



**DESCRIPTION OF ALLOTROPA ORACELLAE  
(HYMENOPTERA: PLATYGASTRIDAE), A PARASITOID  
OF ORACELLA ACUTA (HETEROPTERA:  
PSEUDOCOCCIDAE)**

Authors: Masner, Lubomir, Jianghua, Sun, Clarke, Stephen R., and Berisford, C. Wayne

Source: Florida Entomologist, 87(4) : 600-602

Published By: Florida Entomological Society

URL: [https://doi.org/10.1653/0015-4040\(2004\)087\[0600:DOAOHP\]2.0.CO;2](https://doi.org/10.1653/0015-4040(2004)087[0600:DOAOHP]2.0.CO;2)

---

BioOne Complete ([complete.BioOne.org](http://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Complete 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.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

DESCRIPTION OF *ALLOTROPA ORACELLAE*  
(HYMENOPTERA: PLATYGASTRIDAE), A PARASITOID  
OF *ORACELLA ACUTA* (HETEROPTERA: PSEUDOCOCCIDAE)

LUBOMIR MASNER<sup>1</sup>, JIANGHUA SUN<sup>2</sup>, STEPHEN R. CLARKE<sup>3</sup> AND C. WAYNE BERISFORD<sup>4</sup>

<sup>1</sup>Agricultural Canada ECOR/BRD, Ottawa, ON, Canada K1A 0C6

<sup>2</sup>State Key Laboratory of Integrated Management for Insects and Rodents, Institute of Zoology  
Chinese Academy of Sciences, Beijing 100080, China

<sup>3</sup>USDA Forest Service, 415 South 1st St., Lufkin, TX 75901, USA

<sup>4</sup>University of Georgia, Department of Entomology, 413 Biological Sciences Building, Athens, GA 30602

The genus *Allotropia* is in the subfamily Sceliotrachelinae of the family Platygasteridae (Masner & Huggert 1989). The members of *Allotropia* are known as primary endoparasitoids of various mealybugs (Masner & Huggert 1989; Vlug 1995). Twenty-one species are described from all major biogeographic regions of the world, with five species described from the Nearctic region (Muesebeck 1979).

The mealybug *Oracella acuta* (Lobdell) was accidentally introduced into Guangdong Province, China in 1988 (Sun et al. 1996). Due to a lack of natural enemies, the mealybug spread rapidly through stands of slash pine, *Pinus elliotti* Englm. (Zhou et al. 1994), causing severe growth loss (Ren et al. 2000). After failed attempts to find native natural enemies in China, a Sino-U.S. forestry cooperative project was initiated to study the parasitoid complex of *O. acuta* in the U.S. and to evaluate the potential for a classical biological control program against the mealybug in China. Three primary endoparasitoids of *O. acuta* were identified: *Zarhopalus debarri* Sun (Encyrtidae), *Acerophagus coccois* E. Smith (Encyrtidae), and one in the genus *Allotropia* (Clarke et al. 1990, 1992; Sun et al. 1998). This platygasterid was identified by one of the authors (L.M.) as a species new to science. Due to its potential inclusion in a biological control program, a description of this species is undertaken.

New character states were used in this description because those traditionally used in taxonomy of *Allotropia* offered only limited value in species discrimination. Among the new character states used were the morphology of the mesopleuron, the pilosity of the metapleuron, and the microsculpture of the mesoscutum. The mesopleuron offered excellent distinguishing character states, such as the shape of the mesopleural depression, and the presence or absence of a sternaulus or of deep pits. In contrast to the glabrous mesopleuron, the metapleuron is typically hairy in most, but not all species. The microsculpture of the mesoscutum offered useful diagnostic character states in most species. Since the character

states above were not considered in previous descriptions, types of all species were re-examined for confirmation.

*Allotropia oracellae* Masner **sp. nov.**

Diagnosis

Body black, antennae and legs predominantly dark brown; wings clear; mesopleuron posteriorly with coriaceous microsculpture refined to form nearly smooth area; scutellum rather flattened, predominantly smooth; mesopleuron with complete horse-shoe shaped depression and no pits, sternaulus well developed; metapleuron entirely covered with silvery pilosity.

Description, Holotype (female)

Body length 0.86 mm; body black, nucha of propodeum and T1 brownish, legs predominantly brownish, with trochanters, basal part of tibiae and all tarsi yellowish brown. A1 and clava (A7-A9) brown, A2-A6 light brown; wings clear. Head in dorsal view (Fig. 1C) subellipsoidal, transverse (27:13); hyperoccipital carina only weakly indicated, almost effaced; vertex and occiput with coriaceous microsculpture; lateral ocellus contiguous with inner orbit of eye; eye with short fine pilosity; head in front view with frons coriaceous, also inner orbit but with smooth central part below anterior ocellus; sculptured part of frons with scattered appressed silvery hairs; inter-orbital space distinctly larger than eye height (17:11); antennomeres (A1-A9) in relative proportions (length:width) 15:5, 5.5:3, 5:1.5, 2.5:1.5, 2.5:1.7, 3:3, 4:3, 5:3, A7 and A8 strongly extended-pointed outwardly (Fig. 1A).

Mesosoma in dorsal view (Fig. 1D) slightly narrower than head (25:27); mesoscutum with dense coriaceous microsculpture; microsculpture refined to gradually form an almost smooth area posteromedially (better appreciated if viewed from behind); series of anterior scutellar pits (below transcutal articulation) strongly developed;

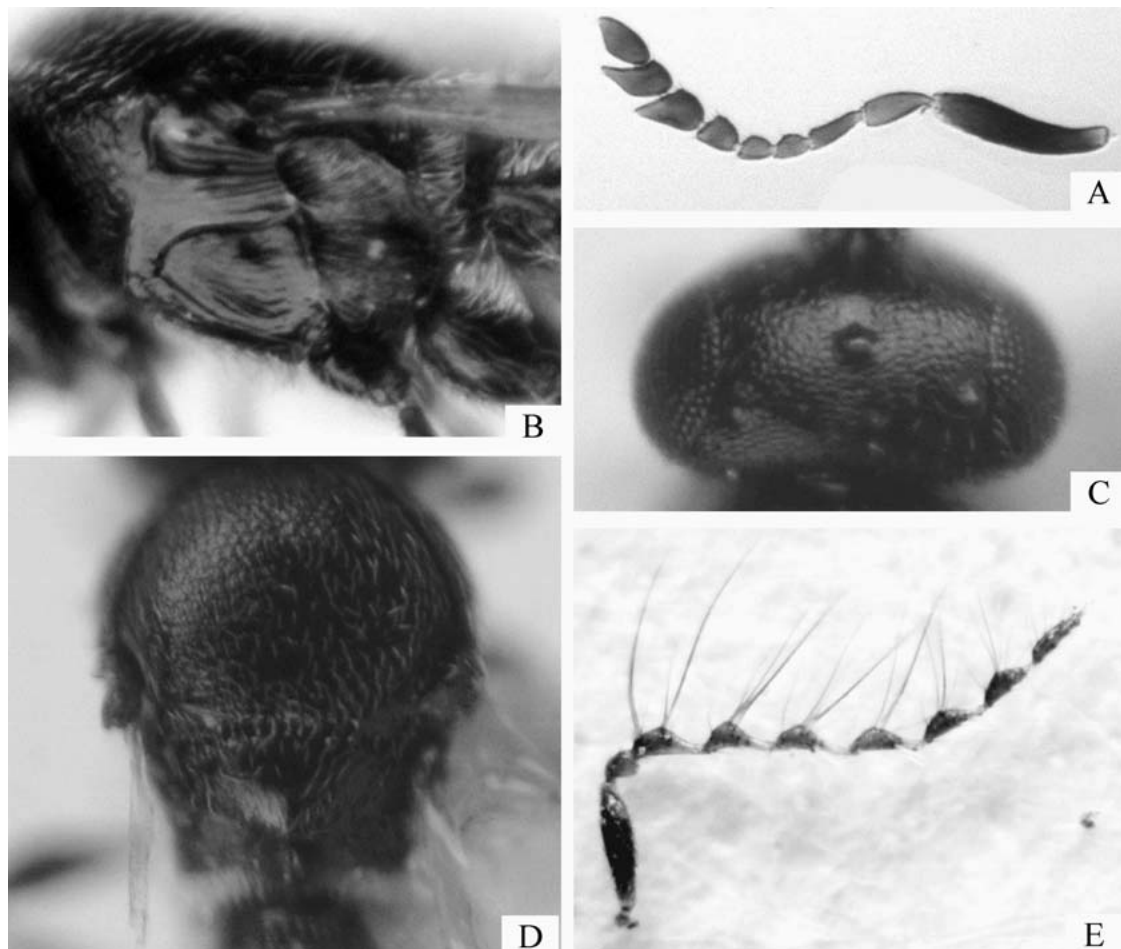


Fig. 1. *Allotropia oracellae* Masner **sp. nov.** A-D female; A: antenna (outer aspect), B: thorax in lateral view showing mesopleuron, C: head in dorsal view, D: thorax in dorsal view, E: male antenna (inner aspect).

scutellum predominantly smooth; mesosoma in lateral view (Fig. 1B) with mesoscutum and scutellum almost flat, non convex; side of pronotum with fine irregular coriaceous sculpture and with scattered appressed pilosity; mesopleuron predominantly glabrous, with several horizontal wrinkles near upper margin; mesopleural depression with distinct horse-shoe shaped declivity sharply margined dorsally by a deep sulcus and a complete sternaulus ventrally, deep pits not developed; anteroventral part of mesopleuron with patch of coriaceous microsculpture and sparse silvery pilosity; entire metapleuron with coriaceous microsculpture and side of propodeum with dense long, non-apressed silvery hairs.

Metasoma distinctly elongate (45:22); T1 with strong longitudinal costae not surpassing basal half of tergite; T2 basally with short costae not exceeding T1 length, rest of T2 glabrous and smooth; T3-T5 short, each with sparse hairs;

T6 broadly triangular, wider than long (10:6), sharply pointed apically.

Allotype (male)

The male differs from female principally in structure of the antenna (Fig. 1E); antennomeres (A1-A9) in relative proportions (length:width) 15:5, 4:3, 10:3, 9:3, 9:3, 8:3, 8:3, 11:2.5, A3-A9 with long upright bristles, bristles on A3-A6 about 2.5 times as long as antennomeres; A3-A8 distally with long neck-like constriction, constricted part nearly as long as basal unconstricted part, especially in A3-A5; A9 lancetoid, not differentiated in broader basal and distal neck-like parts.

Etymology

The specific epithet is derived (in genitive form) from *Oracella*, the generic name of the host mealybug; the gender is feminine.

## Material Examined

Holotype, female, United States, Georgia, Toombs Co., Lyons, 30 September 1996, ex. *Oracella acuta* Loddell on loblolly pine (*Pinus taeda* L.), emerged in laboratory, Jianghua Sun, Hopkins # 67519; Allotype, male, with same data as holotype; Paratypes, 11 females and 21 males, with same data as holotype. The holotype and some paratypes are deposited in the United States Natural History Museum, Washington, D.C.; other paratypes are in the Canadian National Insect Collection (CNIC) and the Natural History Museum of the University of Georgia.

## Recognition and Relationships

*Allotropa oracellae* Masner sp. nov. belongs to the larger group of *Allotropa* species characterized by distinct horse-shoe shaped mesopleural depression. In this group, *Allotropa oracellae* is further distinguished by gradually effaced microsculpture on postero-median part of mesoscutum and also by distinctly neck-like constricted distal parts of the male antennomeres A3-A5. The degree of refinement of the microsculpture on the posterior mesoscutum may vary from weak, especially in females, to almost completely smooth, as in most males. The coloration of the antennae and legs appear constant, at least in material examined.

## Host and Distribution

*Allotropa oracellae* was reared from the mealybug, *O. acuta* infesting loblolly pine in the southeastern United States. No additional specimens were discovered in the rich Nearctic material in CNIC. Additional specimens have been collected in Arkansas, South Carolina, North Carolina, Louisiana, and Texas. *Allotropa oracellae* appears to occur throughout the range of *O. acuta* in the southeastern United States.

This work was supported by grants from the USDA Forest Service, the National Center of Forest Health, and the USDA Foreign Agricultural Service, International Cooperation and Development. A visit to the U.S. Natural History Museum, Washington DC by Dr. Masner to study type material of *Allotropa* species was supported by a USDA Forest Service grant. We gratefully acknowledge the leading role played by Dr. Gary DeBarr in this project. Thanks are extended to Dr. Yanzhou Zhang, Institute of Zoology, Chinese

Academy of Sciences for taking the photographs. Publication of this paper is partially supported by the CAS Innovation Program (KSCX1-SW-13).

## SUMMARY

The parasitoid *Allotropa oracellae* Masner sp. nov. (Platygastridae) is described. This species was collected in Georgia (United States) and is an endoparasitoid of the mealybug, *Oracella acuta* (Loddell). New character states for the genus were used, including the pilosity of metapleuron and the microsculpture of mesoscutum.

## REFERENCES

- CLARKE, S. R., G. L. DEBARR, AND C. W. BERISFORD. 1990. Life history of *Oracella acuta* (Homoptera: Pseudococcidae) in loblolly pine seed orchards in Georgia. *Environ. Entomol.* 19: 99-103.
- CLARKE, S. R., J. F. NEGRON, AND G. L. DEBARR. 1992. Effects of four pyrethroids on scale insect (Homoptera) populations and their natural enemies in loblolly and short-leaf pine seed orchards. *J. Econ. Entomol.* 85: 1246-1252.
- MASNER, L., AND L. HUGGERT. 1989. World review and keys to genera of the subfamily Inostemmatinae with reassignment of taxa to the Platygastrinae and Sceliotrachelinae (Hymenoptera: Platygastridae). *Memoirs of the Entomological Society of Canada*. No. 147, 214 pp.
- MUESEBECK, C. F. W. 1979. Family Platygastridae, pp. 1171-1186 *In* K. Krombein, P. D. Hurd, Jr., D. R. Smith, and B. D. Burks. *Catalog of Hymenoptera in America North of Mexico*. Vol. 1. Smithsonian Institution Press, Washington D.C.
- REN, H., M. R. CHEN, H. B. YU, AND J. X. XU. 2000. A newly found native parasitoid, *Anagyrus dactylopii* of loblolly pine mealybug, *Oracella acuta*. *Nat. Enemies of Insects* 22: 140-143 (In Chinese with English summary).
- SUN, J. H., G. L. DEBARR, T. X. LIU, C. W. BERISFORD, AND S. R. CLARKE. 1996. An unwelcome guest in China: A pine-feeding mealybug. *J. of For.* 94: 27-32.
- SUN, J. H., G. L. DEBARR, C. W. BERISFORD, AND M. E. SCHAUFF. 1998. Description of a new primary parasitoid, *Zarhopalus* Ashmead (Hymenoptera: Encyrtidae), of *Oracella acuta* (Hymenoptera: Pseudococcidae). *Can. Entomol.* 130: 793-797.
- VLUG, H. 1995. *Catalogue of the Platygastridae (Platygastroidea) of the world*. Hymenopterorum Catalogus Pars. 19. SPB Academic Publishing, Amsterdam. 168 pp.
- ZHOU, C., H. JIANG, W. PAN, R. YANG, AND H. YU. 1994. Prospects of controlling loblolly pine mealybug, *Oracella acuta*, with introduced natural enemies. *Nat. Enemies of Insects* 16: 114-118 (In Chinese with English Summary).