



Pest Watch: European Chafer

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS078E

WSU Extension *Pest Watch* fact sheets identify new agricultural pests in or near Washington State that pose environmental and economic threats. In the event of a severe pest outbreak, a *Pest Alert* will be issued with emergency pest management and control information.

Introduction

The European chafer (scientific name *Rhizotrogus majalis*, family Scarabaeidae) is a beetle that causes damage to turf and cereal crops when in its larval (or grub) form. Because it is now confirmed as a problem in southwest British Columbia, Canada, it is important that Washington State gardeners and horticultural professionals are aware of this pest, recognize its various life stages, and know how to report new infestations.

Distribution

The European chafer was introduced to the United States in the 1940s on the East Coast. States that are currently infested with the pest include New York, Michigan, Ohio, Maryland, West Virginia, and Indiana. In 2001, European chafer grubs were discovered infesting lawns in New Westminster, the greater Vancouver area of British Columbia, Canada, less than 15 miles from the northernmost border town in Washington State (Fig. 1). Canadian entomologists have since then tracked a slow rate of natural dispersal up to 10 miles from the epicenter.

The risk of movement from infested areas via human activity is high; fortunately border inspections of nursery plants and turf allow for the chance to exclude the pest from Washington State. When traveling to known infested areas, be sure to check items purchased there such as nursery plants. Follow inspection rules at the border and help prevent this pest from expanding into Washington State.

Identification

Adult European chafers are brick-colored to light brown. As with other scarab beetles, they have that typical oval,

June-beetle shape and are about 1/2 inch long (Fig. 2). The larvae are C-shaped and white with a dark head capsule. When mature, European chafer larvae have three pair of visible legs and are about 3/4 inch long (Fig. 3).

Other insect larvae that feed on turf include crane flies and cutworm caterpillars. Crane larvae are legless and tubular, with a retracted head capsule (Fig. 4; see also EB0856, *European Crane Fly: A Lawn Pasture Pest*). Cutworms, also pests to garden plants, are typical caterpillars, not C-shaped, and have prolegs (small fleshy protuberances) on the abdomen (Fig. 5).



Figure 1. Known distribution of European chafer in the Pacific Northwest as of 2011.

This fact sheet is part of the WSU Extension Home Garden Series.



Figure 2. Adult European chafer.



Figure 5. Cutworm caterpillar (*Noctua pronuba*) commonly found in the thatch layer of lawns. Note the prominent head capsule and prolegs on the abdomen (E. Bechinski, University of Idaho).



Figure 3. Late larval instar of European chafer grub.



Figure 6. Lawn showing damage caused by European chafer grubs feeding. The turf plants are gone and moss has invaded the area.



Figure 4. European crane fly larvae. The head is retracted into the body and the prominent spiracles (breathing holes) are at the tail end of the body.

Life Cycle

European chafers mate as darkness sets in and females seek egg-laying sites in the soil soon after mating. Each female lays 20–30 eggs. Larvae hatch from the eggs two weeks later and begin to feed on plant roots. Chafers spend the winter as larvae and pupate in May, emerging as adults 2–3 weeks later in June.

Damage

Larvae are the damaging stage of the European chafer. They commonly prefer to feed on cereal plants like turf grasses and wheat. They have also been found feeding on the fine roots of broadleaf plants and conifers. In turf, larvae feed in the root zone up to the root crowns. Heavy infestations cause browning and death of turf (Fig. 6), especially as

drier months begin. Secondary pests such as raccoons and skunks peel back turf to feed on the grubs, causing significant damage to lawns.

Management

Generally, 5–10 European chafer grubs per square foot should warrant management tactics. If this pest spreads into Washington State, an increase in pesticide usage on home lawns will create pesticide run-off risks in urban and residential areas. Insecticides should therefore be used judiciously. Some parasitic nematodes such as *Steinernema scarabaei* and *Heterorhabditis bacteriophora* appear to be effective at reducing grub populations. Nematodes are available to purchase at many home and garden supply stores. Irrigation and mowing practices have also proved effective in suppressing and sometimes masking chafer problems in lawns. Frequent watering of lawns during European chafer egg-laying periods (mid-June until August) gave similar protection as some insecticides in experiments in Michigan State (Smitley et al. 2004). However, frequent irrigation may not be practical in areas with costly water.

Monitoring

Monitoring for European chafer grubs is very similar to that for crane fly (Fig. 7). April to May and September to October are the best times to monitor for the grubs because this is when they are the easiest to spot (i.e., at their largest stage). You may see the adults from mid-June until August. They swarm at dusk, sounding much like buzzing bees. When large populations are present, the evening swarms can be very obvious.

Look for areas of lawns that show symptoms of damage. It is best to take samples along the edge of dead or dying grass plants. Do not take a sample from the middle of dead turf, as the insects may have left that area to feed on living plant material. Pay especially close attention to areas that might be suffering from predatory raccoon or skunk activity.

Using a spade or serrated knife, cut a 12-inch square 4–5 inches deep. Sift through the loose soil and thatch to look for the C-shaped grubs. Repeat the sampling in at least four locations to develop an average number of grubs per sample (or per square foot). The threshold for European chafer grubs is dependent on the health of the turf.

Bring samples to your local Extension office or the Washington State Department of Agriculture. Report sightings at 1-877-9-INFEST or PestProgram@agr.wa.gov.



Figure 7. European chafer grubs (in orange circles) exposed during sampling of damaged turf.

Further Reading

- Antonelli, A. and G. Stahnke. 1998. European Crane Fly: A Lawn and Pasture Pest. *Washington State University Extension Publication* EB0856, <http://cru.cahe.wsu.edu/CEPublications/eb0856/eb0856.html>.
- British Columbia Ministry of Agriculture. 2010. European Chafer—A New Turf Pest. <http://www.agf.gov.bc.ca/cropprot/chafer.htm>.
- LaGasa, E.H., P. Hertzog, and D. Bowden. 2003. 2002 Light-trap Detection Survey for European Chafer, *Rhizotrogus majalis* (Raz.) (Coleoptera: Scarabaeidae), a Turf and Grain Pest Recently Found in B.C., Canada. Washington State Department of Agriculture PUB 081, http://agr.wa.gov/PlantsInsects/InsectPests/Exotics/Surveys/european_chafer02.pdf.
- Smitley, D.R., C. DiFonzo, K. Frank, S. Bughra, and T. Fernandez. 2004. Addressing Widespread Damage to Turf, Wheat, and Nursery Crops by the European Chafer: Immediate Strategies and Long-Term Solutions. Michigan State University, Project Number GR01-050. <http://www.ppd.purdue.edu/PPDL/pubs/GR01-050.pdf>.



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Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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