

# UC Davis

## UC Davis Previously Published Works

### Title

The First Host Record for the Wasp Subfamily Brachycistidinae  
(Hymenoptera: Tiphidae)

### Permalink

<https://escholarship.org/uc/item/9w73v3vj>

### Journal

Proceedings of the Entomological Society of Washington, 117(1)

### ISSN

0013-8797

### Authors

Borowiec, Marek L  
Kimsey, Lynn S

### Publication Date

2015

### DOI

10.4289/0013-8797.117.1.62

Peer reviewed

See discussions, stats, and author profiles for this publication at:  
<http://www.researchgate.net/publication/274898850>

# The First Host Record for the Wasp Subfamily Brachycistidinae (Hymenoptera: Tiphidae)

ARTICLE in PROCEEDINGS- ENTOMOLOGICAL SOCIETY OF WASHINGTON · APRIL 2015

Impact Factor: 0.48 · DOI: 10.4289/0013-8797.117.1.62

---

DOWNLOADS

19

---

VIEWS

22

## 1 AUTHOR:



Marek Borowiec

University of California, Davis

18 PUBLICATIONS 47 CITATIONS

SEE PROFILE

## **The First Host Record for the Wasp Subfamily Brachycistidinae (Hymenoptera: Tiphidae)**

Author(s): Marek L. Borowiec and Lynn S. Kimsey

Source: Proceedings of the Entomological Society of Washington, 117(1):62-64.

Published By: Entomological Society of Washington

DOI: <http://dx.doi.org/10.4289/0013-8797.117.1.62>

URL: <http://www.bioone.org/doi/full/10.4289/0013-8797.117.1.62>

---

BioOne ([www.bioone.org](http://www.bioone.org)) is a nonprofit, online aggregation of core research in the biological, ecological, and environmental sciences. BioOne provides a sustainable online platform for over 170 journals and books published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Web site, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/page/terms\\_of\\_use](http://www.bioone.org/page/terms_of_use).

Usage of BioOne content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

NOTE

**THE FIRST HOST RECORD FOR THE WASP SUBFAMILY  
BRACHYCISTIDINAE (HYMENOPTERA: TIPHIIDAE)**

DOI: 10.4289/0013-8797.117.1.62

---

The tiphid subfamily Brachycistidinae comprises 10 genera and at least 85 species and is restricted to the New World (Kimsey 2006, Kimsey & Wasbauer 2006). Because of extreme sexual dimorphism—females are wingless and ant-like and males are nocturnal fliers—the group is an example of a ‘dual-taxonomy’ where a number species that have been described based on one sex will likely eventually prove to be synonyms of a species known from the other (Kimsey 2006).

Data on the biology of the group are scarce. Most females in the family Tiphidae are ectoparasitoids of subterranean insects, especially of beetle larvae in Scarabaeoidea and Cicindelinae (Carabidae), although hosts for most species remain unknown (Wasbauer 1966, Goulet & Huber 1993), including all members of Brachycistidinae. The most detailed discussion of the biology of this subfamily was provided by Wasbauer (1966). The males of are often attracted to lights and in collections they are much more abundant than the females. Wasbauer reports that the females are likely spending most time underground, coming out mainly during the night and, similarly to males, showing some attraction to artificial light. The same author also states that it is probable that brachycistidines are parasitoids of Scarabaeoidea. As supporting evidence he cites co-occurrence of female brachycistidines and scarab beetles in the same habitats and microhabitats. In the above reference he also details an

unsuccessful experiment in which captive female wasps were exposed to beetle larvae of Scarabaeidae and Tenebrionidae in hope to elicit hostile interaction. The more recently published family-level references of Goulet & Huber (1993) and Hanson & Gauld (1995) state that brachycistidines are ‘probably parasites on the larvae of Scarabaeoidea’ without providing any reference and there is little doubt that they followed Wasbauer’s earlier account. Recently one of the authors (MLB) had an opportunity to observe a female *Stilbopogon* Mickel & Krombein stinging a beetle larva of the tenebrionid tribe Coniiontini, most likely belonging to the genus *Eusattus* LeConte.

Below we detail the circumstances of this interaction, which represents the first confirmed host record for a brachycistidine.

The observation took place in California, Imperial County, Algodones Dunes, along Gecko Road just south of Interstate 78 on the afternoon of April 18th, 2014. Coordinates for the collection event are 32.95869° -115.16775°. According to the archive of the California Department of Water Resources Cahuilla weather station located a mile north from the observation locality the weather conditions included temperature of about 27°C (min that day 19°C, max 29°C), relative humidity of 30%, and winds of 20-25 km/h. The skies were overcast. The habitat is a creosote bush scrub at the edge of sand dunes, with flat areas of sand and mounds of soil held

together by clumps of creosote bush (*Larrea tridentata*) and long leafed ephedra (*Ephedra trifurca*). The vegetation cover is sparse but other plants noted in the vicinity included Emory's indigo bush (*Psoralea emoryi*) and fanleaf crinklemat (*Tiquilia plicata*). The area is heavily used by the public in off-road vehicles.

The beetle larva was observed making wriggling movements tumbling down one of the sand mounds. Upon closer inspection it could be seen that it was being stung by a brachycistidine female. The wasp was holding onto the larva, making stinging movements with its abdomen aimed at the underside of the beetle. Both specimens were at this point collected in 95% ethanol for later identification.

The wasp was identified as belonging to the genus *Stilbopogon* by LSK and the beetle larva was identified with the help of Rolf Aalbu, California Academy of Sciences, San Francisco, CA and Warren Steiner, National Museum of Natural History, Washington, DC, as a likely member of the tenebrionid tribe Coniintini. The voucher specimens have been deposited in the Bohart Museum of Entomology, University of California, Davis.

Six species of *Stilbopogon* are known from Algodones Dunes: *S. arenicola* (Wasbauer), *S. confusa* (Kimsey & Wasbauer), *S. inermis* (Malloch), *S. marcida* (Bradley), *S. mexicana* (Kims. & Wasb.), and *S. sonorensis* (Kims. & Wasb.). Because of the male-based taxonomy of this genus the association of our female specimen to any one of these species is not possible at this time. The host larva appears to be a member of Coniintini, and although certain identification of the genus proved difficult it is very likely that it belongs to *Eusattus*, which is the only genus of Coniintini known from the area. DNA barcoding or

a similar molecular identification method is beyond the scope of this note but this approach may prove the most direct way of eventually reconciling both the dual taxonomy of Brachycistidine and associating unidentifiable immature insects with the adults whose taxonomy and morphology are much better studied.

#### ACKNOWLEDGMENTS

We would like to thank Rolf Aalbu, California Academy of Sciences, San Francisco, CA, Warren Steiner, National Museum of Natural History, Washington, DC, Paweł Jałoszyński of the Museum of Natural History, University of Wrocław, Poland and James Dunford, University of Florida, FL for their help in identification of the beetle larva. The list of *Stilbopogon* and Tenebrionidae species occurring in the dunes was compiled as a part of the survey done by the Bohart Museum for the U. S. Bureau of Land Management under an Assistance Agreement, BAA033001/BAA06044 issued under the umbrella Cooperative Agreement for the Californian Cooperative Ecosystems Unit (CESU). Thanks to Matthew Prebus and Brendon Boudinot for company and logistical support during the trip on which this observation was made.

#### LITERATURE CITED

- Goulet, H. and J. T. Huber (eds.) 1993. Hymenoptera of the world: an identification guide to families. Research Branch, Agriculture Canada Publication 1894/E. Ottawa: Canada Communications Group. vii + 668 pp.
- Hanson, P. E. and I. D. Gauld (eds.) 1995. The Hymenoptera of Costa Rica. Oxford: Oxford University Press. xx + 893 pp.
- Kimsey, L. S. 2006. Competing taxonomies: Reexamination of the female-based genera of Brachycistidinae (Hymenoptera: Tiphidae). Zootaxa 1211: 21–834.

- Kimsey, L. S. and M. S. Wasbauer. 2006. Phylogeny and checklist of the nocturnal tephritids of the Western Hemisphere (Hymenoptera: Tephritidae: Brachycistidinae). *Journal of Hymenoptera Research* 15: 9–825.
- Wasbauer, M. S. 1966. Revision of the male wasps of the genus *Brachycistis* in America north of Mexico. University of California Publications in Entomology 43: 1–96.
- Marek L. Borowiec and Lynn S. Kimsey, *Department of Entomology, University of California, Davis, One Shields Avenue, CA 95616, USA (e-mail: mlborowiec@ucdavis.edu, lskimsey@ucdavis.edu)*