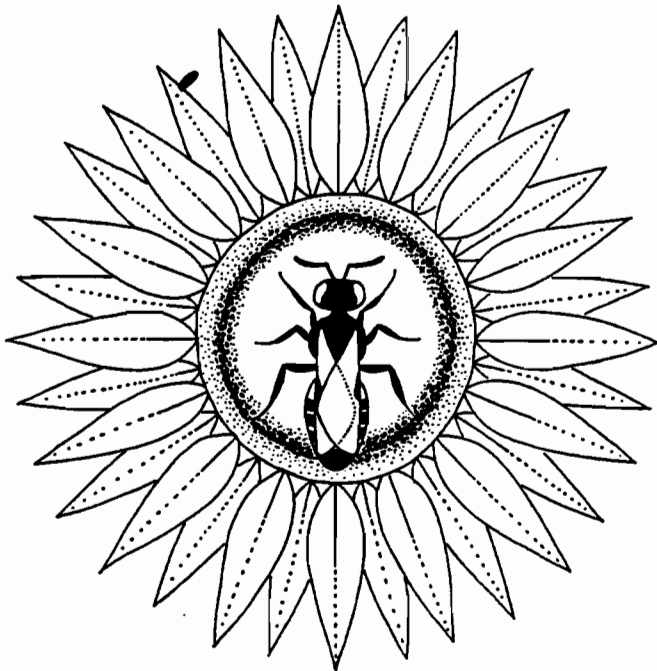


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Two Chloropid Flies (Diptera: Chloropidae) Infesting Proso Millet (*Panicum miliaceum* L.) in Northeastern Colorado

J. SCOTT ARMSTRONG,¹ STAN D. PILCHER,² AND BORIS C. KONDRATIEFF³
Department of Entomology, Colorado State University,
Fort Collins, Colorado 80523

ABSTRACT: In late August 1994 a 32 ha field of 'Sunup' proso millet, *Panicum miliaceum* (L.) in full maturity and located in central Washington County, CO, was observed to have a high number of blasted seed heads (inflorescence). In order to determine the insect responsible for this damage, one hundred blasted seed heads were collected from this field and placed in a nylon screened cages in a greenhouse where the insects were reared to adults. Twenty three flies emerged; nine were the wheat stem maggot, *Meromyza americana* (Fitch), the remaining 14 were identified as *Rhopalopterus carbonarium* (Loew). The biology and damage by these two chloropid flies infesting millet has not been recorded in the literature.

Proso millet, *Panicum miliaceum* (L.), is a short season, summer annual grown in the Central Great Plains region of the United States mostly for human consumption in foreign markets or bird feed.

¹ Research Entomologist, Colorado State University Department of Entomology, Central Great Plains U.S.D.A.-A.R.S Research Station, Akron, Colorado 80720.

² Extension Entomologist, Colorado State University Golden Plains Area, Courthouse Annex, Akron, Colorado 80720.

³ Associate Professor, Colorado State University Department of Entomology, Fort Collins, Colorado 80523.

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There were over 1.9 million bushels harvested in Colorado in 1992, which represented 29.2% of the United States market (Baltzenberger et al., 1995). The crop has been a successful diversification to the wheat-fallow-wheat cropping system that has developed on the Great Plains over the last 50 years (Anderson, 1994).

Millet production in the Central Great Plains has succeeded in part due to the absence of economically threatening insect problems. A pest known to infest millet, but not in economically threatening densities, is the wheat stem maggot, *Meromyza americana* (Fitch), although this is not documented in the literature.

* The wheat stem maggot has a broad grass host range. Common host grasses include bermudagrass, *Cynodon dactylon* (L.) (Arnold and Aring, 1987) and weeping lovegrass, *Eragrostis curvula* (Schrad.) (Kindler et al., 1989). It is more widely known as an occasional economic problem in spring and winter wheat (Kieckhefer and Morrill, 1970). There are no published reports of the wheat stem maggot infesting winter wheat in Colorado, however the first two authors (JSA & SDP) of this paper have observed low levels of infestation in winter wheat.

Wheat stem maggot damage occurs after the female oviposits eggs on grass culms where, after eclosion, the larvae bore into the stem above the terminal node. The consumption of internal stem tissue by the larvae causes premature death of the inflorescence (maggot-blasted heads). Infested heads typically bend toward the ground. Further descriptions of damage to grasses and cereals by *M. americana* are given by Allen and Painter (1937), Gilbertson (1925), and Kieckhefer and Morrill (1970).

On 24 August 1994 a fully mature field of 'Sunup' millet was observed by the authors to have > 15% maggot-blasted heads. One hundred of the millet stems were cut at ground level and put in a 1.0 × 0.5 m screened cage. The cages were left outside until 16 December 1994, and thereafter maintained at 21.5°C in a greenhouse. Within three weeks of moving the cages into the greenhouse, a total of 23 flies emerged from the stems. Nine were identified as wheat stem maggot *M. americana*. The remaining 14 were identified as *Rhopalopterum carbonarium* (Loew), a widespread North American species. Ten species are presently included in the *Rhopalopterum* genus (Sabrosky, 1987). *Rhopalopterum carbonarium* was historically included in *Oscinella* Becker (Sabrosky, 1965), the same genus which includes the well-known introduced frit fly, *O. frit* (L.). In 1980, Sabrosky transferred *O. carbonaria* into *Rhopalopterum*. This is the first record of this species infesting proso millet. From observations made in the field and while rearing the two species to adults, damage can not be differentiated in the field.

Since the millet stems were collected at maturity, the greater number of *R. carbonarium* may not indicate greater abundance (i.e., higher percentage of maggot-blasted heads) but possibly that *M. americana* develops more quickly and had already exited the pupal chamber before being placed in the emergence cage. We believe the millet field from which these two flies were collected suffered significant economic damage and warrants concern to millet producers and crop protection specialists.

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