in Maine, New Hampshire, Massachusetts, Rhode Island and Connecticut (Map 1).



- Google Earth™ was used to detect potential *C. fumipennis* locations; ball fields were the most successful (Fig. 3).
- Colonies ranged in size from 3 to >500 nests.
- 8 different genera of Buprestidae were observed: *Actenodes*, *Agrilus*, *Brachys*, *Chrysobothris*, *Cyriacis*, *Dicerca*, *Melanophila* and *Poelionota*. *Agrilus* and *Dicerca* were the most common prey.

Fig. 3. Google Earth™ screenshots showing possible *Cerceris fumipennis* habitat.



KEY FINDINGS

Observations

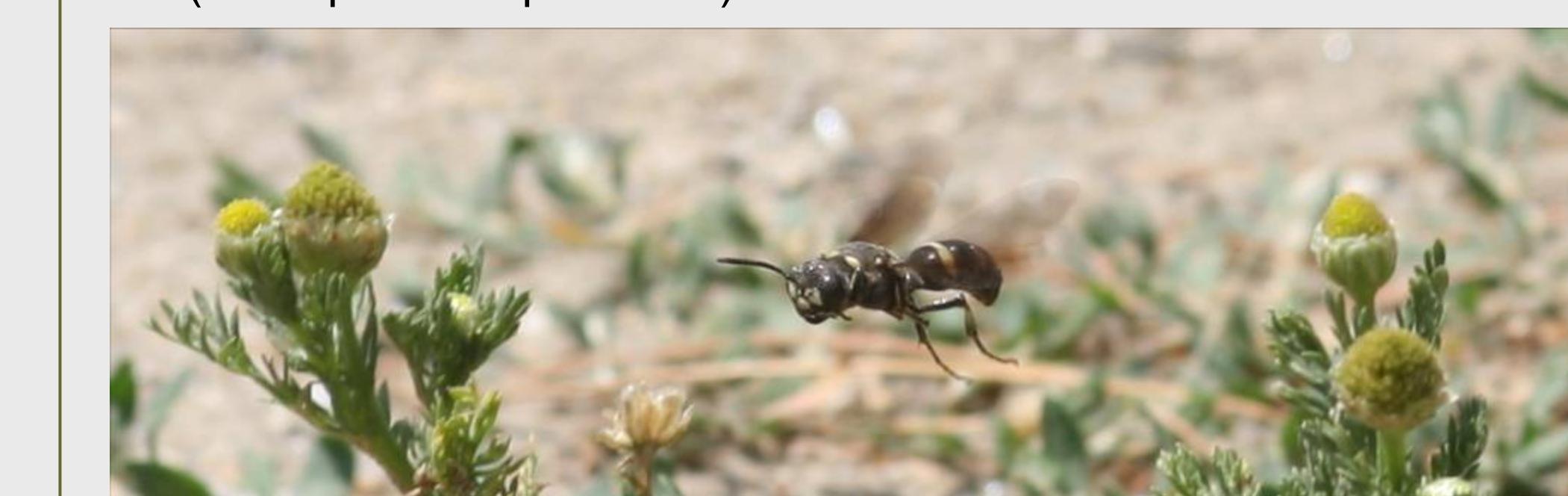
- C. fumipennis* colonies were more common in the Northeast than originally expected.
- Colonies started to decline by the third week of August. The last adult wasp was observed in Maine on September 5.
- Poorly maintained, ungroomed baseball diamonds seemed to be excellent habitat for *C. fumipennis*.

Future Work

- Continue survey for additional *C. fumipennis* colonies; incorporate survey results from New York and Vermont.
- Continue to monitor colonies suitable for biosurveillance for presence of EAB.
- The Maine Forest Service plans to develop an "adopt-a-colony" program, using volunteers to carry out biosurveillance.
- The Maine Forest Service will experiment with various methods of early season extension to further synchronize *Cerceris* with EAB.
- Begin working with the University of Guelph to transfer mobile colony technology.

Literature Cited

Marshall, SA, Paiero, SM and M. Buck. 2005. Buprestid sampling at nests of *Cerceris fumipennis* (Hymenoptera: Crabronidae) in southern Ontario: the first Canadian records of three buprestids (Coleoptera: Buprestidae). Can. Entomol. 137: 416–419.



ACKNOWLEDGEMENTS

We thank Richard Reardon, Vic Mastro and Noel Schneeberger for supporting this project; Steve Paiero for providing training and assistance with *Cerceris* study sites; the Town of Carlisle, MA and MA Department of Conservation and Recreation for providing training locations and assistance.