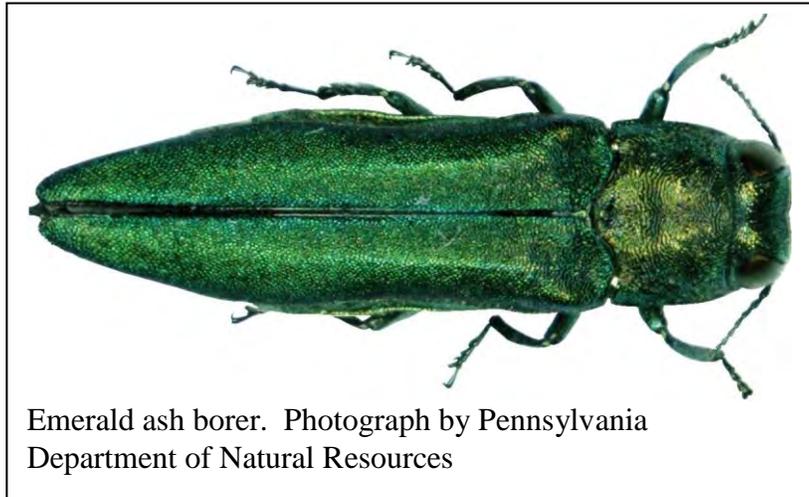


Emerald Ash Borer and Colorado Insects of Similar Appearance

Adults of the emerald ash borer (*Agrilus plannipennis*) have an elongate, rather bullet-form body, typical of most beetles in the metallic wood borer/flatheaded borer family Buprestidae. Emerald ash borer is about 9-13 mm in length, large for members of the genus *Agrilus*, but mid-sized for most other members of this insect family.



Emerald ash borer. Photograph by Pennsylvania Department of Natural Resources

Perhaps the most conspicuous feature is that the emerald ash borer has uniformly green bright, metallic wing covers, sometimes with slight purplish hues. The thorax may be more metallic brown and underneath the wing covers the abdomen is purple. Adults are active between late May to midAugust and almost always they would be found on the leaves or bark of an ash tree.



Emerald ash borer on bark.
Photograph by David Shetlar.



Emerald ash borer on foliage. Photograph by David Shetlar, The Ohio State University.

Damage to ash trees is caused by the immature (larval) stage of the emerald ash borer, a type of flatheaded borer that develops underneath the bark of ash. A comparison of the damage produced by this stage of the emerald ash borer, and damage produced by other wood boring insects in ash trees is

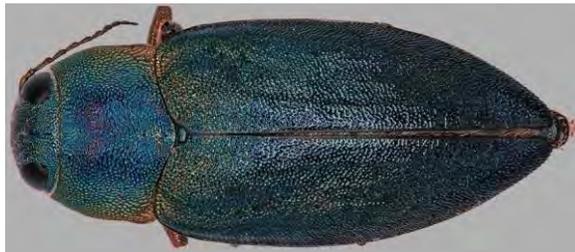
discussed in the publication "*Wood Boring Insects Associated with Ash*".

Several other beetles, bees, wasps and flies also have metallic wood borers, as well as some leaf beetles, occur in Colorado that have some metallic green coloration. However, these either are not uniformly green, have a different body shape and/or are distinctly smaller or larger than the emerald ash borer. These are discussed below.

Other Metallic Wood Borers that Resemble Emerald Ash Borer

The emerald ash borer is one of many insects found in Colorado that are in the beetle family Buprestidae, the metallic wood borers. All develop as borers of woody plants when in their larval stage, a type of flatheaded borer. General body form of all metallic wood borers are similar, with an elongated body, often a bit pointed at the hind end, and some sort of metallic sheen to the body. The coloration of most is bronze or gun metal gray, but some are green, which can cause some confusion with emerald ash borer.

Phaenops gentilis. Known as the "green flatheaded pine borer", *Phaenops gentilis* is likely to be the beetle most commonly encountered in Colorado that can be mistaken for emerald ash borer. It is approximately the same size as the emerald ash borer (9-13 mm) but has a broader body form and the wings are covered with minute punctures. The adults are bright bluish green and have no yellow spots. *Phaenops gentilis* develops in several species of pine.



Phaenops gentilis. Photograph by Steven Valley, Oregon Department of Agriculture.



A series of *Phaenops gentilis*.

***Buprestis* species of conifers.** In higher elevation forested areas of the state there are several brightly colored metallic green wood borers that develop in dead/dying conifers. All are considerably larger than the emerald ash borer (15-22mm), have a broader body form, and have distinctly grooved wing covers.

Buprestis aurulenta, known as the golden buprestid, develops in Douglas-fir and ponderosa pine.



Buprestis aurulenta, the golden buprestid. Photograph by Steven Valley, Oregon Department of Agriculture

Buprestis adjecta is associated with lodgepole pine.



Buprestis adjecta. Photograph by Steven Valley, Oregon Department of Agriculture.

Buprestis intricata is also associated with lodgepole pine.



Buprestis intricata. Photograph by Steven Valley, Oregon Department of Agriculture.

Buprestis langii develops in Douglas-fir.



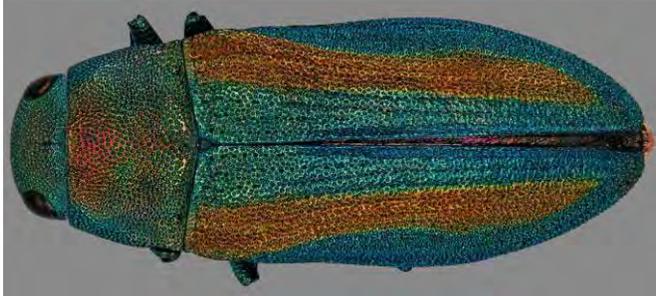
Buprestis langii. Photograph by Steven Valley, Oregon Department of Agriculture.

Buprestis confluenta. *Buprestis confluenta* is more widely distributed in the parts of the state where ash is grown, and develops in aspen and cottonwood (*Populus* spp.) It is a large (12-20 mm) metallic wood borer with green wing covers (occasionally a coppery-brown or purplish-blue) marked with yellow spots. These yellow spots are not found on any other species and make it easily distinguishable from other metallic green wood borers including the emerald ash borer.



Buprestis confluenta.

***Chrysophana placida*.** This is a moderately sized (6-10 mm) metallic wood borer found in the dry cones, trunk and branches of dead pines, true firs, and Douglas-fir. *C. placida* ranges in color from green to red and usually has a reddish-bronze stripe on each wing cover. This species, sometimes known as the flatheaded cone borer, is common in many areas of the west, but is not considered an economically important pest species of native trees.



Chrysophana placida. Photograph courtesy of Steven Valley, Oregon Department of Agriculture.



A series of *Chrysophana placida*.

Native *Agrilus* species. There are a great many Colorado native species of metallic wood borers in the same genus as the emerald ash borer, *Agrilus*. All are smaller in size and less intensively colored than is the emerald ash borer and most are bronze or reddish brown. But a few have metallic green hues of their wing covers. Examples include *Agrilus cyanescens*, a blue-green beetle about 6-mm in length that develops as a borer in honeysuckle. *Agrilus pulchellus* has wings with a green center band, but the wings are bordered by reddish purple. It is known to exist in Weld County and ranges in size from 7-11 mm. In southeastern Colorado *Agrilus pulchrellus* is present. It is usually bronze, but greenish forms exist.



Agrilus cyanescens.



Agrilus lacustris.



Agrilus pulchellus.

Colorful Beetles that May Be Mistaken for Emerald Ash Borer

There are other kinds of beetles that have metallic green coloration and may be mistaken for emerald ash borer. This includes some tiger beetles, which are active insects that sometimes rest on tree trunks. Several species of leaf beetles, usually found on leaves, also have metallic green coloration.

Japanese beetle. Japanese beetle (*Popillia japonica*) is an insect that has only recently become established in parts of Colorado. The shiny green and bronze adults feed on leaves and flowers of a great many kinds of plants in summer. Its broad body form and markings of brown, white and black allow it to be easily distinguished from emerald ash borer.



Japanese beetles.



Apple flea beetles

Apple flea beetle. Apple flea beetle (*Altica foliaceae*) are small (5-6mm) shiny green beetles that are sometimes abundant on leaves of a great many plants, notably evening primrose, grape, *Guara*, and *Epilobium*. They jump readily when disturbed.



Dogbane leaf beetles. Photograph courtesy of David Shetlar, The Ohio State University.

Dogbane leaf beetle. The dogbane leaf beetle (*Chrysochus auratus*) is not common in Colorado but is an insect that attracts attention because of its bright shiny coloration. It is associated with *Apocynum* species.

Tiger Beetles. Tiger beetles are highly active insects that are usually observed on the ground but readily fly when disturbed. All are predators of other insects. Some species are brightly colored and may be confused with emerald ash borer.

Two tiger beetles.
(Left) *Cicindela purpurea*.
Photograph by David Leatherman.
(Right) *Cicindela scutellaris*.



Ground Beetles. Ground beetles have a generally elongate body form but have a narrow, forward projecting head and jaws. They are predators of other insects and most hunt on or near the soil surface. The great majority of species are dark colored, but a few have greenish metallic coloration.



Two ground beetles with metallic coloration. Photograph on left by David Shetlar, The Ohio State University

Colorful Flies, Bees and Wasps that May Be Mistaken for Emerald Ash Borer

Greenbottle flies. Greenbottle flies (*Phaenicia* spp.) are very common flies that have bright green coloration. The larvae develop in animal manure and carrion.



Greenbottle fly.

Sweat bees. Sweat bees (Halictidae family) are native bees that are considerably smaller than a honey bee. Most are dark colored, but those in the genus *Agapostemon* have bright, shiny green patterning.



Sweat bee



Sweat bee

Cuckoo wasps. Cuckoo wasps (Chrysididae family) are small, metallic blue-green wasps that are parasites of ground nesting solitary bees, such as sweat bees.



Cuckoo wasp. Photograph courtesy of Jim Kalisch, University of Nebraska

Whitney Cranshaw
 Department of Bioagricultural Sciences and Pest
 Management
 Colorado State University

July 12, 2017 draft