



A revision of the *Dibrachys cavus* species complex (Hymenoptera: Chalcidoidea: Pteromalidae)

RALPH S. PETERS^{1,3} & HANNES BAUR²

¹Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, 53113 Bonn, Germany. E-mail: r.peters@zfmk.de

²Department of Invertebrates, Natural History Museum, Bernastrasse 15, 3005 Bern, Switzerland. E-mail: hannes.baur@nmbe.ch

³Corresponding author

Abstract

The taxonomy and host ranges of the *cavus* species complex within *Dibrachys* Förster (Chalcidoidea: Pteromalidae) are revised. Examination of about 810 specimens, including multivariate morphometric analysis of 21 quantitative characters clearly separated three species, *Dibrachys microgastri* (Bouché, 1834), *Dibrachys lignicola* Graham, 1969, and *Dibrachys verovesparum* Peters & Baur **sp. n.**, but allowed no further subdivision of taxa according to origin, host association or previous taxonomic concepts. A neotype is designated for *D. microgastri* and under this name are placed in synonymy the names *Dibrachys cavus* (Walker, 1835) **syn. n.** (including eight current junior synonyms), *Dibrachys clisiocampae* (Fitch, 1856) **syn. n.** (including five current junior synonyms), *Dibrachys boarmiae* (Walker, 1863) **syn. n.**, and *Dibrachys elegans* (Szelényi, 1981) **syn. n.** *Dibrachys goettingenus* Doganlar, 1987 **syn. n.** is synonymized under *D. lignicola*. The morphological analyses revealed several new qualitative and quantitative characters for separating taxa in this species complex and an identification key and diagnoses are provided for females and males. *Dibrachys microgastri* is a polyphagous generalist pupal ectoparasitoid of several different orders of holometabolous insects, whereas *D. lignicola* is a polyphagous ectoparasitoid of hosts in Diptera, Lepidoptera and Hymenoptera, and *D. verovesparum* is a primary or secondary parasitoid in nests of Vespidae.

Key words: *Dibrachys microgastri*, *Dibrachys lignicola*, *Dibrachys verovesparum*, taxonomy, principal component analysis (PCA), linear discriminant analysis (LDA), host range, ratio analysis

Introduction

Dibrachys Förster, 1856 (Hymenoptera: Chalcidoidea: Pteromalidae) is a genus of small parasitoid wasps that is mainly Holarctic. Individuals can be identified using the keys of Graham (1969), Bouček & Rasplus (1991) and Bouček & Heydon (1997). A total of 21 species (Noyes 2003) are recognized in two subgenera, *Dibrachys* sensu stricto and *Allodibrachys* Bouček (Bouček 1965). Graham (1969) and Doganlar (1987) revised the Western European and Holarctic fauna, respectively, and keyed most species. Among them, *D. cavus* (Walker) is the best-known species because it is the most polyphagous pteromalid known, with hundreds of host records from several insect orders including Holo- and Hemimetabola and parasitism of different stages (Peck 1963, Noyes 2003). Even though ectoparasitoids are known to be quite polyphagous (Askew & Shaw 1986), such a broad host range is most unusual.

Within the subgenus *Dibrachys*, what has been identified previously as *D. cavus*, *D. boarmiae* (Walker), *D. clisiocampae* (Fitch), *D. goettingenus* Doganlar and *D. lignicola* Graham forms a complex called the *cavus* species complex. The species of this complex are distinguished from other species of the subgenus by moderate body size of less than 3 mm, slightly reticulate lower face lacking transverse wrinkles, only slightly emarginate anterior margin of clypeus, and hyaline wings (Graham 1969, Kusevska 1977, Doganlar 1987). The recognition and separation of certain species of this complex has always proved difficult. For instance, Bouček (1965) suspected that *D. cavus* might consist of a number of cryptic species. Graham (1969: 812) admitted that the differences between *D. cavus* and *D. boarmiae* “are very small” and although he gave numerous distinguishing characters (p. 811–813) they are