



Velvet ants (Hymenoptera: Mutillidae) of the Algodones sand dunes of California, USA

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Abstract

The diversity of velvet ants (Hymenoptera: Mutillidae) on the Algodones Sand Dunes of southern California is investigated. Forty species are found to inhabit areas on and around the dunes. *Sphaerophthalma django* is described as a **new species**. Most of the species are known from males only. In an attempt to associate the sexes of the species, two internal transcribed spacers (ITS1 and ITS2) are sequenced for 11 female morphospecies of nocturnal Mutillidae found on the Algodones Sand Dunes. Their ITS sequences are compared to species known only from males that were also found on these same dunes. Sequences are compared for multiple individuals to assess genetic diversity. As has been found with other mutillids, intersexual sequence differences are much smaller than the interspecific differences. This work results in the matching of 11 females with their conspecific males using molecular data, including: *Odontophotopsis arcuata*, *O. obscura*, **new comb.**, *O. parva*, *O. villosa*, *Sphaerophthalma arota*, *S. blakeii*, *S. django*, **sp. nov.**, *S. difficilis*, *S. ecarinata*, *S. militaris*, and *S. triangularis*. Fresh females of *O. inconspicua* were unavailable, but an association of the female is made using morphological and distributional data. An *Odontophotopsis* female of unknown identity also is described, but not named. *Sphaerophthalma helicaon* (Fox), *Photopsis lingulatus* Viereck, *Sphaerophthalma* (*Photopsis*) *carinata* Schuster, *Sphaerophthalma* (*Photopsis*) *helicaon coahuilae* Schuster, *Sphaerophthalma* (*Photopsis*) *helicaon diegueno* Schuster are **junior synonyms** of *Sphaerophthalma arota* (Cresson). *Mutilla hebes* Melander is a **junior synonym** of *Photomorphus clandestina* (Viereck). *Mutilla bellerophon* Melander (nec Fox) and *Mutilla* (*Photomorphus*?) *crepuscula* Viereck are **junior synonyms** of *Photomorphus bicolor* (Blake). *Odontophotopsis grata* Schuster (nec Melander) is a **junior synonym** of *O. acmaea* Viereck. Neotypes are designated for *O. obscura* Schuster and *O. quadrispinosa* Schuster. Only *Dasymutilla imperialis*, *D. nocturna* and *Sphaerophthalma django*, **sp. nov.**, were found to be restricted to the Algodones Sand Dunes. *Odontophotopsis arcuata*, *O. parva*, *O. villosa* and *S. ecarinata* are not restricted to the Algodones Sand Dunes, but can be found in much greater abundance on the dunes than elsewhere. Keys are provided for both sexes.

Key words: ITS1, ITS2, Sphaerophthalminae, solitary wasp