Abstract

Phylogenetic relationships are hypothesized and a revised taxonomy for the *Sphecosoma* genus group is proposed, based on a cladistic study of adult morphological characters. These moths have a neotropical distribution and are accurate mimics of polybiine wasps. The last complete treatment of the group was by Hampson in 1898. We provide a taxonomic history of genera associated with *Sphecosoma*.

We examined 61 of the 89 described species in the 14 genera associated with *Sphecosoma*. These genera included *Abnormipterus* Orfila, *Bombopsyche* Hampson, *Metamya* Travassos, *Methysia* Butler, *Myrmecopsis* Newman, *Orcynia* Walker, *Phaeosphecia* Hampson, *Pleurosoma* Orfila, *Pompiliodes* Hampson, *Pompilopsis* Hampson, *Pseudosphecosoma* Strand, *Sphecops* Orfila, *Sphecomimax* Bryk, and *Sphecosoma* Butler. To establish putative outgroups, we examined dissections of 39 species of 37 ctenuchine–euchromiine genera and we selected 13 species in 7 genera. Outgroup genera included *Calonotos* Hübner, *Chrysocale* Walker, *Horama* Hübner, *Isanthrene* Hübner, *Macrocneme* Hübner, *Metaloba* Hampson, and *Pseudopompilia* Druce. The data set consisted of 52 adult morphological characters (22 binary, 30 multistate, 195 states total) from head, thorax, and abdomen. Characters were traditional and novel (i.e., microtymbals, abdominal apophyses) and were unrelated to wasp mimicry. Maximum parsimony (MP) was performed.

The final analyses yielded 24 most parsimonious trees in two islands (L = 353, CI = 0.42, RI = 0.64). The tree islands differ in the placement of *Orcynia* and *Pseudopompilia*. Our revised classification includes six genera and two species groups that reflect clades supported by both islands. The following genera are included in our revised concept of the *Sphecosoma* genus group: *Horama*, *Methysia*, *Myrmecopsis*, *Pleurosoma*, *Pseudopompilia*, and *Sphecosoma*. Within *Sphecosoma*, we recognize two species groups, the *S. cognatum* species group and the *S. aliena* species group. We remove *Orcynia* from the *Sphecosoma* genus group.

We provide redescriptions and diagnoses of the six genera and two species groups along with illustrations of relevant structures. Our revised taxonomy results in six new generic synonyms, 22 new combinations and one new species name (*Sphecosoma donahuei* Simmons), summarized in a species checklist.