

Montana Urban and Community Forestry Association (MUCFA)
Montana Emerald Ash Borer (EAB)
Sampling Protocol and Documentation Form

History of Emerald Ash Borer *Agilus planipennis* 'Fairmaire' (EAB) Problem: EAB has been causing extensive damage to forest and community ash trees in eastern Canada and the Midwest US, creating a tremendous loss in forest cover, shade, aesthetics, and property values. This aggressive beetle was introduced from Asia, likely in shipping material and was first identified in the US in Michigan in 2002. The insect may have been in the state for 6 years before detection. Adults feed on tree foliage but the real damage occurs when the young beetle larva, bore into the tree and feed on the inner bark. More than 30 million trees have been killed in Michigan alone.

Green ash, *Fraxinus pennsylvanica*, is a vital component of many eastern Montana hardwood draws and has been extensively planted in Montana communities. Green ash is equally susceptible to this destructive pest. We **have not yet encountered EAB in Montana** but are concerned that this pest could be introduced into the state, possibly via infested firewood, nursery stock, wood packing materials, or other human-assisted movement. The EAB problem is summarized in the EAB Pest Alert (http://na.fs.fed.us/spfo/pubs/pest_al/eab/eab.pdf). Since the Pest Alert was published EAB has spread to other states. Minnesota, Kentucky, and New York detections were in 2009; Iowa and Tennessee detections were in 2010; and Connecticut, Kansas, Missouri, and Massachusetts detections were in 2012. In 2013, EAB was detected in Colorado. For a March 2015 map of EAB distribution in the US go to: http://www.emeraldashborer.info/files/MultiState_EABpos.pdf

Need for Sampling Protocol: As mentioned in the EAB Pest Alert cited above, evidence suggests that EAB is generally established in an area for several years before it is detected. Current programs for early detection in Montana have been limited to insect traps. The Montana Department of Natural Resources and Conservation (DNRC), in conjunction with the Department of Agriculture and the US Department of Agriculture Animal and Plant Health Inspection Service (APHIS), deployed purple traps coated with a sticky material, and baited with manuka oil throughout the state in an effort to catch any insects as soon as they arrive. There are many common native insects in Montana that feed on ash or look like EAB so suspected beetles caught in traps are sent to an expert entomologist for identification. Newer green sticky traps and funnel traps are also being used.

This EAB Sampling Protocol recommends a research documented method that tree workers can use to sample asymptomatic as well as symptomatic green ash trees to verify the continued absence of EAB and increase the potential for early detection in Montana. The protocol includes a sampling form to be used to document the sampling method used and location of the trees sampled. Ian Foley, Montana Department of Agriculture entomologist (ifoley@mt.gov) will maintain the database of Montana trees sampled using the protocol to track tree location, number of trees sampled, and need for sampling in other areas of Montana. Montana sampling information will be forwarded to the USDA Integrated Plant Health Information System (IPHIS) database.

Insect Identification: EAB identification is summarized in the EAB Pest Alert (http://na.fs.fed.us/spfo/pubs/pest_al/eab/eab.pdf). EAB looks similar to other insects including birch bronze borer (Foley, I. A. 2008. The *Agilus* species of Montana (Coleoptera: Buprestidae). Montana Department of Agriculture outreach poster, Helena, Montana).

Life Cycle: The EAB life cycle is summarized in the EAB Pest Alert: (http://na.fs.fed.us/spfo/pubs/pest_al/eab/eab.pdf). For more info about EAB go to: <http://www.emeraldashborer.info/#sthash.yiXa7o4O.dpbs>.

Research Summary: Canadian Forest Service (CFS) researchers sampled 97 asymptomatic ash trees and 50 percent of the trees were already hosting EAB (K. L. Ryall, J. Fidgeon, J. Turgeon. Canadian Forest Service-Great Lakes Forestry Centre. www.nrcan.gc.ca/cfs-scf). The research developed a branch sampling method that can detect EAB presence at low populations with an 80 percent probability of detection. CFS stressed the need for an effective and efficient sampling tool for **early detection**. The sampling method can be used as an early warning system. The sampling can be combined with GIS mapping to show the current EAB "footprint". The researchers stressed there is no need to wait for the late-stage (D holes) indicators in a tree to confirm an infestation.

Recommended Sampling Method: Sample open grown, semi-mature green ash trees

- 20 -50 centimeters (cm) (8 -20 inches (in)) DBH
- **Two** branches per tree minimum; 5-8 cm (2-3.25 in) diameter
- Mid-crown, south aspect
- **One** 50-cm (20 in) sample per branch
- **Tag** branches with tree i.d. information so tree can be relocated if results are positive.

Place branch in a vice; then using a drawknife (such as a "Nalco 13" straight blade bark knife" or Victorinox Model V-9300 pruning knife) remove bark on the branch exposing the xylem tissue. Examine for galleries (See photo of EAB gallery below). Samples should include trees that are EAB asymptomatic and those that are potentially EAB symptomatic (i.e., basal sprouting/upper canopy dieback/etc.)

Reporting Method: (link to EAB Reporting Form) (See draft form on next page). Report results of sampling to Montana EAB Protocol Database c/o: Ian Foley, Montana Department of Agriculture: (ifoley@mt.gov).

Treatments: Potential treatments can be found at: http://www.emeraldashborer.info/files/multistate_eab_insecticide_fact_sheet.pdf.

Ramifications Once EAB Reaches MT: An inventory of 10 Montana community tree inventories in 2010 found that green ash made up 34 percent of the total trees (Fred Bicha, Billings Parks City Forester, 2013. *Personal communication to Patrick Plantenberg. MUCFA Chair, March 11*). APHIS and DNRC have a survey detection/delimitation response plan. APHIS does not have a management plan and is not likely to have funding for management. Those significant costs, likely in the tens of millions of dollars, will probably be borne by local communities with EAB.



Characteristic EAB gallery in Green Ash

This EAB sampling protocol and sampling form can be found at:
<http://dnrc.mt.gov/divisions/forestry/docs/assistance/urban/eabmtprotocol.pdf>

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**Montana Urban and Community Forestry Association (MUCFA)
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Sampling Documentation Form
(Use one form per tree)**

Date	
County	
City	
Address	
Description of site (front yard, back yard, boulevard, hardwood draw, city park, etc.)	
Property Ownership (Private, City, State, Federal, etc.)	
GPS coordinates (Lat/Long)	
Size of tree sampled (DBH in cm and inches)	
Height sample was taken (mid-crown, etc.)	
Aspect sample was taken (south, etc.)	
Number of branches sampled	
Length of branch sampled in cm and inches)	
Results (positive or negative presence of EAB galleries)	
Destructive sampling (Was tree removed or just branch removed?)	
Number of Specimens (insects)	
Name of sampler(s)	
Sampler contact information: (phone number, email address, affiliation)	
Notes:	
If Sampling is positive, or you are unsure if you have a positive identification:	Please contact: Ian Foley, Montana Department of Agriculture: (ifoley@mt.gov) or call 1-406-444-9454.