

Name: _____ Class: _____

Emerald Ash Borer

By Department of Energy and Environmental Protection
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The emerald ash borer is a beetle that is native to northeastern Asia but has now been found in North America. In this informational text, the author discusses the beetle's life cycle and diet. As you read, take notes on what the beetle eats and how it's impacting plant life.

[1] The emerald ash borer is a small, green beetle that belongs to a large family of beetles known as the buprestids, or metallic wood-boring beetles. The description is apt,¹ as many of the adult buprestids are indeed glossy, appearing as if their wing covers are made of polished metal. The emerald ash borer, with its green iridescent² wing covers, fits right in. Adult EABs are between 0.3 to 0.55 inches in length — small by most standards but large compared to other buprestids — and relatively slender.



"Emerald Ash Borer adult" by cham0138 is licensed under CC BY 2.0

During its life cycle, EAB undergoes a complete metamorphosis. It starts as an egg, becomes a larva (alternatively called a grub), and then changes to become a pupa³ and then an adult. The life cycle of an EAB takes either 1 or 2 years to complete. Adults begin emerging from within ash trees around the middle of June, with emergence continuing for about 5 weeks. The female starts laying her eggs on the bark of ash trees about 2 weeks after emergence. After 7 to 10 days, the eggs hatch and the larvae move into the bark, to begin feeding on the phloem (inner bark) and cambium of the tree. Throughout each of its successive instars (larval growth stages), the larva continues to feed within this same part of the tree. The larval stage may last for nearly two years. Before becoming an adult, the insect overwinters⁴ as a pre-pupal larva. It then pupates⁵ in the spring and emerges as an adult during the summer.

EAB feeds strictly on ash trees. The larvae feed on the phloem⁶ and cambium,⁷ while the adults feed on leaves. In Connecticut, there are three species of ash trees — the white ash (*Fraxinus americana*), the green or red ash (*F. pennsylvanica*) and the black ash (*F. nigra*). Despite its common name, mountain ash (*Sorbus spp.*) is not a true ash and does not attract the EAB.

Two other buprestids are well-known to those in Connecticut who are concerned about trees. The bronze birch borer is a pest of ornamental⁸ birch trees. The two-lined chestnut borer often attacks stressed oak trees, including oaks in the forest.

1. appropriate
2. showing bright colors that appear to change from different angles
3. an insect in an inactive form between larva and adult
4. to spend the winter
5. a stage in the development of the beetle
6. the plant tissue that sends important nutrients to other parts of the plant
7. the plant tissue just beneath the bark of a tree

Why is EAB a Problem?

- [5] EAB is an insect that is not native to North America. It was first found in 2002 in the vicinity of Detroit, MI, and Windsor, ON. It had arrived sometime within the several years previous, presumably on woody packaging materials. It is now known to be found in 12 states. It is considered to be established in several of the upper Midwest states where it was first found. Movement of ash, in particular, ash nursery stock and ash wood in the form of firewood, logs, and wood packaging materials, has been cited as a likely means by which EAB has been assisted in its spread. More recently, strict regulations have been initiated to prevent the movement of these materials from infested areas.

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Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: How does the author organize information about the emerald ash borer?
 - A. by providing general facts followed by a statement of the problem
 - B. by defining the problem in scientific terms followed by an argument for proposed action
 - C. by presenting a problem followed by a suggested solution
 - D. by listing facts in order of importance followed by causes of a problem

2. PART B: How does paragraph 3 contribute to the organizational pattern of the passage?
 - A. by showing why some facts about EABs are of greater significance than others
 - B. by explaining what course of action should be taken to prevent borer infestations
 - C. by providing the scientific names of various species of borer insects
 - D. by contrasting the food sources of the mature and immature EABs

3. PART A: What is one reason why the author includes the explanation about the EAB in paragraph 5?
 - A. to help the reader understand the types of damage the EAB causes
 - B. to help the reader understand why the EAB issue did not exist in the previous century
 - C. to help the reader understand how the EAB exists in ash trees
 - D. to help the reader understand where the EAB will most likely travel next year

4. PART B: Which detail from paragraph 5 best supports the answer to Part A?
 - A. "not native to North America."
 - B. "known to be found in 12 states."
 - C. "in particular ash nursery stock and ash wood"
 - D. "movement of these materials from infested areas."

5. PART A: What is the meaning of "established" as it is used in paragraph 5 of the passage?
 - A. in a strong position permitting growth
 - B. proven beyond a doubt
 - C. well-known and respected
 - D. accepted as a rule or law

6. PART B: Which phrase from paragraph 5 helps the reader understand the meaning of "established"?
 - A. "not native"
 - B. "first found"
 - C. "several years previous"
 - D. "found in 12 states."

7. PART A: Based on the information in the passage, what is one conclusion that can be drawn about the emerald ash borer?
- A. The habits of the emerald ash borer are harmful to ash trees.
 - B. The emerald ash borer is the most destructive of the buprestids in North America.
 - C. The buprestids, including the emerald ash borer, cause problems for Connecticut homeowners.
 - D. Additional laws are needed in North America to help protect the ash trees from the emerald ash borer.
8. PART B: Which evidence from the passage supports the answer to Part A?
- A. "The larvae feed on the phloem and cambium, while the adults feed on the leaves." (Paragraph 3)
 - B. "Two other buprestids are well-known to those in Connecticut" (Paragraph 4)
 - C. "The two-lined chestnut borer often attacks stressed oak trees" (Paragraph 4)
 - D. "More recently, strict regulations have been initiated to prevent the movement of these materials from infested areas." (Paragraph 5)

