

Re-examination of Monopterous and "Micropterous" House Crickets (*Acheta domesticus*)¹

T. J. WALKER

Department of Entomology and Nematology, University of Florida, Gainesville 32611

ABSTRACT

Monopterous and "micropterous" house crickets, *Acheta domesticus* (Linnaeus), are macropterous crickets that have shed one or both metathoracic wings. No truly micropterous house crickets are known.

Many species of crickets are dimorphic in the length of the metathoracic wings. Long-winged or macropterous individuals may fly; short-winged or micropterous individuals cannot. The genetic and environmental factors that cause an individual to develop long or short wings are poorly understood (Alexander 1968).

R. L. Patton (1975) reported experiments to determine the effect of diet on the development of wings in *Acheta domesticus* (Linnaeus). He observed 3 states of wingedness in his colonies: (1) both metathoracic wings longer than the tegmina; (2) neither metathoracic wing longer than the tegmina; and (3) one metathoracic wing longer than the tegmina. He assumed that individuals in the 1st and 2nd categories were macropterous and micropterous, respectively. The 3rd category was different from any previously described and he termed such individuals *monopterous*.

Macropterous crickets sometimes shed their wings (McFarlane 1964, Walker 1972, Tanaka 1976). They then may be confused with micropterous crickets, but they have stumps of wings beneath the tegmina rather than fully formed, short wings. Dr. Patton's illustration of the metathorax of a "micropterous" house cricket (1975, p. 853, Fig. 2) showed what appeared to be wing stumps.

Dr. Patton graciously sent samples of 15-20 individuals of each of his categories. The samples included no individuals with fully formed, short wings. "Micropterous" individuals had 2 wing stumps and monopterous individuals had one wing stump. When gently pulled with forceps, hindwings of macropterous individuals detached at the axillary sclerites. The stumps were indistinguishable from those of "micropterous" and monopterous individuals.

The U.S. museums having the largest collections of crickets are Philadelphia Academy of Natural Sciences, University of Michigan Museum of Zoology, Florida State Collection of Arthropods, and United States National Museum (Natural History). I have examined the house crickets in these collections ($n \cong 150$) and found none that are truly micropterous. About 20% are dealated or semi-dealated.

Patton (1975) concluded that in house crickets "wing polymorphism, the development of macropterous, monopterous, or micropterous metathoracic wings, is a function of the quality of the diet . . ." Unless evidence of true microptery in house crickets is forthcoming, Patton's data might best be interpreted as indicating that house crickets with diets low in protein (1) have wings that come off more easily, or (2) have a greater tendency to tug on their own or their fellows wings, or (3) both. Crickets of the genera *Anurogryllus* and *Gryllus* are known to eat detached wings (Walker 1972). Perhaps such wings contain significant protein.

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