



Biosurveillance of Buprestidae in New York and New England

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ABSTRACT

The solitary 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 Buprestidae monitoring system using *C. fumipennis* colonies continued in New England and New York in 2009.

242 colonies of *C. fumipennis* were located in 7 states. Over 1,000 specimens of 55 species of 11 different genera of Buprestidae were collected from selected colonies.

While no EAB were located, biosurveillance was very successful at detecting Buprestidae. The biosurveillance effort will continue in 2010.

Fig. 1. *Cerceris fumipennis* with prey.



Fig. 2. *C. fumipennis* nests with discarded prey.

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INTRODUCTION

One of the most pressing concerns in New England is the early detection of the emerald ash borer (*Agrilus planipennis*). This insect has already killed millions of ash trees in the Midwest since its 2002 discovery in Detroit, MI.

The ground nesting wasp *Cerceris fumipennis* provisions nests with buprestid beetles (Fig.1). It was demonstrated that this wasp was a sensitive way to survey for the presence of buprestid species (Marshall et al 2005) and will collect EAB if they are present (Careless 2006). In 2008, state and federal forest health specialists began looking for wasp colonies for EAB biosurveillance (Bohne et al. 2009). The biosurveillance effort was expanded as an overall Buprestidae detection tool. State and federal cooperators set out to accomplish the following goals in the summer of 2009:

- Locate additional *C. fumipennis* colonies in areas of high risk for emerald ash borer in New England and New York.
- Monitor *C. fumipennis* colonies for the presence of EAB.
- Collect and identify captured or discarded Buprestidae prey items (i.e. beetles dropped at nest entrance).
- Investigate minimal disturbance collection technique by solely collecting discarded beetles (Fig. 2).
- Develop local citizen monitoring for biosurveillance colonies.

Map 1. Locations of *C. fumipennis* colonies in New York and New England.

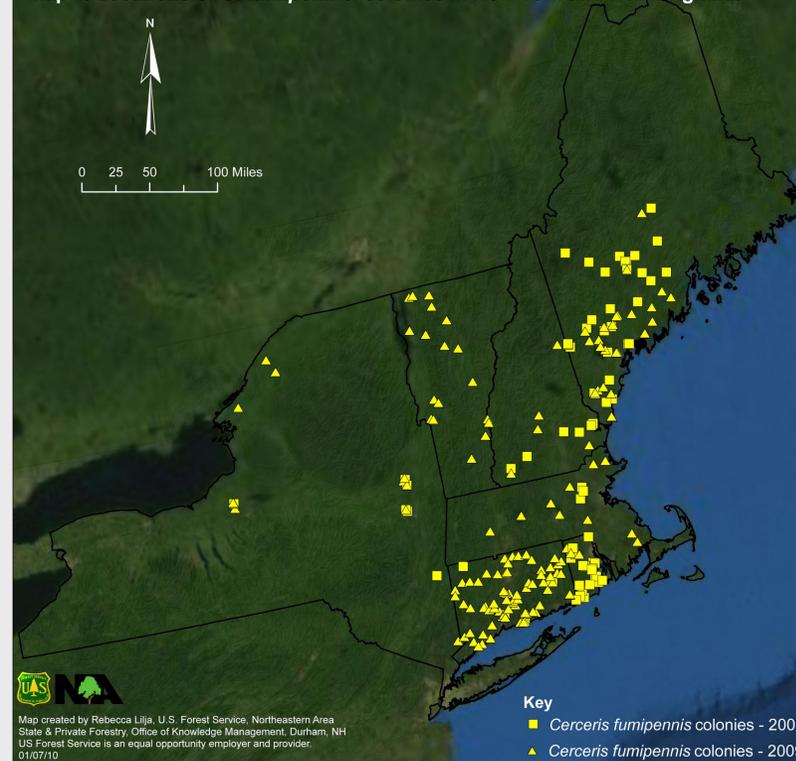


Fig. 3. Tentative list of Buprestidae collected through biosurveillance in New York and New England

<i>Actenodes</i>	<i>acornis</i>
	<i>simi*</i>
<i>Agrilus</i>	<i>anxious</i>
	<i>arbuti</i>
	<i>arcuatus</i>
	<i>aurichalceus</i>
	<i>bilineatus</i>
	<i>carpinus</i>
	<i>crataegi</i>
	<i>defectus</i>
	<i>difficilis</i>
	<i>ferrisi</i>
	<i>geminatus</i>
	<i>liragus</i>
	<i>masculinus</i>
	<i>obsoletoguttatus</i>
	<i>pensus</i>
	<i>pollitus</i>
	<i>quadrimpressus</i>
	<i>olivaceoniger</i>
	<i>sayi</i>
	<i>ruficollis</i>
<i>Anthaxia</i>	<i>spp</i>
<i>Brachys</i>	<i>aeruginosus</i>
	<i>ovatus</i>
<i>Buprestis</i>	<i>consularis</i>
	<i>maculipennis</i>
	<i>maculiventris</i>
	<i>nuttalli</i>
	<i>striata</i>
<i>Chrysobothris</i>	<i>azurea</i>
	<i>rotundicollis*</i>
	<i>caurina</i>
	<i>dentipes</i>
	<i>harrisi</i>
	<i>femorata</i>
	<i>neopusilla</i>
	<i>orono</i>
	<i>scabripennis</i>
	<i>semisculpta</i>
	<i>sexsignata*</i>
<i>Dicerca</i>	<i>caudata</i>
	<i>callosa</i>
	<i>divaricata</i>
	<i>lepida</i>
	<i>lurida</i>
	<i>punctulata</i>
	<i>tenebrica</i>
	<i>tenebrosa</i>
	<i>tuberculata</i>
<i>Eupristocerus</i>	<i>cognitans</i>
<i>Melanophila</i>	<i>dummondi</i>
	<i>fulvoguttata</i>
<i>Poecilonota</i>	<i>cyanipes*</i>
<i>Spectralia</i>	<i>gracilipes*</i>
	* indicates new state record

RESULTS & OBSERVATIONS

- No EAB was detected using biosurveillance in 2009.
- 242 *C. fumipennis* colonies were detected in 2008 and 2009 (Map 1).
- 55 species in 11 different genera of Buprestidae were collected (Fig. 3).
- At least five new state Buprestidae records were recorded from colony collections (Fig. 4).
- *Dicerca* was the most abundant genus collected overall, however many colonies exhibited high prey diversity.
 - a single colony yielded 26 species of 8 genera.
- Discarded beetle collections yielded 10 species of 5 genera from a single colony.
- Citizen monitoring programs were successfully developed in some states in 2009.
 - one volunteer collected 350 beetles from a colony in NY



Fig. 4. *Actenodes simi*, potential new state record for Connecticut. Photo: Claire Rutledge

Future Work

- Continue monitoring colonies for presence of EAB.
- Expand citizen monitoring biosurveillance efforts.
 - Tree Stewards, Girl Scouts, 4-H, etc
- Experiment with colony transplantation.
 - Transplant colony to the Randolph, NY EAB infestation
 - Maine to transplant 'nuisance' colony from private residence
- Experiment with supplemental feeding (adding buprestids) to increase colony success.

Literature Cited

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