Common White Grubs Of Northeast Ohio Nurseries

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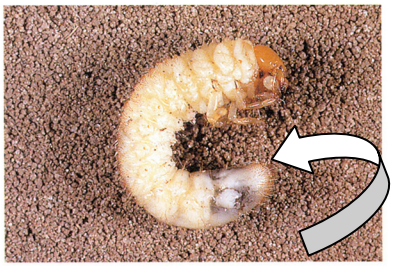
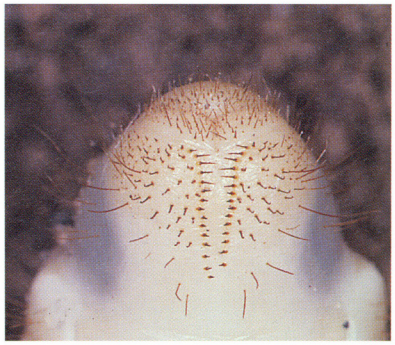
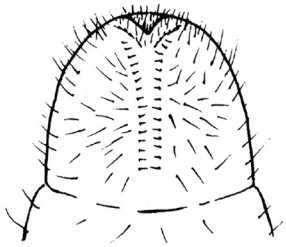
White Grub (Scarab) Identification by Rastral Pattern

A hand lens can be used in the field to identify white grubs by looking at the arrangement of spines and hairs on the last abdominal segment (the raster). The Northern masked chafer and Bumble flower beetle have random hairs that do not form a pattern (see photos on pages 7 and 8). See page 9 for a drawing of the Rose chafer rastral pattern.

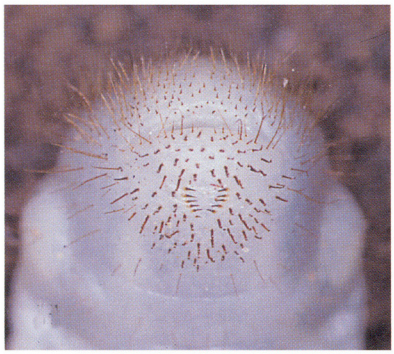


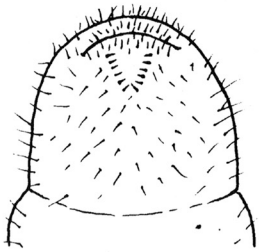
Location of raster on white grub



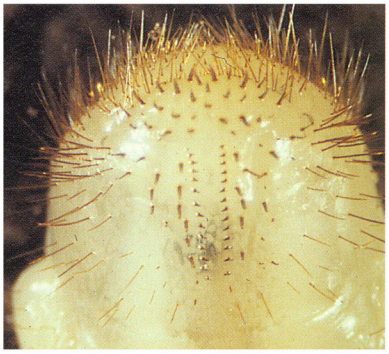


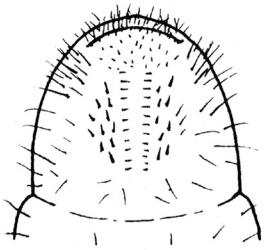
European chafer



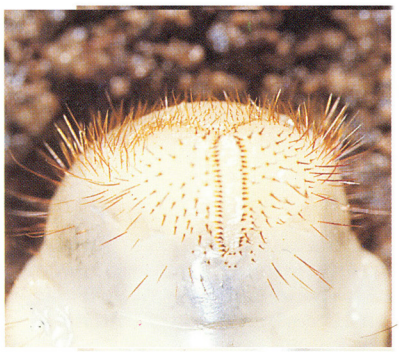


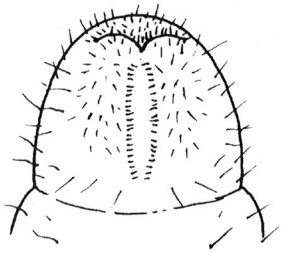
Japanese beetle



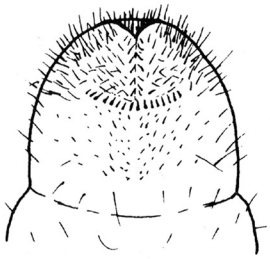


Oriental beetle





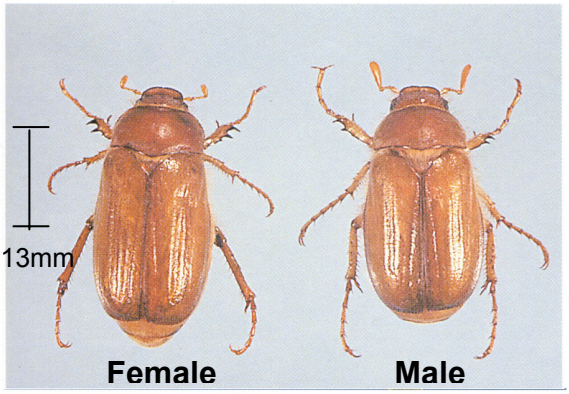
May-June beetle

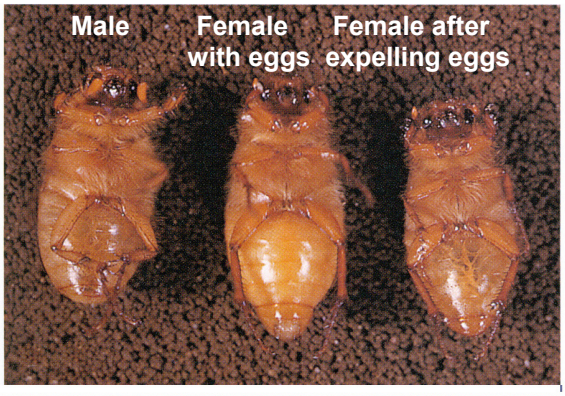


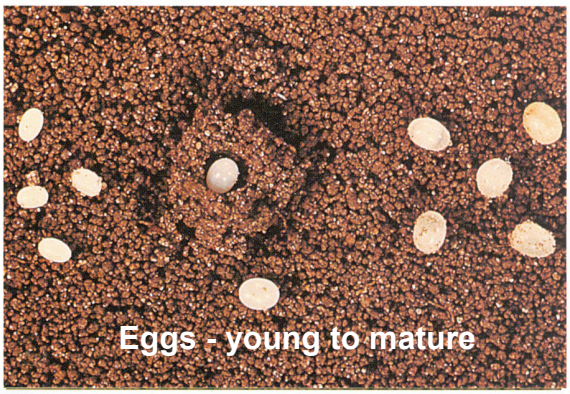
Asiatic garden beetle

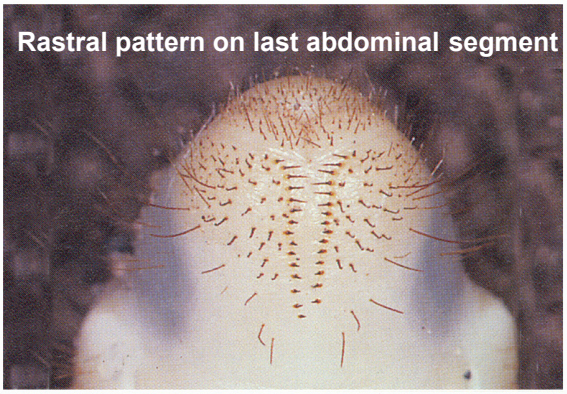
(Photos: NYSAES.)

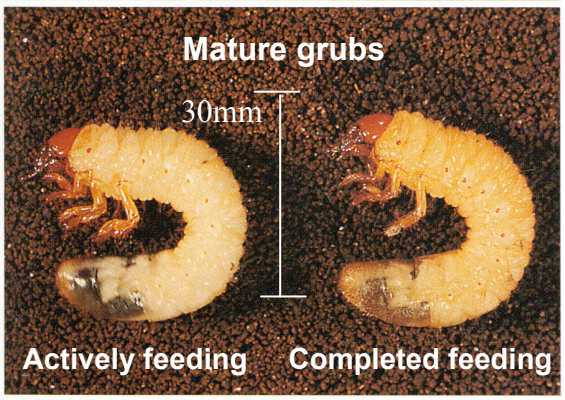
European chafer, *Rhizotrogus majalis*

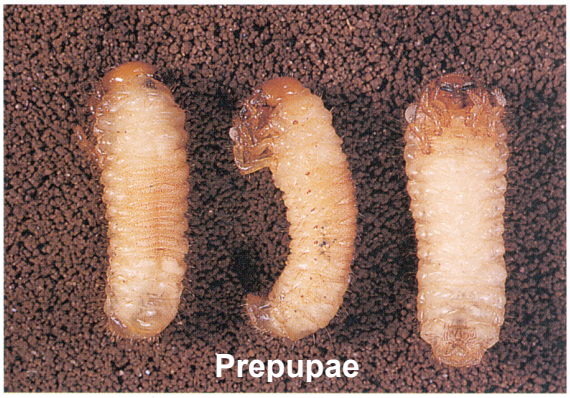


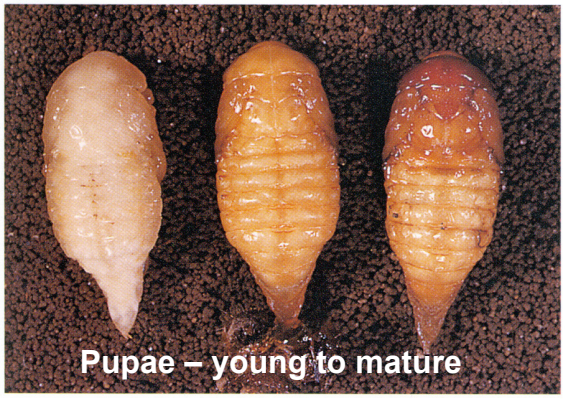






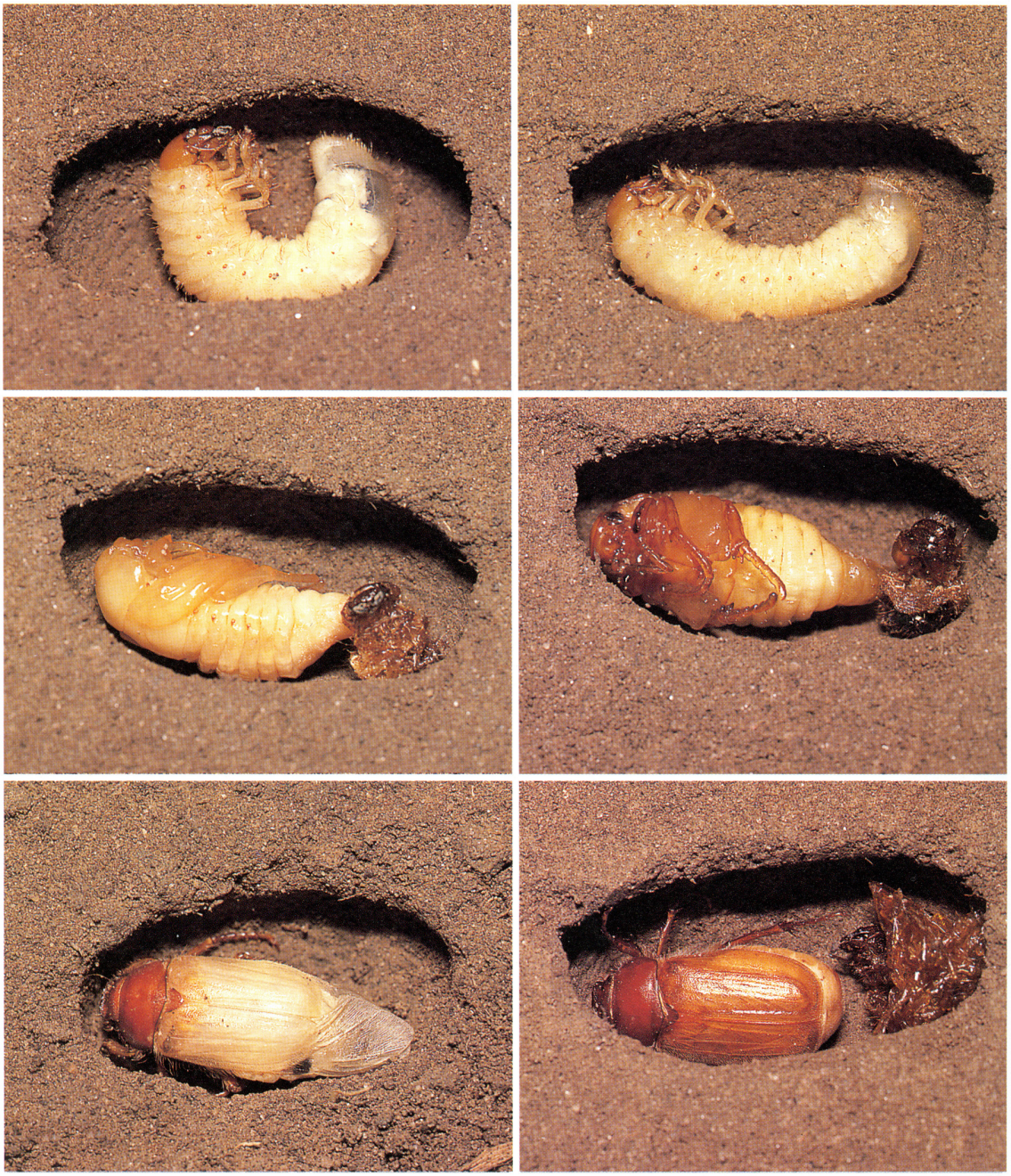






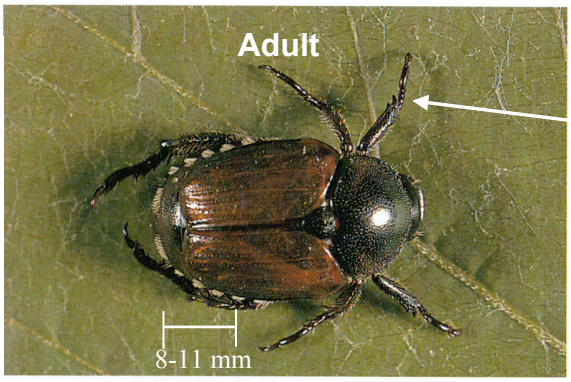
Photos: NYSAES

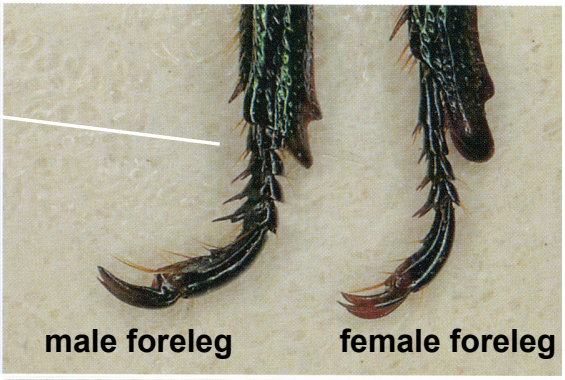
European chafer – larva to adult sequence

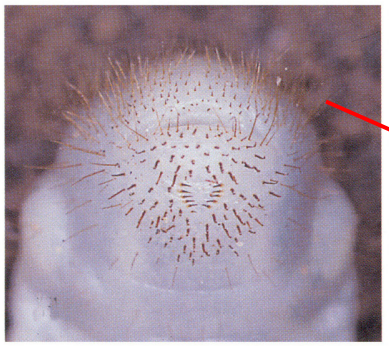


Photos: NYSAES

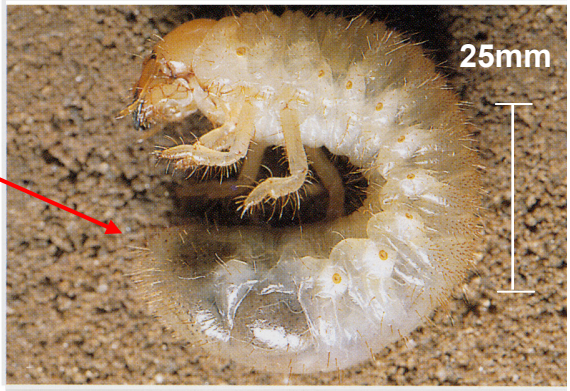
Japanese beetle, *Popillia japonica*





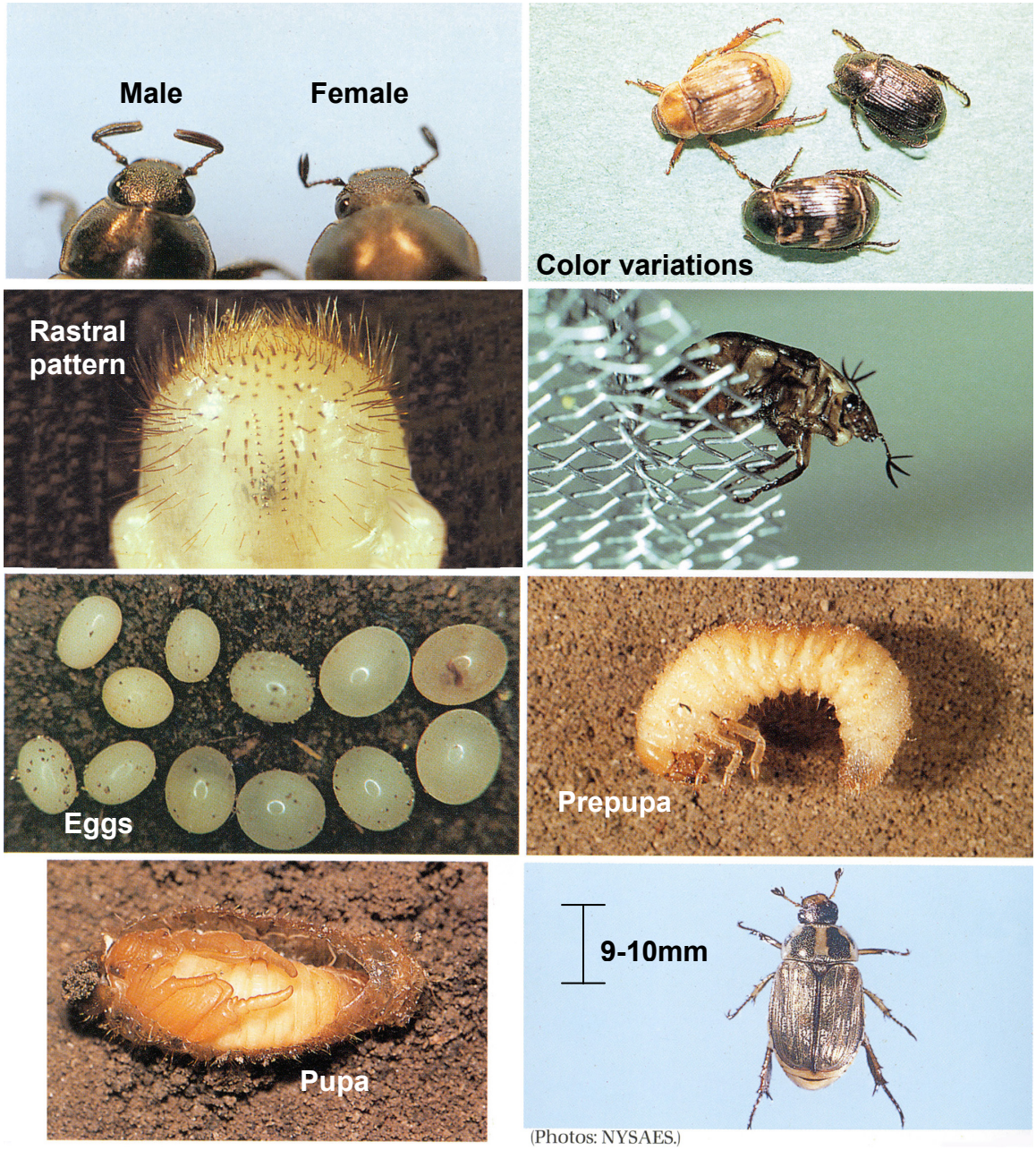


Rastral pattern on last abdominal segment



(Photos: NYSAES.)

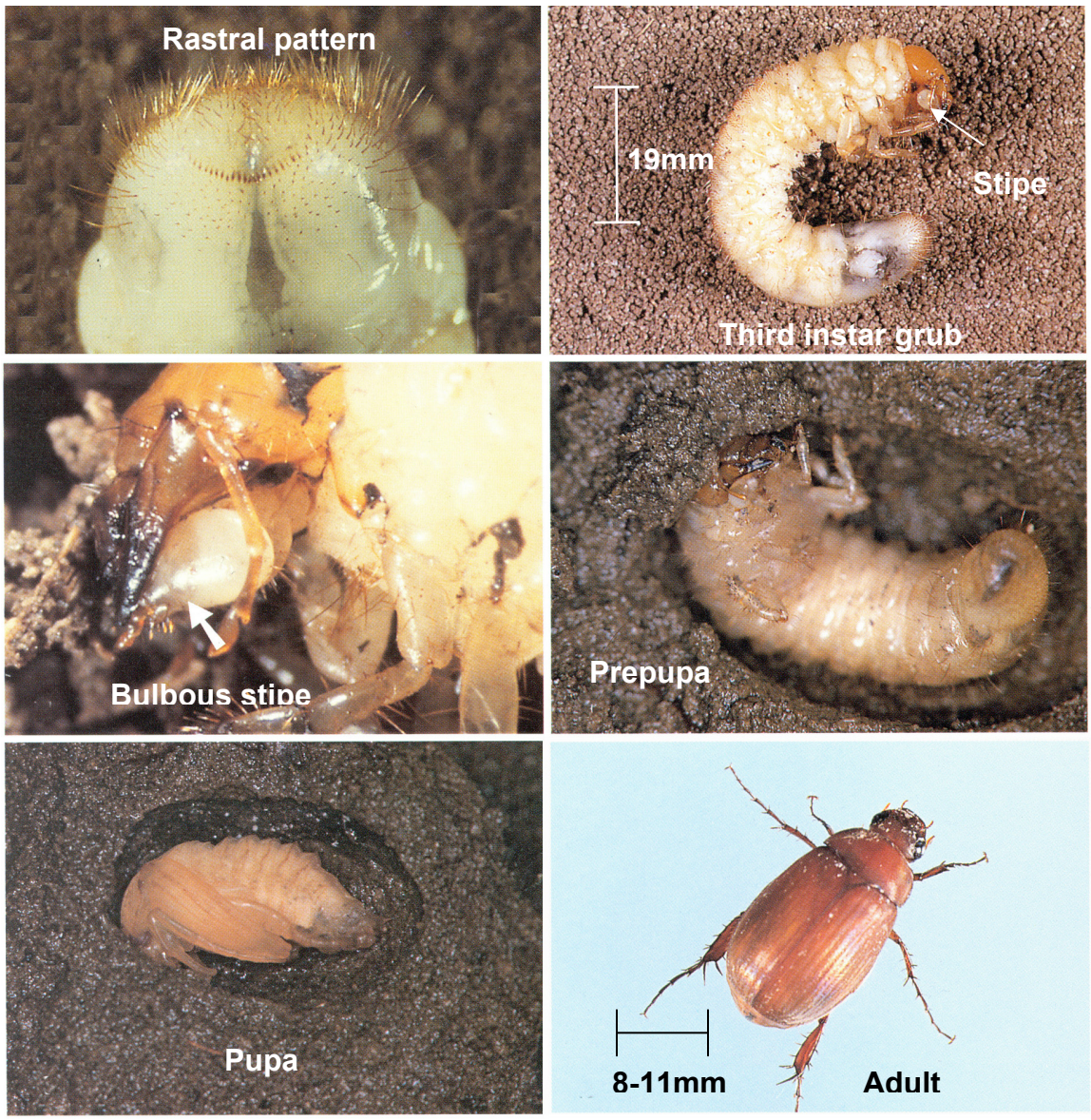
Oriental beetle, *Anomala* (=*Exomala*) *orientalis*



(Photos: NYSAES.)

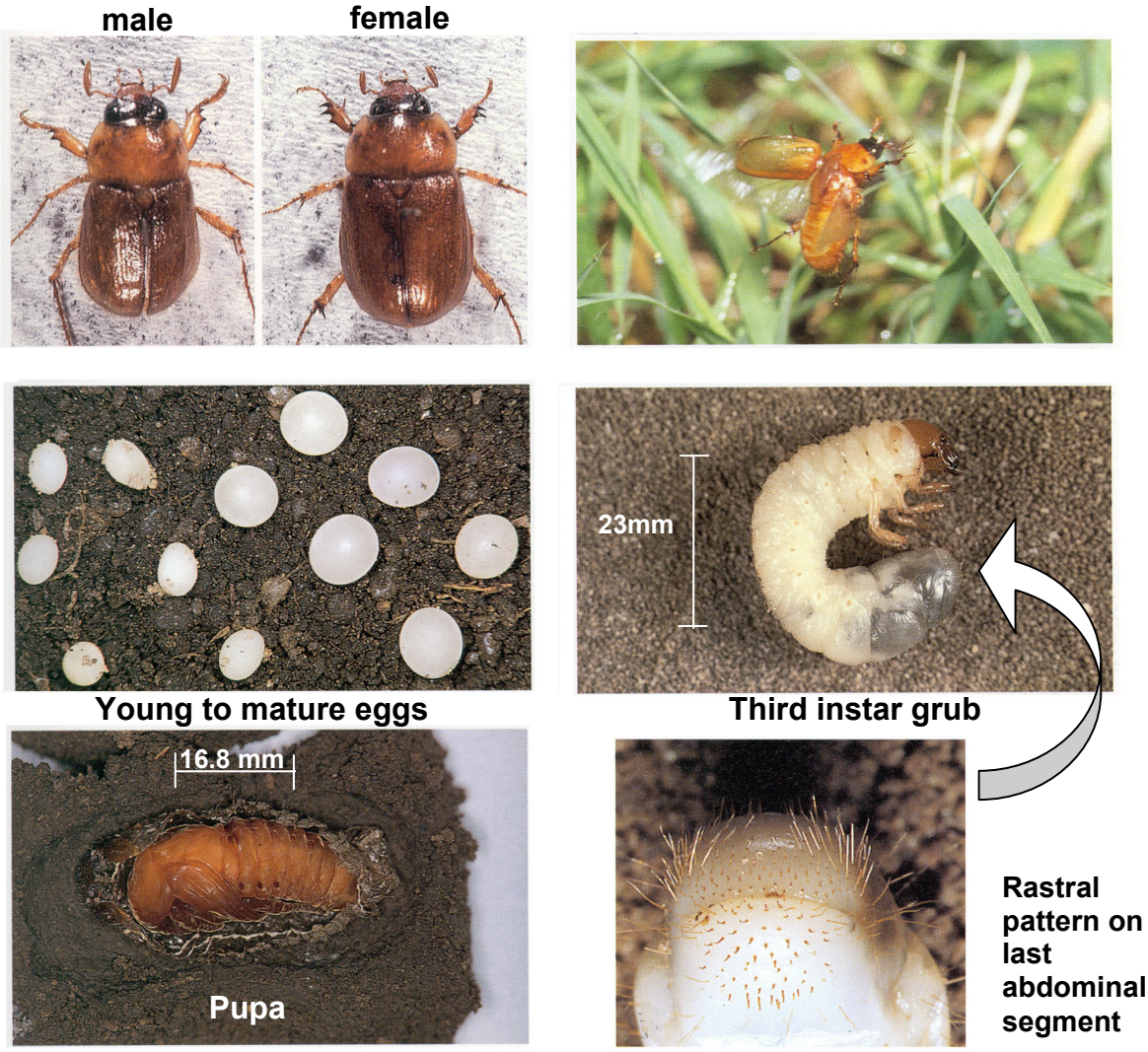
Asiatic garden beetle, *Maladera castanea*

The bulbous stipe on the maxilla is a characteristic that distinguishes the Asiatic garden beetle larva from other white grubs.

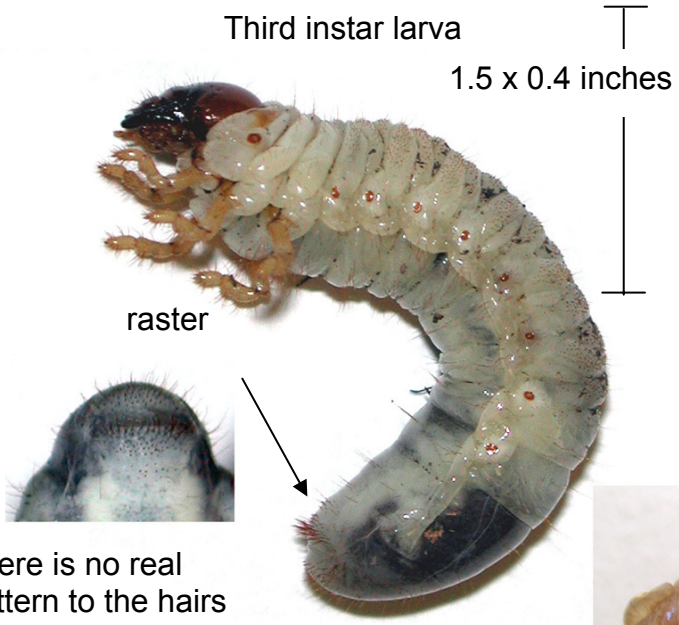


(Photos:NYSAES.)

Northern Masked Chafer,
Cyclocephala borealis



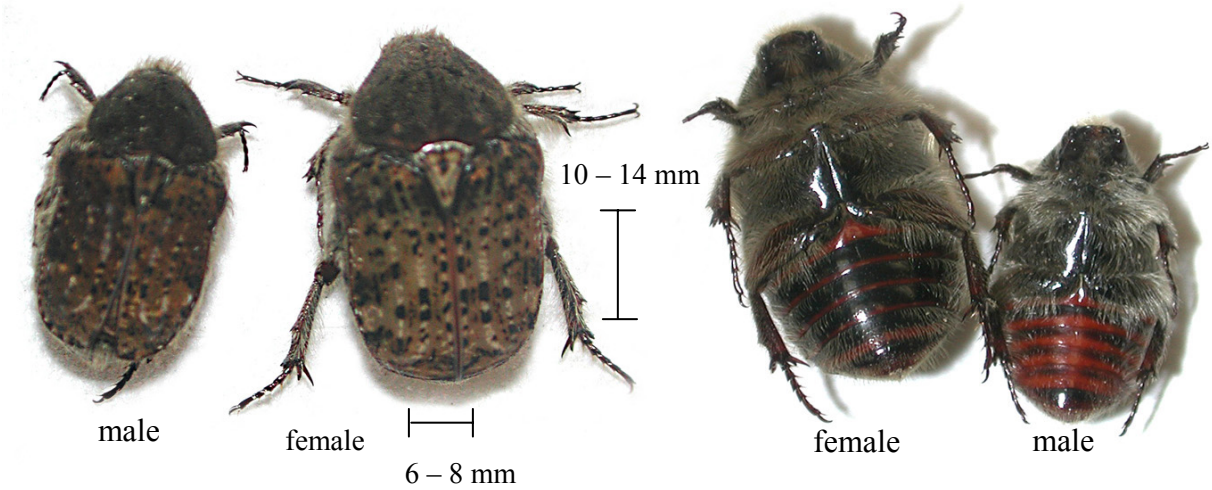
Bumble Flower Beetle, *Euphoria inda* L.



There is no real pattern to the hairs on the raster (the last abdominal segment).

pupa

Adults emerging from pupal cells



(Photos: B.A. Anderson, USDA/ARS, Horticultural Insects Lab, Wooster, OH)

Grubs have been found in nursery containers in a couple of ways. Workers in this nursery tried to determine why some of the top-dressed pots were missing newly applied fertilizer. When the taxus on the left was lifted from the pot, grubs were found under the root ball, as seen below. Grub movement up and down in the pot apparently incorporated the fertilizer. Another way these grubs have been discovered in nursery containers has been by looking in the potting media of plants uprooted by skunks.

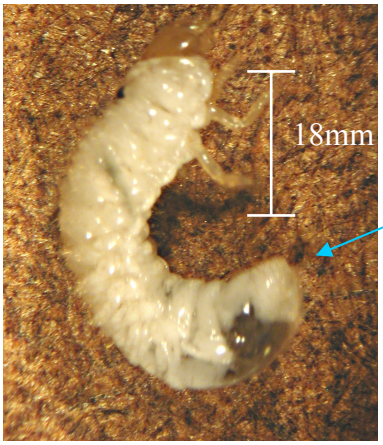
(Photos: B.A. Anderson, USDA/ARS, Horticultural Insects Group, Wooster, OH)

Adults have been seen flying in northeast Ohio at various times. Literature suggests Bumble flower beetles mature in late summer and can be observed flying in the fall. They overwinter as adults and fly again in early spring. The adults are known to feed on flowers, ripe and rotting fruits such as grapes, apples and peaches and on sap from tree wounds and sunflower stalks. The larvae feed on decaying wood and plant material and are found in mulch, manure piles, and rotting vegetable waste. The larvae are distinctive in that they crawl on their backs like green June beetle larvae but differ by not having a defined raster pattern. The green June beetle has two parallel rows of hairs on the raster that resemble a zipper.

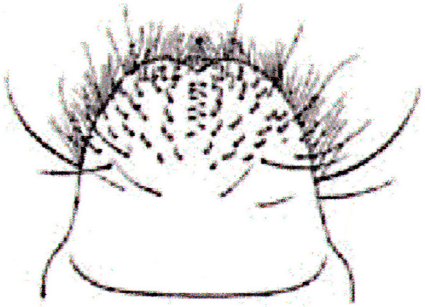
Rose chafer, *Macrodactylus subspinosus*

Rose chafers are a serious pest of many plants including rose, grape, apple, cherry, strawberry, hydrangea, peony and many other ornamentals and vegetables. They feed on leaves, skeletonizing them much like Japanese beetles do, and severely damage flowers and fruits. The adults emerge in June and lay their eggs in grassy sandy areas. Upon hatching, the larvae feed on roots of grasses and overwinter as larvae.

Adult



Larva

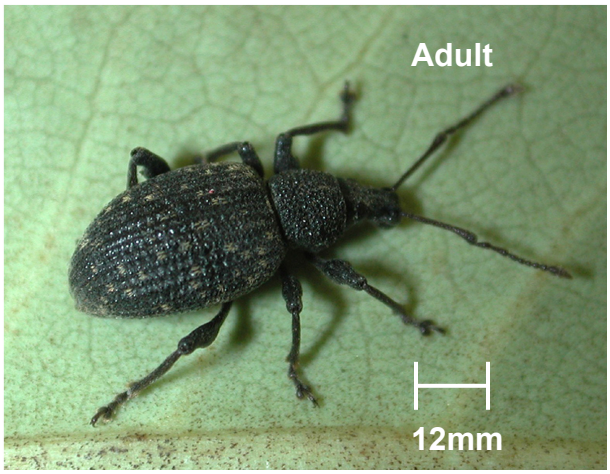


Larval rastral pattern

(Photos: B.A. Anderson, USDA/ARS, Horticultural Insects Lab, Wooster, OH)

Black vine weevil, *Otiorhynchus sulcatus*

All black vine weevils are female and cannot fly



(Photos: B.A. Anderson, USDA/ARS, Horticultural Insects Lab, Wooster, OH)

Comparison Table of Common White Grubs

Common Name	Scientific Name	Time of Adult Activity	Adult Feeding	Larval feeding	Oviposition
European chafer	*Rhizotrogus majalis*	Evening	No	Feed on roots of grass, trees and shrubs	Light sandy loam
Japanese beetle	*Popillia japonica*	Day	Yes –feed on leaves and flowers of over 300 hosts including: roses, grape, cherry, hibiscus & linden	Feed primarily on roots of grasses	Prefer moist loam soils
Oriental beetle	*Anomala orientalis*	Day/evening	No Occasionally feed on flowers but cause very little damage	Feed on roots of turfgrass, and nursery plants growing in the field and containers	Wide range of soils and soilless media
Asiatic garden beetle	*Maladera castanea*	Night	Yes- leaves of more than 100 kinds of shrubs, trees, flowers and vegetables	Feed on roots of flowers, vegetables and weeds 2 – 3 inches below surface	Prefer loam soils
Northern masked chafer	*Cyclocephala borealis*	Night	No	Kentucky bluegrass and perennial ryegrass roots	Prefer loam soils
Rose chafer	*Macrodactylus subspinosa*	Day	Yes-leaves and flowers of rose, peony, grapes, berries, cherry, and peach	Roots of grasses and weeds	Light sandy soils
May/June beetle	*Phyllophaga spp.*	Night	Yes- foliage of trees and shrubs with oak the preferred species	Serious damage to roots of turf, and trees and shrubs growing in grassy areas	Prefer loam soils
Bumble flower beetle	*Euphoria inda*	Day - (fuzzy scarab that resembles a bee and makes buzzing sound in flight)	Yes- fruit, plant sap, flowers including sunflower, daylily and strawflower	Sometimes found in container-grown plants especially if fresh compost included in potting mix.	Highly organic soils, compost, mulches and animal manure
Black vine weevil	*Otiorhynchus sulcatus*	Night (Flightless)	Yes – leaf notching on a variety of hosts including: taxus, strawberry, astilbe rhododendron, and sedum	Are a pest in nurseries, hoop houses and greenhouses. Feed on roots and crowns on a variety of shrubs and perennial plants.	Light sandy loam and soilless media are preferred