

# Emerald Ash Borer Management Plan

## Nelson Dewey State Park

January 2015

### Background

The Emerald Ash Borer (EAB, *Agrilus planipennis* Fairmaire) is a beetle that is native to China, Mongolia, North Korea, South Korea, Japan, Taiwan and the Russian Far East. Emerald Ash Borer probably arrived in the United States on solid wood packaging material carried in cargo ships or airplanes originating in its native Asia. It was first identified in the Detroit, Michigan area in 2002, and, to date, EAB has been confirmed in 24 states and two Canadian provinces.

As of October, 2014, there are 37 counties in Wisconsin quarantined for EAB, including Grant County. Residents and businesses in quarantined counties are restricted from moving any hardwood firewood, ash nursery stock or ash logs, or timber out of the quarantined area without a government-issued Compliance Agreement.

In North America, EAB has only been found in ash (*Fraxinus* spp.) trees and recently in white fringe trees (*Chionanthus virginicus*). Ash trees generally die within five years of being infested. There appears to be very little natural resistance of North American ash species to EAB.

The canopy of infested trees begins to thin above infested portions of the trunk and major branches because the borer larvae destroy the water and nutrient conducting tissue under the bark. Heavily infested trees exhibit canopy die back usually starting at the top of the tree. One-third to one-half of the branches may die in one year. Most of the canopy will be dead within 2-3 years of when symptoms are first observed. Sometimes ash trees push out sprouts from the trunk after the upper portions of the trees die. Although difficult to see, the adult beetles leave a “D”-shaped exit hole in the bark, roughly 1/8 inch in diameter, when they emerge.

Adult beetles nibble on ash leaves but cause little damage by this minor feeding.

The EAB beetle can have a one or two-year life cycle. Adults begin to emerge early in June in southeastern Wisconsin with peak emergence in late June. Females usually begin to lay eggs about 2 weeks after emergence. Eggs hatch in 1-2 weeks, and the tiny larvae bore through the bark and into the cambium which is the area between the bark and wood where nutrient levels are high. The larvae typically pass through four instars (stages), eventually reaching a size of roughly 1 to 1.25 inches long. Most EAB larvae overwinter in a small chamber in the outer bark or in the outer inch of wood. Pupation occurs in spring and the new generation of adults will emerge in early June to begin the cycle again.

EAB adults are capable of flying several miles from the tree where they emerge, although most beetles are likely to travel less than ¼ mile if host material is present. Many infestations, however, were started when people moved infested ash nursery trees, logs, or firewood into non-infested areas.

## **Key Concerns for Nelson Dewey State Park**

The main concerns regarding EAB and ash mortality at Nelson Dewey State Park are public safety, resource protection, and aesthetics. Nelson Dewey State Park offers many recreational opportunities including a family campground, outdoor group campground, 3 picnic areas, hiking trails, and hunting and trapping. Ash trees are present in some of the designated use areas.

Stressed trees are more attractive to EAB females for depositing eggs. Trees in heavily used areas such as campgrounds and picnic areas are typically under greater stress than forest trees due to soil compaction and bark and limb injuries. The values of older trees, such as shade trees, are difficult to replace when they die. Tree mortality resulting from EAB in the park may be aesthetically unappealing and potentially a hazard to park visitors. Ash that are killed by EAB tend to dry out rapidly and become brittle, causing them to break up easily. Areas of heavy use by the public will be the first sites assessed for hazard tree identification and removal and new tree planting.

## **Current Situation**

Emerald Ash Borer was discovered at Nelson Dewey State Park and Stonefield Historic Village, in the township of Cassville, in Grant County in July 2014. The discovery of EAB at these two locations caused Grant County to be added to the list of counties in Wisconsin that are included in the EAB quarantined area.

In addition to EAB, ash trees are affected by a number of insect pests and diseases. Some of the ash trees in the park are infected by “ash yellows” which is a disease that causes slow growth, branch die-back, and eventually mortality of ash. It is caused by a special type of bacteria, a bacterium without cell walls, called a phytoplasma. There is no known way to prevent or cure ash yellows. Ash yellows is a chronic, systemic disease that affects ash trees of all ages. Leafhoppers are thought to be the primary means by which this pathogen is moved from tree to tree.

Some of the ash trees in the park are affected by a native insect called red-headed ash borer (*Neoclytus acuminatus*). Red-headed ash borer larvae feed on the sapwood of dead and dying ash trees and other hardwood trees.

Park use areas have been and continue to be evaluated to identify existing and potentially hazardous ash trees.

## **High Priority Areas**

1. Campgrounds: a. Family and b. Outdoor Group
2. Picnic Areas: a. Mound Point, b. Dewey Heights, and c. Cedar Trail
3. Hiking Trails

## **Low-priority Areas**

Low priority areas are those where there is no ash, no compelling ecological need to remove ash, or no public hazards posed by dead or dying ash trees.

## Wildlife Concerns

Ash species, especially white ash, can be important sources of habitat and browse for wildlife. The samaras (fruit) are good forage for many birds and small mammals. White ash's ability to readily form trunk cavities if the top is broken and its large size (24-48 inches in diameter) at maturity make it highly valuable for primary cavity nesters such as woodpeckers. Once the primary nest excavators have opened up the trunk of the tree, it is excellent habitat for secondary nesters such as wood ducks, owls, nuthatches, and gray squirrels. Dead standing ash trees that are not hazards should be left for wildlife habitat.

## Endangered Resources and State Natural Area Concerns

There are many rare species known to occur at Nelson Dewey State Park which are either endangered, threatened or of special concern.

<b>Taxon group</b>	<i>Total species</i>	<i>Endangered</i>	<i>Threatened</i>	<i>Special Concern</i>
<b>Bird</b>	3	1	1	1
<b>Butterfly/Moth</b>	9	1	0	8
<b>Herptile</b>	3	0	0	3
<b>Other Insect</b>	4	1	1	2
<b>Plant</b>	11	0	1	10
<b>Snail</b>	2	0	1	1

Park staff will consult the NHC district ecologist to avoid negative impacts to rare species; avoidance may be accomplished by timing and/or by determining the lack of suitable habitat for one or more of the rare species.

There is one State Natural Area within the park (Dewey Heights Prairie). The SNA program will be consulted for management of EAB within Dewey Heights Prairie.

Nelson Dewey State Park is located along the Mississippi River. The river that borders the park is home to 28 rare aquatic species including birds, butterflies, fish, mussels, plants, mammals, and dragonflies; of these 28 species, 6 are listed as endangered, 10 as threatened, and 11 are of special concern.

There are good quality examples of 4 different natural community types in the park: dry cliff, dry prairie, southern dry-mesic forest, and stream—slow, hard, cold.

## Archaeological Feature Concerns

Archaeological and historical sites are known to occur in the park. All state and federal statutes will be followed regarding any EAB management at these sites. The department archaeologist will be consulted as needed.

## Management of EAB

### *Monitoring*

Park staff will monitor for EAB symptoms in trees in the designated use areas, especially in the campgrounds and picnic areas.

### ***Ash Tree Removal***

Potential hazard trees have been identified within the park's priority areas. Some of these trees were felled in the fall of 2014. Priority areas will continue to be monitored for signs of EAB and ash yellows. Additional hazard trees will be removed as they are identified in priority areas. Stumps in mowed areas will be ground so that they do not create a safety hazard. In the event that EAB is found in the park all infested trees in priority areas will be removed and stockpiled for two years, at which time they may be cut up for firewood for use in the park.

In low-priority areas dead ash trees will be left standing for wildlife as long as the trees are not safety hazards.

Ash trees along trails will be managed using hazard tree standards.

### ***Cultural Management***

In areas where natural regeneration is not sufficient, tree planting will be needed to replace hazard trees that are removed from priority areas. Replacement trees will be a diverse mix of native, ecologically appropriate species, with a balance of fast-growing and slow-growing species. Fast-growing tree species will more quickly replace shade trees while allowing slower growing species to become established and reach maturity. Proper maintenance after the trees have been planted, such as watering as needed and reducing competition from other vegetation, may be needed to increase survival of saplings.

### ***Biological Controls***

Several small, non-native parasitic wasp species have been identified and authorized for release by the U.S. Department of Agriculture as biological control agents. These stingless wasp species are highly specific to EAB and harmless to humans. Although the wasps will not eliminate the population of EAB, they can help extend the life of trees, giving the park more years to spread out removals of dead/dying trees. There are no large stands of ash trees at Nelson Dewey State Park so it is probably not a suitable release site for the wasps.

### ***Pesticides***

Insecticides can be used to protect any high value trees (for example, a large shade tree in a high priority area). Depending on the chemical used, pesticide treatments would need to be applied at one or two year intervals. Trees in the priority areas will be evaluated for potential pesticide treatment.

Stumps of ash trees that are felled should be treated with herbicides to prevent stumps from re-sprouting.

### ***Public Education and Communication***

EAB posters and other information will be posted in the kiosks in the use areas. Flyers and EAB information will be handed out at the park office. A public outreach campaign about EAB management within Nelson Dewey State Park should be developed and implemented with the Office of Communication. When possible, on-site interpretive programs would be encouraged with area schools.

### ***Funding***

Educational literature is available through the DNR at no charge. The park will be able to purchase materials for physical controls and labor with Sustainable Forestry Funding Grant money. Hazard trees will be felled by park staff and a Department of Corrections crew. Tree planting will be done by a Department of Corrections crew, park staff, and local volunteers such as: school groups, boy scouts, and “Friends” members.

EAB will initially be funded with money from a Sustainable Forestry Funding Grant. In successive years alternative funding sources will have to be identified and pursued in order to provide continuous funding for EAB management.

**Plan developed by (Date):** Lisa M. Pitzer, January 2015

**Plan Reviewed by:**

Park Superintendent (Date): Chadwick Breuer, February 19, 2015

Regional Forest Health Specialist (Date): Mark Guthmiller, February 6, 2015

State Parks Ecologist (Date): Craig Anderson, February 16, 2015

Parks District Manager (Date): Paul Zajackowski, February 5, 2015

**Revisions:**

Revised by (Date):

Revision Comments:

Attachment: map of high priority areas

Nelson Dewey State Park EAB high priority areas. Note that the trail network (priority area 3) is not shown.

