



Drosophila sonora (Diptera, Drosophilidae), a new species in the *repleta* species group from Mexico

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Abstract

We describe a new species, *D. sonora* Heed and Castrezana from Sonora, Mexico in the *repleta* species group of *Drosophila* (Drosophilidae, Diptera). This species is morphologically similar to other members of the newly established *D. longicornis* complex, and the well-established *D. longicornis* cluster. Host plant associations, biogeography, and distributions of species in both the *longicornis* and *mulleri* species complexes are discussed here.

Key words. Cactophilic *Drosophila*, pupal horns length, aedeagus shape

Introduction

The *Drosophila repleta* species group consists of about 120 described species that have been placed in a number of subgroups, clusters and complexes largely on the basis of polytene chromosome banding patterns (Wasserman 1982; 1992). The *longicornis* species complex (*mulleri* subgroup, *repleta* species group) was by Oliveira *et al.*, (2005), based primarily on a phylogenetic analysis of four mitochondrial genes. According to Bachli, the *longicornis* complex contains eight species: , *D. longicornis* Patterson & Wheeler 1942, *D. spenceri* Patterson 1943, *D. mainlandi* Patterson 1943, *D. hexastigma* Patterson and Mainland 1944, *D. propachuca* Wasserman 1962, *D. pachuca* Wasserman 1962, and two recently described species, *D. huckinsi* Etges & Heed 2001, and *D. huicholi* Etges & Heed 2001 (Etges *et al.*, 2001).

Here we describe *Drosophila sonora* sp. nov., and place it within the *longicornis* complex. *Drosophila sonora* breeds exclusively in fermenting *Opuntia* pads as do 7 of the other 9 species in the complex. The remaining two species, *D. hexastigma*, and *D. spenceri*, breed in several genera of columnar cacti (Oliveira *et al.*, 2005). Wasserman (1982, 1992) referred to this species as “form Sonora” in his chromosome studies and noted that, *D. sonora* is only one chromosomal inversion removed from the ancestral “subspecies E” banding sequence of polytene chromosomes. This species also shares a unique character with its close relatives *longicornis*, and *D. mainlandi*, extremely long pupal horns (Fig. 1b) that are longer than those of any drosophilid. We discuss the evolution of this character in the *longicornis* complex and its relevance ecological adaptation (Table 1).

On the other hand, Oliveira *et al.* (2005) first suggested that the North America *mulleri* complex, containing 23 species, should be divided into two separate units. On cytological grounds, the *mulleri* complex has for many years included the *D. longicornis* lineage (Wasserman 1982, 1992). It is now evident, however, that the two lineages are sufficiently different on other grounds including the results of Oliviera *et al.* (2005) and should be considered as separately evolving sister complexes. This change reduces the *mulleri* complex to 11