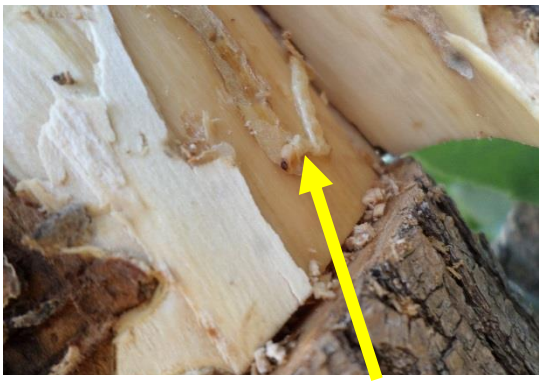
The release of non-stinging wasps to help manage emerald ash borer in Sioux Falls

August 2018

Emerald ash borer (*Agrilus planipennis*) is an Asian beetle that infests and kills ash trees. Since its accidental introduction into Michigan sometime during the mid-1990s, it has spread to 31 states and 3 Canadian provinces. North American ash species, black ash (*Fraxinus nigra*), green ash (*F. pennsylvanica*) and white ash (*F. americana*) have no natural tolerance or resistance to this insect. Once emerald ash borer is found in a community, all ash that are not protected by insecticide treatments will be killed within five to ten years.

Emerald ash borer adult on the bark.



Emerald ash borer larva beneath the bark.

Emerald ash borer was confirmed in Sioux Falls in May 2018. The infestation is concentrated in the northern part of the city and is estimated to be about two to four years old. The insect density is low to moderate at this time but is expected to expand within the next few years. The infestation will spread throughout the city within the next several years and in 10 years or so there will be no ash remaining except those that have been injected every two-years with an insecticide to kill these insects.

While the loss of ash in Sioux Falls is inevitable, the time in which this loss occurs can be managed. If no management is conducted within the community almost all the ash, approximately 85,000 trees, will be killed within 8 to 10 years. If infested trees that are not being treated are promptly identified and removed and the movement of infested ash trees restricted during the summer flight period, the loss can be extended over 15 years or more which reduces the strain of removal costs on the city and tree owners.

An infested ash tree.

Another tactic to slow tree mortality is the introduction of natural enemies, insects that feed on emerald ash borer. While the introduction of these insects will not eliminate the threat, nor are

they a replacement for removal or treatment of infested trees, they can help to slow the spread.

These insects, known as parasitoid wasps, are from Asia where they feed on emerald ash borer in the native forests. These insects have been brought to the United States and are reared at a special USDA facility in Michigan. They are provided, through the Animal and Plant Health Inspection Service (APHIS) to state cooperators at no charge.

These parasitoid wasps are also known as non-stinging wasps and pose no threat to humans, other animals, and even insects other than the emerald ash borer. These wasps are so tiny, about 1/8-inch, that they are difficult to see and will not be noticed by most people. These insects will be released on infested ash trees in the northern part of Sioux Falls during August and early September 2018.

Oobius agrili adults being released.

One of these insects, *Oobius agrili*, inserts an egg into an emerald ash borer egg. The wasp develops in the egg and then emerges as an adult. Each *O. agrili* can parasitize up to about 60 emerald ash borer eggs. Since an emerald ash borer adult typically lays about 80 eggs, this wasp can provide significant control and help slow the spread of an infestation.

There are also two other parasitoids, *Tetrastichus planipennisi* and *Spathius galinae*, that attack emerald ash borer larvae. These wasps can find the larvae as it feeds beneath the bark. Once they locate a larva they thread their ovipositor down into the emerald ash borer and deposit their eggs inside this host insect. After the eggs hatch, the wasp larvae devour their host then emerge as adults.

A log attached to a tree containing Tetrastichus planipennisi adults.

These insects will be released on trees infested by emerald ash borer, but are not being treated with insecticides, during early August. Some of these wasps will be released by attaching small logs containing the insects onto trees, others through cups attached to the tree. The egg wasp will be release by shaking them out of small cup. The releases will be monitored, and data collected on their effectiveness at slowing the spread of emerald ash borer.

This institution is an equal opportunity provider.

Anyone having questions regarding these releases can contact USDA-APHIS PPQ in Pierre at 605-224-1713 for more information.

The parasitoids were produced and supplied from, the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) EB Parasitoid Rearing Facility in Brighton, MI. For parasitoid information please call 866-322-4512.