

CONTROL OF THE EUROPEAN MARSH CRANE FLY IN NEWFOUNDLAND AND NOVA SCOTIA

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The European marsh crane fly³ is a serious pest of turf, vegetable gardens, and sometimes perennial flower gardens in Newfoundland and Cape Breton Island. Although many kinds of crane flies are found in the area, this is the only one that has a gray body and pale-gray wings with dark front edges. It is not found in other parts of Canada but is common in Europe, where it is often reported as severely injuring grasses, cereals, beets, strawberries, hemp, flax, tobacco, and other crops.

In hayfields, pastures, and lawns the larvae, or leatherjackets, eat the upper roots and the crowns. The sward becomes thin and bare patches appear, which later may become filled in by weeds. The poor turf is often wrongly attributed to low fertility, disease, or weather.

DESCRIPTION AND LIFE HISTORY

The flies appear from mid-July to mid-September, depending on the season, but they are usually most abundant in early August. The fly (Figure 1) is like a mosquito but much larger. The grayish-brown body is long and slender, the wings narrow, and the legs very long and fragile.

The female flies live 10-12 days and lay 350 to 600 eggs on the soil near the stems and roots of grasses. The eggs (Figure 2) are black and oval, and have a very tough, smooth, leathery shell.

In six to nine days, the eggs hatch into very small, brown larvae less than an eighth of an inch long with black mouth parts. The young larvae begin feeding at once on decaying vegetation and the crowns and

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roots of grasses. They molt twice, overwinter in the third instar, and complete their growth the following spring. The full-grown leatherjackets (Figure 3) are about $1\frac{1}{2}$ inches long when stretched out but are much shorter and thicker in their usual contracted form. They are dark gray and smooth-skinned. They live in very wet to rather dry soil, usually beneath turf, in weeds, or in open grassland.

After completing their growth in late July, the full-grown larvae pupate in the turf near the soil surface. The pupae (Figure 4), about $1\frac{1}{4}$ inches long and dark brown, have many spines and tubercles. When disturbed, they become very active and wriggle violently. The adults emerge from the pupal cases after 12 to 15 days.

As in Europe, there is only one generation of this insect each year in Newfoundland and Nova Scotia.

CHEMICAL CONTROL

Where the infestation is light in gardens or in grassed areas of little importance, it is best to avoid using insecticides.

When damage is severe, apply a spray containing aldrin, dieldrin, or heptachlor. It is best to spray in the spring when the soil is moist, but you may spray during the summer or fall. The method is the same for the three poisons. Apply $1\frac{1}{2}$ pounds of active ingredient per acre, or 3 quarts of 20 percent emulsifiable concentrate, in 40 to 100 gallons of water. These insecticides not only kill the larvae at the time of application but

Figure 1—Adult female (left) and adult male, slightly less than natural size.

Figure 2—Eggs, $2\frac{1}{2}$ times natural size.





Figure 3—Full-grown larvae, or leatherjackets, slightly less than $1\frac{1}{2}$ times natural size.



Figure 4—Pupae, $1\frac{1}{4}$ times natural size.

also prevent reinfestation for several years. They also control other kinds of leatherjackets and wireworms.

For small areas, apply 5 percent DDT dust at $\frac{1}{2}$ ounce per square yard. Or use a poisoned bran bait consisting of:

Wheat bran	24 pounds
Paris green	1 pound
Water	Enough to moisten

Thoroughly mix the dry ingredients, and then add enough water to make the bait crumbly. Broadcast it late in the afternoon at 25 pounds of the dry materials per acre, or 5 pounds to 1,000 square yards. Be sure not to leave any lumps for animals or birds to eat.

CAUTIONS

Follow closely all the cautions listed on the insecticide label. An interval is required between the application and grazing or harvesting for some of the treatments. The interval varies with the material used and the amount applied. Keep to the interval given to avoid residues that would render the meat or milk unfit for sale.



NATURAL CONTROL

Although this pest thrives where the climate is maritime and wet, weather plays an important part in its control and outbreaks do not occur every year. Drought during August and early September kills many of the newly hatched larvae. In severe winters, particularly without snow cover, many of the overwintering larvae die.

Leatherjackets are attacked by various insects, nematodes, diseases, and birds, but evidently none of the predators or parasites reduces a severe or even a moderate outbreak appreciably. A virus disease, which prevents the larva from completing its growth and pupating, has recently been found in Newfoundland, but has apparently not brought the pest under control.

INQUIRIES

For more information, consult your agricultural representative or provincial entomologist, or write to the Experimental Farm, Canada Department of Agriculture, P.O. Box 2068W, St. John's West, Newfoundland, or to the Research Station, Canada Department of Agriculture, Kentville, Nova Scotia.

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