

Ornamental Pest Management Requires a Team Approach

Statewide monitoring to improve management of Granulate Ambrosia Beetle

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Since this is my first article in *Nursery Notes* let me start by introducing myself. I am the new Assistant Professor and Extension Specialist in the Department of Entomology at North Carolina State University. I have the pleasure of conducting research and extension in the management of nursery, landscape, and greenhouse pests of ornamental plants. As a lifelong gardener and entomologist I am thrilled to have a job working with ornamental plants and their arthropod pests. However, pest management is but one component of successful nursery production and landscape management. In the months since I arrived I have received a warm welcome, advice, and support from faculty in the departments of horticulture and plant pathology and from other extension personnel. I have also had the pleasure of meeting many nursery growers who conveyed to me their pest concerns and innovative solutions. Campus faculty, extension personnel, growers, and landscapers are all part of a team with the goal of improving the economic outlook of the North Carolina green industry.

Management of arthropod pests in ornamental nurseries and landscapes is challenging because there are hundreds of plant species and varieties that are differentially susceptible to nearly as many pests. Moreover, many pests have unpredictable emergence patterns that make them difficult to manage without extensive monitoring and scouting regimens. Granulate Ambrosia Beetle, *Xylosandrus crassiusculus*, is one such pest.

Granulate Ambrosia Beetle

(fig. 1) was introduced to South Carolina from Asia in the early 1970's. Granulate Ambrosia Beetles emerge in early spring and attack trees such as styrax, ornamental cherry and other fruit trees, Japanese maple, golden rain tree, dogwood, and oak though it has been reported to attack over 100 tree species. Female beetles bore into trees, excavate a gallery, and lay eggs. In addition to boring damage, female beetles inoculate trees with ambrosia fungus on which they feed. Infested plants often die from boring damage, ambrosia fungus, or infection by a secondary pathogen.

Although native ambrosia beetle species can attack nursery and landscape trees, Granulate Ambrosia Beetle is unique in that it attacks seemingly healthy trees. As beetles bore into trees they push out sawdust and frass in the shape of toothpicks that stick out of the trees (fig. 2). Infested nursery stock should be left in place until after peak emergence because they may serve as "trap trees" to attract beetles away from other trees. Infested nursery stock should be burned or chipped to prevent new adults from emerging. Landscape trees may survive attacks but should be monitored for dieback and removed if necessary.

Preventative applications of pyrethroid insecticides can protect trees by preventing Granulate Ambrosia Beetles from excavating galleries. However, once beetles are inside trees they cannot be killed with insecticides. Thus, the timing of preventative insecticide applications is crucial to protect trees from damage by this pest. Applications that occur too early waste time and

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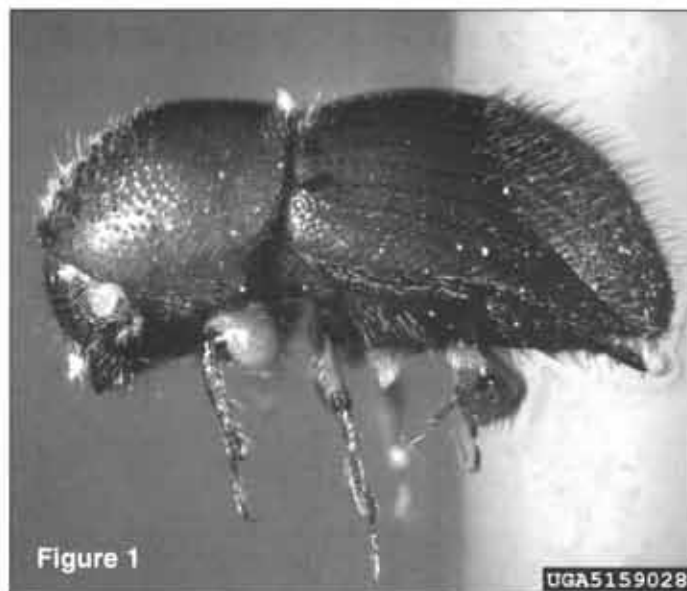
money. Applications made too late may fail to protect trees from damage.

Deciding when to start protecting trees is difficult because Granulate Ambrosia Beetle emergence time varies between years and geographic locations throughout the state. Likewise, Granulate Ambrosia Beetle biology is not understood well enough to predict emergence with degree day models or plant phenology. Therefore, active monitoring is the only way to determine when beetles emerge and preventative insecticide applications are required. This is where the team approach to pest management comes into play. It would be more efficient for a few folks in each region of the state to monitor and relay their information to others. Monitoring Granulate Ambrosia Beetle emergence is a task where information gathered by a few people could benefit the pest management programs of many others.

For this approach to work we need two things. First, we need to know if Granulate Ambrosia Beetles emerge at similar times in areas that are geographically and climatically similar. This requires data. Second we need a network of people that monitor Granulate Ambrosia Beetle and a system to quickly relay their findings to others. This requires volunteers.

In spring 2009 I will set up a pilot monitoring and alert program to determine when Granulate Ambrosia Beetle is active in different growing regions of the state and to inform growers when preventative treatments are appropriate. At least 15 monitoring locations will be established, three in each of the state's five USDA Plant Hardiness Zones. This will provide data to determine the geographic or climatic range for which Granulate Ambrosia Beetle emergence information is valid in order to refine the program in the future.

Monitoring will need to be conducted by extension personnel and volunteer nursery and landscape professionals. Nursery and landscape professionals will be notified by email when Granulate Ambrosia



Beetle is captured at each monitoring site. I have set up an email list-serve for this purpose.

What can you do to help? I am glad you asked. We clearly need volunteers to monitor traps on their property. Volunteers must be willing to check their traps twice per week for beetles. This will entail looking through the glass collection jar for beetles and should take a couple of minutes. When a beetle is captured volunteers must be willing to identify the beetle and call or email me. After trapping the first beetle, volunteers will simply change the trap collection jar each week for twelve weeks so that I have data about the initial and peak emergence from each site.

How will you benefit? I will meet with each volunteer to provide them with equipment (trap, lures, hand lens) and educational materials (fact sheets and pictures) necessary to carry out trapping and identification of Granulate Ambrosia Beetle. You will, of course, be first to know when Granulate Ambrosia Beetles are active on your property. Finally, you will be the hero of other growers and

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Figure 2



landscape professionals in your area who will be able to protect their trees with precision timing.

If I have convinced you to volunteer or you would like to discuss the project in more detail please contact me. If you would like to sign up for email alerts when Granulate Ambrosia Beetle emerges, send me an email at steven_frank@ncsu.edu with "alert signup" in the subject line and I will add you to the list. I promise you will not be bombarded with email. You will only receive email when Granulate Ambrosia Beetle emerges in a different part of the state.

Successful implementation of this pilot project will provide industry professionals (who sign up!) information to help prevent wasteful insecticide applications and damage by Granulate Ambrosia Beetle. In addition, if successful, this project can be used as a model for similar projects in the future.

Thank you in advance for your interest and participation.

Steve Frank can be reached by email at steven_frank@ncsu.edu or by phone at 919-515-8880. Insect Notes on ornamental pests can be found at <http://insects.ncsu.edu>.



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