USDA
United States Department of Agriculture

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

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Questions and Answers: USDA's Emerald Ash Borer Biocontrol Program

Q. What is biocontrol?
A. Biological control (biocontrol) is the reduction of pest populations through the use of natural enemies such as parasitoids (stingless wasps), predators, pathogens, antagonists (to control plant diseases), or competitors. It is a practical option to suppress pest populations and an environmentally sound method of pest control.

Q. What is biological control in relation to USDA's Emerald Ash Borer (EAB) Program?
A. Two U.S. Department of Agriculture (USDA) agencies—the Animal and Plant Health Inspection Service (APHIS) and the Forest Service—initiated a biological control effort shortly after the EAB beetle was detected in Michigan in 2002. USDA research in the beetle's native range of China identified three potential biological control agents (stingless wasps) for EAB—*Spathius agrili*, *Tetrastichus planipennisi*, and *Oobius agrili*.

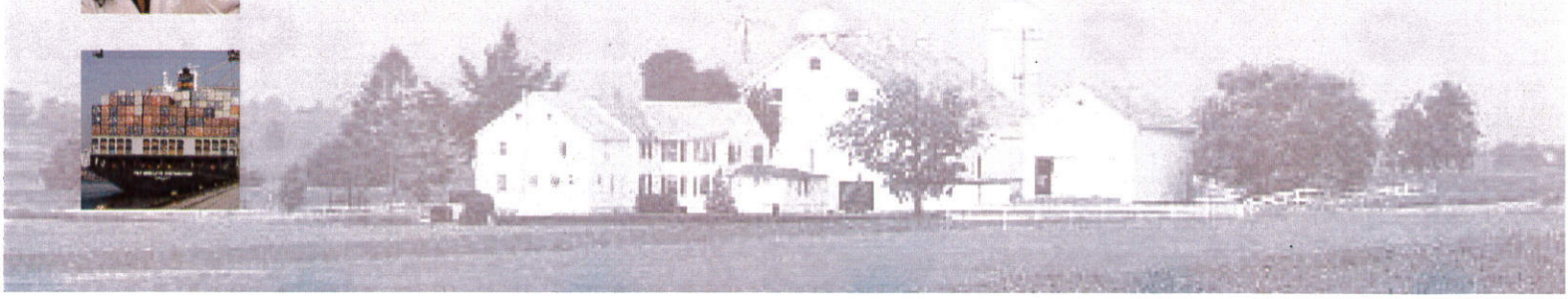
Following host range testing, USDA prepared an environmental assessment that outlined the risks and benefits of releasing the stingless wasps. The wasps specifically hunted EAB to an acceptable degree and were not expected to attack insect species other than EAB, except for incidental attacks on other wood-boring (*Agrilus*) species. USDA then prepared a "finding of no significant impact," a decision document explaining the reasons for this conclusion. With this finding and with approval from the State of Michigan, USDA released the wasps in July 2007. Limited releases also took place in 2008.

Q. What do you mean by stingless wasps?
A. The EAB biocontrol agents are very tiny wasps—the largest one is about the size of a typical mosquito. Female wasps use an organ that looks like a stinger (called an ovipositor) to lay their eggs. Despite their appearance, the wasps cannot sting, so they are referred to as stingless.

To see photos of the stingless wasps and other EAB-related images, please visit our Web site at www.aphis.usda.gov/wps/portal/aphis/ourfocus/planthealth. Click on "Pests and Diseases," then "Pest and Disease Programs," then "Emerald Ash Borer," and "Image Gallery."

Q. How many species of wasps have been released?
A. APHIS has reared three stingless wasp species and released them in EAB-infested areas of the United States. Two of the wasps attack EAB larvae, and one targets EAB eggs.

- ***Spathius agrili*** has a long, egg-laying organ (ovipositor) that enables it to attack larvae in ash trees of various sizes. *Spathius* targets EAB larvae by drilling through the bark and laying up to 20 eggs on its host. The hatching wasp larvae feed and develop on the EAB larva, resulting in the EAB larva's death.
- ***Tetrastichus planipennisi*** also attacks EAB larvae. The life cycle of *Tetrastichus* is similar to that of *Spathius*; however, the female lays eggs inside EAB larvae where the wasp larvae grow, eventually killing their host. Because of its shorter ovipositor, *Tetrastichus* targets larvae in ash trees with a diameter of 5 inches or less.
- ***Oobius agrili*** is the smallest of the wasps and targets EAB eggs. When *Oobius* locates an EAB egg in the bark crevices, the wasp injects its own egg inside the host egg, where it will hatch, grow, and kill the EAB larva before the EAB larva can emerge from the egg.



Q. Will the wasps bother people or pets?
A. No. The wasps target the EAB eggs and larvae and are not attracted to people or pets.

Q. Is it safe to release these non-native insects?
A. Yes. Before USDA released the stingless wasps, testing in China and the United States revealed that the wasps prefer EAB over other insect species. Also, in USDA's environmental assessment, no critical issues were raised during the 60-day public comment period, which supported our finding of no significant impact. To read these documents and public comments go to www.regulations.gov/#!docketDetail;D=APHIS-2007-0060.

Q. Who determines whether to release stingless wasps?
A. USDA and State officials, along with national EAB Program management, collectively determine release sites for EAB biocontrol. State cooperators secure permits and agree to follow standardized release and monitoring protocols. Cooperators also agree to monitor release sites for parasitoid establishment following the protocol in the "EAB Biological Control Release and Recovery Guidelines."

Q. When and where were the wasps released in the United States?
A. Stingless wasps were first released in 2007 in Michigan. Since that time, one or more species of the wasps have been released in 17 States: Connecticut, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin.

Q. How effective are the wasps at reducing EAB populations?
A. Although it is premature to talk about the wasps' effect on EAB populations, a recently published study reported that stingless wasp populations in Michigan are increasing and spreading into adjacent areas. In addition, cooperators in 10 States (Indiana, Illinois, Maryland, Michigan, Minnesota, New York, Ohio, Pennsylvania, Tennessee, and Wisconsin) have successfully recovered the offspring from one or more wasp species. We anticipate more evidence of progress as release sites are continually monitored.

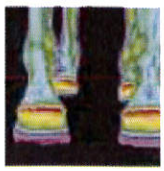
Q. Will biological control eventually eradicate EAB?
A. Stingless wasps will not eradicate EAB. However, they can be used in an integrated pest management plan to help control the pest and benefit our urban, suburban, and rural landscapes. Continued scientific advances in the fields of forest health, pest management, and entomology offer promise that more effective treatments and tools will eventually be available to fight EAB.

Q. Who is involved in the EAB biocontrol program?
A. APHIS works with USDA's Agricultural Research Service, Forest Service, and various State partners to maximize the efficiency and effectiveness of EAB biocontrol.

Q. Can the public purchase the stingless wasps used in EAB biocontrol?
A. No. The stingless wasps are difficult to produce, which limits their availability. The goal of the EAB biocontrol program is to provide stingless wasps to States that have EAB infestations.

Q. Is it true that there are native insects in the United States that attack EAB?
A. Yes. Some natural enemies (parasitoids and predators) of the EAB have been detected in the United States. A native stingless wasp, *Atanycolus*, was found attacking EAB larvae at a number of sites in Michigan. Also, the predator wasp *Cerceris fumipennis* is used as a detection tool in some States. Unfortunately, these native enemies do not appear to provide a significant level of pest control for EAB populations.

Q. Where can I find more information on EAB and the biocontrol program?
A. To learn more, go to our Web site at www.aphis.usda.gov/wps/portal/aphis/ourfocus/planthealth. Click on "Pests and Diseases," then "Pest and Disease Programs," and "Emerald Ash Borer."



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