



Revision of *Odontophotopsis* Viereck (Hymenoptera: Mutillidae), Part 1, with a description of a new Genus *Laminatilla*

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Abstract

This study presents part 1 of a revision of *Odontophotopsis* Viereck (Hymenoptera: Mutillidae) and includes the *cockerelli*, *dentifera*, *exogyra*, *hexadonta*, *quadridentata*, *setifera*, *tenuiptera*, and *unicornis* species-groups *sensu* Schuster (1958), representing 14 species. This revision also includes the *sonora* species-group, which contains *Odontophotopsis sonora* (Schuster), **new comb.**, and the *villosa* species-group, which is newly defined and contains *O. villosa* Mickel. *Odontophotopsis polis*, **sp. nov.**, is described from Baja California and is placed in the *O. dentifera* species-group. *Odontophotopsis mexicana*, **sp. nov.**, and *O. costaricensis*, **sp. nov.**, are described from Mexico and Costa Rica, respectively, and are placed in the *O. tenuiptera* species-group. A neotype is designated for *O. unicornis* Schuster. Keys are provided to the *Odontophotopsis* species-groups and to the species in these species-groups, where appropriate. *Odontophotopsis* (*Periphotosis*) *mamata* Schuster is placed in the *O. parva* species-group and *Periphotosis* is a **junior synonym** of

Odontophotopsis. *Odontophotopsis rubriventris* (Schuster), **new comb.**, was previously placed in *Sphaerophthalma* Blake. *Photomorphus piceogaster* (Schuster), **new comb.**, was previously placed in *Odontophotopsis*. A new genus *Laminatilla*, **gen. nov.** (type species *Odontophotopsis lamellifera* Schuster 1958), is described. This new genus includes the three species *L. bicornigera* (Schuster), **comb. nov.**, *L. lamellifera* (Schuster), **comb. nov.**, and *O. mixtoensis* Schuster (Schuster), **comb. nov.**, which were previously placed in the *O. lamellifera* species-groups *sensu* Schuster (1958). A key to the species of *Laminatilla* and a new key for the males of the Nearctic genera of nocturnal mutillids are provided.

Key words: Sphaerophthalminae, new genus, *Sphaerophthalma*, *Photomorphus*

Introduction

Velvet ants that are nocturnally active as adults represent nearly half of the known Nearctic velvet ant species and are classified in eight genera, with the most species-rich being *Odontophotopsis*, *Photomorphus*, and *Sphaerophthalma*. These genera are endemic to the Nearctic region, being found throughout the southwestern United States, Mexico, and, to a lesser extent, further south into Central America. *Sphaerophthalma* extends into South America as well, although it is not as species-rich in the Neotropics as it is in the Nearctic. The Nearctic nocturnal mutillids are placed in Sphaerophthalmini (Sphaerophthalminae) along with the more conspicuous diurnal genera, such as *Dasymutilla* Ashmead and *Pseudomethoca* Ashmead (Brothers 1975). Most nocturnal species (92%) are based on males only (Pitts *et al.* 2004). The males of these species are more easily collected than females, yet are difficult to identify and are in dire need of taxonomic revision.

The objective of this research is to revise the males of the larger nocturnal genera, starting with *Odontophotopsis*, by providing keys and, in many instances, the first complete descriptions, distributional data, and illustrations for the species. This work is based on the study of ~40,000 specimens of nocturnal Nearctic Mutillidae. The revision of *Odontophotopsis* will be published in three parts. Currently, *Odontophotopsis* contains 54 species, 44 of which are found in North America, while 19 are found in Central America (Krombein 1979; Nonveiller 1990). Several new species will be described in this revision.

Schuster (1958) performed the only previous extensive study of the nocturnal male Sphaerophthalmini of the Nearctic region including *Odontophotopsis*. Based only on males, he described 122 species, of which 21 were *Odontophotopsis*. He also created three new genera (*Acanthophotopsis*, *Acrophotopsis* and *Dilophotopsis*) and six new subgenera. One of the subgenera, *Periphotopsis*, was placed in *Odontophotopsis*. Prior to Schuster, no revisions existed and species descriptions by various authors (e.g., Blake, Bradley, Fox, Melander, Viereck, etc.) were scattered throughout the literature.

Unfortunately, there are undeniable problems with Schuster's treatment of the genera and species. Foremost, errors exist with the labeling of Schuster's types (Pitts and McHugh 2002), and the location of many types remain unknown (Ferguson 1967; Mickel unpub.; Pitts unpub.). The problem is a result of Schuster not labeling the holotypes or paratypes for the 122 newly described species at the time of writing his manuscript. Instead, 12 years passed before he visited the various museums housing the returned type material, and only then did he attach holotype and paratype labels as he saw fit (Ferguson 1967). Due to this oversight, Schuster did not find all of his original type specimens, and some type specimens may have been mislabeled (Ferguson 1967). Of the new species he described, Schuster (1958) included complete locality data along with descriptions or redescriptions for only the nine species of *Acanthophotopsis*, *Acrophotopsis* and *Dilophotopsis*. The remaining 114 species were described only by diagnoses in a key and only general locality data were published. Thus, locating unlabeled holotypes is impossible. Furthermore, many specimens of nocturnal species bear paratype labels even though Schuster (1958) specifically listed paratypes only for *Acanthophotopsis*, *Acrophotopsis* and *Dilophotopsis*. Some of these paratypes can cause considerable confusion, because they may represent multiple species (Pitts and McHugh 2002). This situation is further complicated by the fact that the institutions housing the type material and quantity of paratypes have not been published.