Common White Grubs
Of Northeast Ohio Nurseries

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New York State Agricultural Experiment Station (NYSAES).
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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*

Adult

- Male foreleg
- Female foreleg

8-11 mm

Adult feeding damage on linden.

Rastral pattern on last abdominal segment

Eggs young to mature

25 mm

(Photos: NYSAES.)
Oriental beetle, *Anomala (=Exomala) orientalis*
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*

- **Male**
- **Female**

- Young to mature eggs
- Third instar grub

- Pupa

- Rastral pattern on last abdominal segment

- 16.8 mm
- 23 mm
Bumble Flower Beetle, *Euphoria inda* L.

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

Third instar larva
1.5 x 0.4 inches

prepupa

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

pupa

Adults emerging from pupal cells

male
female

6 – 8 mm

10 – 14 mm

male
female

(Photo: USDA/ARS, Horticultural Insects Lab, 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 subspinous*

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.
## Comparison Table of Common White Grubs

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Size of Adult (LxW)</th>
<th>Mature Grub (inches)</th>
<th>Time of Adult Activity</th>
<th>Adult Feeding</th>
<th>Oviposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>European chafer</td>
<td><em>Rhizotrogus majalis</em></td>
<td>0.6 x 0.3 in.</td>
<td>1.2</td>
<td>evening</td>
<td>no</td>
<td>light sandy loam</td>
</tr>
<tr>
<td>Japanese beetle</td>
<td><em>Popillia japonica</em></td>
<td>0.3-0.5 x 0.25 in.</td>
<td>1</td>
<td>day</td>
<td>yes – nursery</td>
<td>prefer loam soils</td>
</tr>
<tr>
<td>Oriental beetle</td>
<td><em>Anomala orientalis</em></td>
<td>0.36-0.41 x 0.25 in.</td>
<td>0.98</td>
<td>day/evening</td>
<td>no</td>
<td>wide range of soils</td>
</tr>
<tr>
<td>Asiatic garden beetle</td>
<td><em>Maladera castanea</em></td>
<td>0.3-0.4 x 0.2 in.</td>
<td>0.75</td>
<td>night</td>
<td>yes-garden</td>
<td>prefer loam soils</td>
</tr>
<tr>
<td>Northern masked chafer</td>
<td><em>Cyclocephala borealis</em></td>
<td>0.45 x 0.26 in.</td>
<td>1</td>
<td>night</td>
<td>no</td>
<td>prefer loam soils</td>
</tr>
<tr>
<td>Rose chafer</td>
<td><em>Macrodactylus subspinoa</em></td>
<td>0.4 in. (L)</td>
<td>0.71</td>
<td>day</td>
<td>yes-flowers</td>
<td>sandy</td>
</tr>
<tr>
<td>June beetle</td>
<td><em>Phyllophaga spp.</em></td>
<td>0.3-2.5 x 0.15-1.25 in.</td>
<td>1-2.5</td>
<td>night</td>
<td>yes-foliage</td>
<td>prefer loam soils</td>
</tr>
<tr>
<td>Bumble flower beetle</td>
<td><em>Euphoria inda</em></td>
<td>0.5-0.6 x 0.3-0.4 in.</td>
<td>2</td>
<td>day</td>
<td>yes-fruit</td>
<td>highly organic</td>
</tr>
</tbody>
</table>