

***Zdenekiella deon* gen. nov. et sp. nov. (Hymenoptera: Chalcidoidea, Encyrtidae), egg parasitoid of *Phonapate frontalis* (Coleoptera: Bostrichidae) from Libya**

Emilio GUERRIERI<sup>1)</sup> & John S. NOYES<sup>2)</sup>

- <sup>1)</sup> Istituto per la Protezione delle Piante, CNR, sez. Portici (NA), Italia; e-mail: guerrieri@ipp.cnr.it  
<sup>2)</sup> Department of Entomology, Natural History Museum, London, United Kingdom; e-mail: jsn@nhm.ac.uk

Received July 2, 2004; accepted December 15, 2004  
Published December 30, 2005

**Abstract.** A new genus and species of encyrtid (Hymenoptera: Chalcidoidea: Encyrtidae) reared from the eggs of Bostrichidae (Coleoptera) on date palm is described. Morphological and biological features suggest that *Zdenekiella deon* gen. nov. et sp. nov. belongs to the tribe Oobiina in the subfamily Encyrtinae. Differences from the closely related genera *Avetianella* Trjapitzin, 1968, *Oobius* Trjapitzin, 1963 and *Orianos* Noyes, 1990 are highlighted. A dichotomous key is provided to facilitate the identification of the known genera of Oobiina.

**Taxonomy, new genus, new species, key, Hymenoptera, Chalcidoidea, Encyrtinae, Oobiina, date palm, frond borer, Coleoptera, Bostrichidae, Palaearctic region**

#### INTRODUCTION

The frond borer, *Phonapate frontalis* (Fåhraeus, 1871) (Coleoptera: Bostrichidae), is a minor pest of the date palm, *Phoenix dactylifera* L. (Arecaceae). The species has been recently reported from Europe and develops in mines in palm leaves (López-Colón 1998). From eggs of *P. frontalis* collected in Libya, an interesting parasitoid emerged. Indeed, it belongs to an undescribed genus that we name in honour of Dr Zdeněk Bouček in celebration of his 80<sup>th</sup> birthday and in recognition of his contribution to Chalcidoidea systematics.

#### MATERIAL AND METHODS

Abbreviations used in the text include: F1, F2, etc., first funicle segment, second funicle segment, etc.; FV, minimum frontovertex width; FWL, maximum length of fore wing; FWW, maximum width of fore wing; GL, gonostylus (= third valvula) length; HW, maximum head width; MT, mid tibia length; MV, maximum length of marginal vein; OCL, occipital-ocellar line (= the shortest distance between posterior ocellus and occipital margin); OL, ovipositor length; OOL, ocular-ocellar line (= the shortest distance between posterior ocellus and adjacent eye margin); PMV, SMV, maximum length of postmarginal and submarginal veins respectively; POL, the minimum distance between posterior ocelli; SL, scape length (excluding radicle); SV, maximum length of stigmal vein; SW, maximum scape width.

#### *Zdenekiella* gen. nov.

TYPE SPECIES. *Zdenekiella deon* sp. nov.

ETYMOLOGY. The genus is named in honour of Dr Zdeněk Bouček. Gender feminine.

DESCRIPTION. Head in facial view 1.2× as broad as long; malar space nearly 0.5× length of eye. Frontovertex nearly 0.4× head width; ocelli forming a right angle. Antennal scrobes deep and almost reaching anterior ocellus; interantennal prominence well developed; antennal torulus sep-

arated from mouth margin by two-thirds its own length and from other torulus by about 1.3× its own length. Antennal scape (Fig. 1) cylindrical, about 5.5× as long as broad; pedicel subconical longer than any funicular segment; funicle 6-segmented; clava 3-segmented, apex obliquely truncate. Mandible (Fig. 2) with three teeth, upper tooth sharpest, lower one shortest; maxillary palpus (Fig. 3) 4-segmented, labial palpus (Fig. 4) 3-segmented.

Thorax convex; visible part of mesoscutum 1.5× as broad as long, with notaular lines absent; scutellum about as long as broad. Mesoscutum with sculpture (Fig. 5) made of irregular ridges; scutellum with reticulate sculpture (Fig. 6) composed of small cells. Fore wing (Fig. 7) hyaline, about 2× as long as broad; linea calva interrupted by 2 small setae; filum spinosum present; submarginal vein (Fig. 8) with an apical hyaline break, parastigma a little broadened in apical third; costal cell with subparallel margins about 8× as long as broad with one line of setae dorsally along distal half; marginal vein as long as broad and as long as postmarginal vein; stigmal vein 1.3× as long as marginal vein. Mid tibial spur as long as basal mid tarsal segment.

Gaster about as long as thorax (23:20); cercal plates about halfway along gaster; paratergites absent. Ovipositor (Fig. 9) 1.3× as long as mid tibia and a little exserted, exserted part shorter than mid tibial spur; outer plate of ovipositor almost rectangular; gonostylus about 0.25× length of ovipositor. HOSTS. The type species has been reared from eggs of the palm frond borer *Phonapate frontalis* (Coleoptera: Bostrichidae).

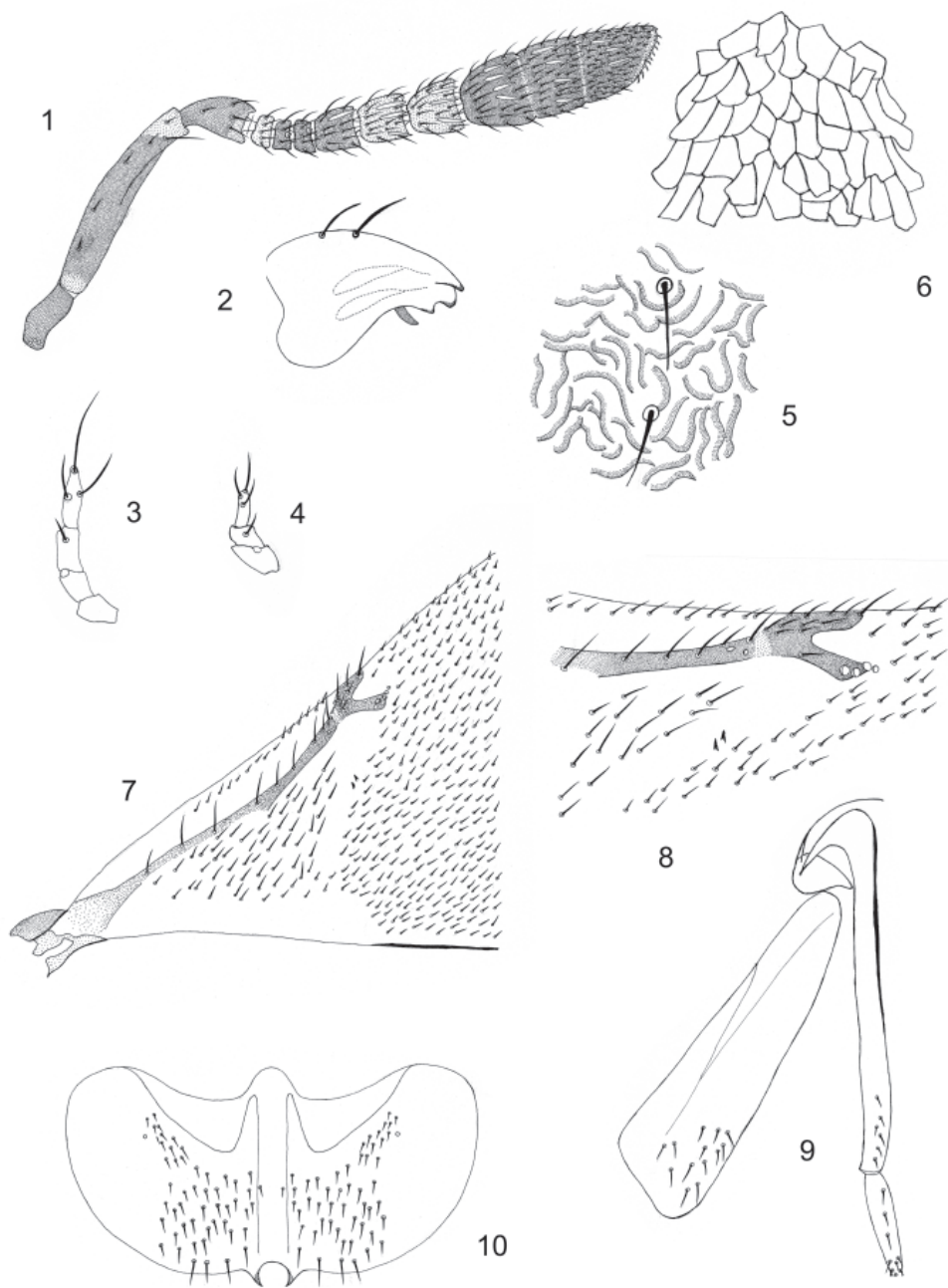
DISTRIBUTION. Known so far from Libya only.

COMMENTS. Records of Encyrtidae parasitising the eggs of Coleoptera are relatively few. In the most current catalogue of Chalcidoidea (Noyes 2003), they are recorded from *Ooencyrtus* Ashmead, 1900 and some related genera, and from the subtribes Oobiina and Cheiloneurina. *Zdenekiella* gen. nov. cannot be placed in any genera close to *Ooencyrtus* or in the Cheiloneurina because the mesopleuron is not expanded posteriorly and it is clearly separated from the base of the gaster whereas in all genera related to *Ooencyrtus* and those of the Cheiloneurini, the mesopleuron is clearly expanded posteriorly and touches the base of the gaster or nearly so. We believe that the combination of the obliquely truncate clava, the broadened parastigma, the interrupted linea calva, the unexpanded mesopleuron and biology clearly places *Zdenekiella* gen. nov. in the subtribe Oobiina. Females of this genus can be separated from those of other genera of the subtribe using the key presented below.

### Key to genera of Oobiina (females)

1. Frontoververtex without membranous lines. .... 2
- Frontoververtex with membranous lines adjacent to inner eye margins and across frontoververtex below anterior ocellus. .... 3
2. Mandible with four teeth; clava obliquely truncate for half its length; mesoscutum with reticulate sculpture, each cell further divided by parallel ridges. .... *Orianos* Noyes, 1990
- Mandible with three teeth; clava obliquely truncate in apical one-third; mesoscutum with sculpture composed of irregular ridges. .... *Zdenekiella* gen. nov.
3. Clava 3-segmented. .... 4
- Clava entire. .... 5
4. Maxillary palpi 3-segmented; labial palpi 1-segmented. .... *Oobius* Trjapitzin, 1963
- Maxillary palpi 4-segmented; labial palpi 3-segmented. .... *Avetianella* Trjapitzin, 1968
5. Labial palpi 3-segmented. .... *Chrysomelechthrus* Trjapitzin, 1977
- Labial palpi 1-segmented. .... *Szelenyiola* Trjapitzin, 1977

In the most recent faunistic keys available for Encyrtidae (Noyes & Hayat 1984, Trjapitzin 1989), the new genus runs respectively to *Coccidoxenoides* Girault, 1915 and *Paralitomastix* Mercet, 1921 (= *Copidosoma* Ratzeburg, 1844 see Guerrieri & Noyes (2005)). Apart from belonging to a different subfamily of Encyrtidae, *Zdenekiella* gen. nov. can be conveniently separated from



Figs 1–10. *Zdenekiella deon* gen. nov et sp. nov., female. 1 – antenna; 2 – mandible; 3 – maxillary palp; 4 – labial palp; 5 – sculpture of mesoscutum; 6 – sculpture of scutellum; 7 – base of fore wing; 8 – fore wing venation; 9 – ovipositor; 10 – hypopygium.

*Coccidoxenoides* by having tridentate mandibles, whilst in *Coccidoxenoides* the mandibles are bidentate. *Zdenekiella* gen. nov. can be distinguished from *Copidosoma* by having a distinctly broadened parastigma and the placoid sensilla of the stigmal vein being arranged in two rows, whilst in *Copidosoma* the parastigma is more or less the same diameter as the submarginal vein and the placoid sensilla of the stigmal vein are arranged symmetrically in a square.

***Zdenekiella deon* sp. nov.**

(Figs 1–10)

DESCRIPTION. Female (holotype): length 0.9 mm.

Body entirely black with blue-green reflections; antenna (Fig. 1) dark brown, apex of scape, F1, F5 and F6 pale brown; fore wing (Fig. 7) hyaline, venation brown; legs dark brown, apices of all femora and tibiae, and base of tarsi yellowish.

Head about 2.8× as wide as frontovertex; ocelli forming a right angle; posterior ocellus almost touching eye; antennal proportions as in Fig. 1 with scape about 5.5× as long as broad, F1–F3 strongly transverse, F4–F6 abruptly larger than preceding segments and with linear sensilla; clava obliquely truncate at apex; mandible and palpi as in Figs 2–4. Relative measurements: HW 44, FV 16, POL 10, OOL <1, OCL 8, SL 22, SW 4.

Fore wing (Fig. 7) about 2× as long as broad, venation as in Fig. 8. Relative measurements: FWL 100, FWW 48, MV 3, PMV 3, SV 4.

Gaster with ovipositor slightly exerted.

Paratype. Ovipositor as in Fig. 9 about 1.3× as long as mid tibia and 4× as long as gonostyli; hypopygium as in Fig. 10. Relative measurements: OL 82, MT 60, GL 20.

ETYMOLOGY. The specific name is an arbitrary combination of letters.

HOSTS. The species has been reared from eggs of *Phonapate frontalis* (Coleoptera: Bostrichidae) collected on date palm, *Phoenix dactylifera* L.

DISTRIBUTION. Libya.

TYPE MATERIAL. Holotype ♀, LIBYA, Gialo, 19.v.2001, ex eggs of *Phonapate frontalis* on palm trees (legit Salah Agunna). Paratypes: 11♀, same data as holotype. Holotype and paratypes in the Natural History Museum, London, UK. One paratype will be deposited at Dipartimento di Entomologia e Zoologia Agraria, Università di Napoli “Federico II”, Portici (NA), Italy.

A c k n o w l e d g e m e n t s

We wish to thank Dr Salah Agunna for supplying the original material on which this paper is based.

REFERENCES

- GUERRIERI E. & NOYES J. S. 2005: Revision of the European species of *Copidosoma* Ratzeburg (Hymenoptera: Encyrtidae), parasitoids of caterpillars (Lepidoptera). *Systematic Entomology* **30**: 97–174.
- LÓPEZ-COLÓN J. I. 1998: *Phonapate frontalis* (Fähræus, 1871), nuevo bostríquido ibérico (Coleoptera, Bostrichidae). *Boletín de la Sociedad Entomológica Aragonesa* **21**: 11–13.
- NOYES J. S. 1990: A new genus and species of encyrtid (Hymenoptera, Chalcidoidea) parasitoid of the eggs of the varicose borer, *Agrilus sexsignatus* (Fisher) (Coleoptera, Buprestidae), a pest of bagras (*Eucalyptus deglupta* Blume) in the Philippines. *Journal of Natural History* **24**: 21–25.
- NOYES J. S. 2003: *Universal Chalcidoidea Database*. *World Wide Web electronic publication*. [www.nhm.ac.uk/entomology/chalcidooids/](http://www.nhm.ac.uk/entomology/chalcidooids/) [accessed 8 September 2003].
- NOYES J. S. & HAYAT M. 1984: A review of the genera of Indo-Pacific Encyrtidae (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum of Natural History (Entomology)* **48**: 131–395.
- TRJAPITZIN V. A. 1989: [*Parasitic Hymenoptera of the Fam. Encyrtidae of Palaearctics*]. *Opredelitel po faune SSSR 158* [Key to identification of fauna of the USSR 158]. Leningrad.: Zoologicheskii Institut Akademiyi Nauk SSSR, 489 pp (in Russian).