MISSOURI BOTANICAL GARDEN

William T. Kemper Center for Home Gardening

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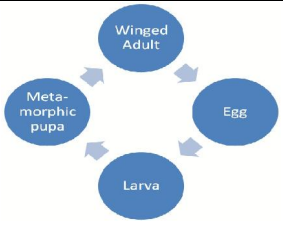
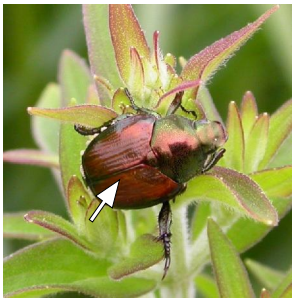
Insect Order ID: Coleoptera (Beetles, Weevils)

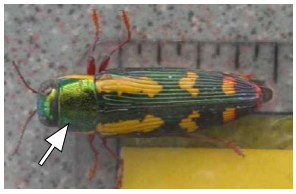
Life Cycle–Complete metamorphosis: Adults lay eggs. Larvae eat, grow and molt. This stage is repeated a varying number of times, depending on species, until hormonal changes cause the larvae to pupate. They form a pupal case, inside of which the pupae change in form and in color and develop wings. The emerging adults look completely different from the larvae.



Adults–Forewings (elytra) form a hard, usually rounded shell and meet in a straight line down the middle of the back, completely covering the membranous hindwings but not always covering the entire abdomen. A hard protective shell (pronotum) covering the thorax between the head and wings and the hard-shelled forewings make most adult beetles look armor-plated. Adults are winged and do not change or grow. *(Click images to enlarge or orange text for more information.)*



Forewings meet in straight line down center of back

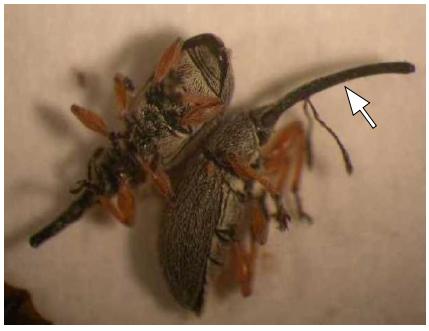


Hard-shelled pronotum

Hard-shelled forewings (elytra)

Hindwings membranous

Not all have smooth forewings



Weevils & curculios have long snouts

Forewings do not always cover abdomen

Eggs–Adults lay eggs where larval food is plentiful. *(Click images to enlarge or orange text for more information.)*

Lady beetle eggs

Larvae–All have three pairs of legs, although some legs are hairlike and barely visible. None have wingbuds. Most commonly encountered species are in one of three different forms, depending on species: elateriform (wireworms), scarabaeiform (grubs), and campodeiform (often spiny). *(Click images to enlarge or orange text for more information.)*

Scarabaeiform
(grub-like)

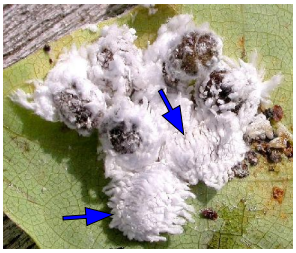
Campodeiform
(spiny larva)

Elateriform
(hard-shell wireworm)

No pincer-like cerci

No prolegs

All have 3 pairs of jointed legs



Some larvae resemble giant mealybugs

Pupae–All beetles and weevils have a pupal stage, during which the adult winged form develops. Pupae can be in the soil or inside trees, seeds or other plant tissue or out in the open, e.g., on a leaf. When the adult emerges from the pupa, it is completely grown, fully developed, and looks different from the larva. *(Click images to enlarge or orange text for more information.)*

Weevil pupa inside a seed

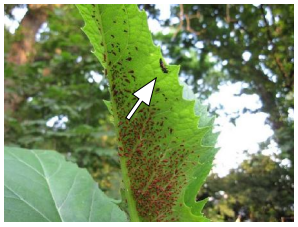
Squash lady beetle pupa on leaf

Lady beetle pupa

Lady beetle emerging from its pupal case

Beneficial / Benign Aspects–Some are minor pollinators. Many are predators, including most species of lady beetles, soldier beetles, ground beetles, lightning bugs, tiger beetles, and many more. They eat other insects or mites. Many other species cause insignificant damage to plants or are benign. *(Click images to enlarge or orange text for more information.)*

Pollinators



Predators
(lady beetle larva)

Predatory beetle
adult & larvae

Beautiful,
minor damage

Non-feeding adults,
predatory larvae

Damage–Both adults and larvae have chewing mouthparts. They eat wood or leaves or roots or flower petals or pollen or nectar or seeds. *(Click images to enlarge or orange text for more information.)*

Skeletonized leaves

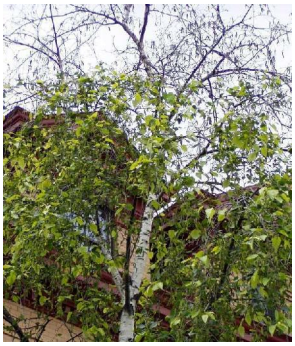
Exit holes of
bark beetles

Leafminers

Weevil hole in seed

Eaten leaves

Root feeders



Canopy dieback
from borers

Half-moon notches
from weevil feeding

Comments–Coleoptera is the largest insect order, containing more species than any other. Adults are sometimes confused with true bug adults (Hemiptera: Suborder Heteroptera--True Bugs). Campodeiform larvae are sometimes confused with lacewing larvae (Neuroptera--Lacewings & Antlions).

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