

# CRANE FLIES, AN EMERGING PEST COMPLEX IN GRASS SEED FIELDS

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We are currently studying the crane fly complex in grass seed fields to determine the biology, seasonal occurrence and extent of damage caused by these insects. The non-native species, the European crane fly, *Tipula paludosa*, has been in the Pacific Northwest for several years (Jackson and Campbell, 1975) while the closely related *T. oleracea* appears to be a recent introduction. In addition, several species of native crane flies are present in and around grass seed fields. These crane flies have not previously been associated with damage.

## Procedures

Crane fly larvae collected in the winter of 2001 were reared in the laboratory until adult emergence using procedures described by Wiegiers *et al.* (1992). The larvae were collected from grass seed fields in the Willamette Valley and from a dryland wheat field near Heppner in the Columbia Basin.

## Results

An identification key by Brindle (1960) that separates the larvae is not suitable for Oregon or Washington. Certain characters listed in the key appear to be influenced by habitat, and larvae collected from the same habitat are, at times, indistinguishable. Hence adult characters need to be used for species identification.

Adults from larvae collected in the Willamette Valley and the Columbia Basin were identified as native *Tipula* spp. In addition, a crane fly collected from a tall fescue field in the Valley was identified as *T. oleracea*. This is perhaps the first record of *T. oleracea* collected from a commercial grass field in Oregon.

Based on the literature, and our observations, the following information is presented about crane flies in Oregon:

*Identification:* Adult crane flies look like large mosquitoes and are called 'mosquito hawks'. However, they do not feed, nor do they bite, pierce or sting. They tend to emerge in large numbers over a short period of time. They are weak fliers and often accumulate on buildings downwind of infestations. Crane fly larvae live in the soil around roots or below straw. They are gray-brown, 24 to 38 mm long when fully grown, and are called "leather jackets" because of their tough skin. Young or small crane fly larvae are often confused with March fly larvae that do not cause direct damage to plants.

*Life cycle:* *T. paludosa* has one generation per year. Adults appear in late summer and early fall. Females mate and lay eggs immediately. Eggs usually hatch within two weeks and young larvae commence feeding in late fall. Feeding is reduced in winter except on warm days but is resumed in early spring. In contrast, adults of *T. oleracea*, and at least one native *Tipula* sp., emerge in early spring. *T. oleracea* adults have also been

collected in the fall indicating that the species either has bimodal emergence or two generations a year. *T. oleracea* is a new introduction, and there is little additional information about its biology. The biology of native crane flies also remains relatively unknown.

*Detection:* Crane flies are found in pastures, lawns, turfgrass and commercial grass seed fields as well as in clover, peppermint and a few other crops. The larvae appear to feed on organic matter in the soil, and on the roots and crowns or stems of grasses and other host plants. The extent of damage caused can be extensive but is variable. It appears that some plants such as many grasses are able to compensate for damage. Other pests in the soil such as cutworms, slugs and sod webworms produce damage similar to that caused by crane flies.

*Control:* Larval populations often decline considerably in fall and spring due to natural mortality and predation by birds, moles and probably other organisms. Chemical control with chlorpyrifos provides excellent suppression of larvae when applied to crops appearing on its label.

*Summary:* Considerable controversy exists about the damage crane fly larvae cause to crops. Some turf specialists believe that they do not injure crowns, reduce stands or affect the aesthetics of well-managed turf and lawns. This is assuming all other pests are reasonably suppressed and the grass is in 'good health'.

Our current studies are designed to determine the nature of crane fly injury to grasses, particularly those varieties grown for seed under non-irrigated conditions. Appropriate management techniques are to be researched as well.

## References:

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- Wiegiers, G. L., A. M. Dulleman, and J. Wijnbenga. 1992. The rearing of *Tipula oleracea* L. (Dipt., Tipulidae). J. Apl. Ent. 114: 410-414.