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## First Report of the Chinch Bug (Heteroptera: Lygaeidae) Egg Parasitoid *Eumicrosoma beneficum* Gahan (Hymenoptera: Scelionidae) in Nebraska

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**First Report of the Chinch Bug (Heteroptera: Lygaeidae)  
Egg Parasitoid *Eumicrosoma beneficum* Gahan  
(Hymenoptera: Scelionidae) in Nebraska**

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**ABSTRACT:** A scelionid wasp, *Eumicrosoma beneficum* Gahan, was reared from chinch bug, *Blissus leucopterus leucopterus* (Say), eggs collected from wheat (*Triticum aestivum* L.) near Odell, Nebraska, in June 1989. Three-hundred twenty-one of 680 chinch bug eggs (47.2%) were parasitized by *E. beneficum*. Based on a subsample of 92 wasps the population was 64.1% female. This is the first report of this wasp from Nebraska.

The chinch bug, *Blissus leucopterus leucopterus* (Say), has been recognized as a periodic pest of corn, wheat, sorghum and other grasses in the midwest for many years (Swenk, 1925; Shelford and Flint, 1943). Chinch bug populations were abundant in southeastern Nebraska (Spike et al., 1991), north-eastern Kansas (Bell, 1991) and adjacent regions of Iowa and Missouri during 1988-1991. Nebraska sorghum growers have suffered crop losses from chinch bugs estimated at \$11.3 and \$10.0 million in 1989 and 1990, respectively (Spike et al., 1991).

Recent research on management of chinch bugs in crops has focused on plant resistance (e.g., Meehan and Wilde, 1989), chemical insecticides (e.g., Mize et al., 1980) and to some extent biological control by the fungus, *Beauveria bassiana* (Balsamo) Vuillemin (e.g., Krueger et al., 1991). Other potential biological controls of chinch bugs are less well researched.

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A scelionid wasp, *Eumicrosoma beneficum* Gahan, has been reported as an egg parasitoid of chinch bugs. The biology of this wasp was studied in Kansas by McColloch and Yuasa (1914, 1915). Little research on *E. beneficum* as a parasitoid of *B. leucopterus leucopterus* has been reported since that date. *Eumicrosoma beneficum* has been reported from eggs of *Blissus leucopterus hirtus* Montandon in Virginia (Dicke, 1937), and New Jersey (Mailloux and Streu, 1981) and Reinert (1972) reported it from *Blissus insularis* Barber in Florida. *Eumicrosoma beneficum* is known to occur in Virginia, Florida, Illinois, Iowa, South Dakota, Kansas, Oklahoma, Texas, the British West Indies, and the Union of Soviet Socialist Republics (Krombein et al., 1979).

As part of preliminary studies begun in 1989 to explore alternative management strategies for chinch bugs we collected samples of chinch bug eggs to determine if *E. beneficum* was present in Nebraska.

**MATERIALS AND METHODS:** A sample of wheat (*Triticum aestivum* L.) plants was collected from a chinch bug infested field located approximately 3.2 km SW of Odell (Gage County) in southeastern Nebraska on 12 June 1989. Chinch bug egg hatch had begun by this time and early instar chinch bug nymphs were present and numerous. Chinch bug eggs were collected in the laboratory by carefully searching the base of the wheat plants and the associated soil from around the roots. Chinch bug eggs were placed on moistened filter paper in petri dishes and held in the dark at about 25°C until wasp emergence was complete. Water was added as needed to maintain moisture inside each dish. A random subsample of emerged wasps was sexed using antennal characteristics described by Gahan (1913). Voucher specimens of *E. beneficum* from this study have been deposited with the U.S. National Museum.

**RESULTS AND DISCUSSION:** Of 680 eggs held for parasite emergence 321 (47.2%) of the eggs showed evidence of parasitism (either wasp emergence or wasp development to the pupal stage, visible within the chinch bug egg). The wasps were identified as *E. beneficum* by Dr. Paul Marsh, USDA Systematic Entomology Laboratory, Beltsville, MD. This level of parasitism in *B. l. leucopterus* was similar to that reported from Kansas by McColloch and Yuasa (1914, 1915), and by Mailloux and Streu (1981) for *E. beneficum* in *B. l. hirtus*. However, since chinch bug egg hatch had begun at the time this egg sample was collected, the actual level of parasitism may be overestimated by this value.

A subsample of 92 emerged wasps consisted of 64.1% females. This value is consistent with previous results of McColloch and Yuasa (1914, 1915) who reported 65% and 72% female wasps from field collected chinch bug eggs. Reinert (1972) reported 42.8% females when *E. beneficum* was reared from *B. insularis*.

Although this wasp has now been reported throughout the areas where chinch bugs currently cause major economic damage (primarily Kansas and Nebraska), other than the work of McColloch and Yuasa (1914, 1915), little is known of the impact of this parasitoid on the population dynamics of chinch bugs. Based on published information, it is active throughout the period that chinch bug eggs are present (May–September), and is capable of parasitizing large proportions of chinch bugs eggs under certain conditions. Although weather and *Beauveria bassiana* have often been assumed to be primary determinants of chinch bug population cycles (Swenk, 1925; Shelford and Flint, 1943; Krueger et al., 1991), *E. beneficum* and other biological controls may play a measurable role and deserve further study.

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