

On the taxonomic position of *Hoplisus sepultus* COCKERELL, 1906, from the Lower Oligocene of Colorado  
(Hymenoptera, Sphecidae)

O położeniu systematycznym *Hoplisus sepultus* COCKERELL, 1906, z Dolnego Oligocenu Kolorado (Hymenoptera, Sphecidae)

WOJCIECH J. PUŁAWSKI<sup>1</sup> and ALEXANDR P. RASNITSYN<sup>2</sup>

<sup>1</sup> Muzeum Przyrodnicze, Sienkiewicza 21, 50-335 Wrocław, Poland

<sup>2</sup> Paleontological Institute, Profsoyuznaya 113, 117321 Moscow, USSR

ABSTRACT. *Hoplisus sepultus* COCKERELL, 1906 from the Lower Oligocene of Colorado is transferred to *Psammaecius* after a detailed analysis of the holotype.

Through the kindness of Professor F. M. CARPENTER, Harvard University, Cambridge, Massachusetts, we were able to examine the holotype of *Hoplisus sepultus*. Our conclusions on its generic placement are given below. Morphological terms used are from BOHART and MENKE (1976). The geological age of the specimen is usually said to be Miocene, but it is Lower Oligocene according to WILSON (1978). The structure of the holotype, as we have interpreted it, is shown by figs 1-2.

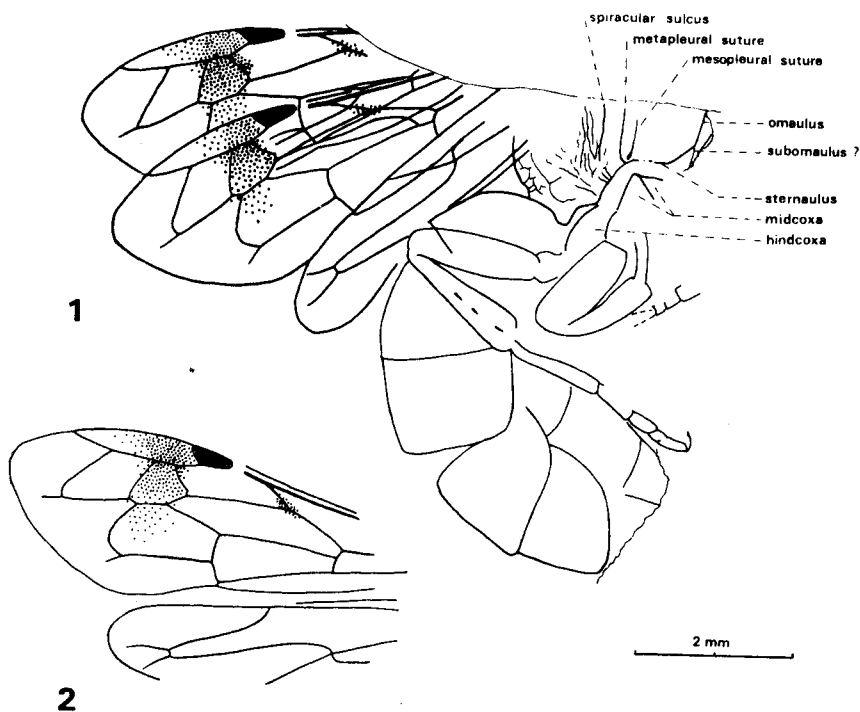
*Psammaecius sepultus* (Cockerell, 1906), new combination

*Hoplisus sepultus* COCKERELL, 1906: 48. Holotype: Florissant, Colorado; Lower Oligocene (Museum of Comparative Zoology, Cambridge, Massachusetts). — EVANS, 1966: 369; BOHART and MENKE, 1976: 31. — In *Gorytes*: BOHART and MENKE, 1976: 502.

IDENTIFICATION OF THE FAMILY AND TRIBE

The basally curved hindbasitarsus suggests the presence of a well developed cleaning apparatus. This feature excludes *Chrysidoidea* (includ-

ing *Bethylidae*), *Scolioidea* s. l., and *Apidae* (= *Apoidea* of authors). The form of gastral segment I and the presence of veins *2r-m* and *2m-cu* in the forewing exclude *Formicoidea*. The *Vespoidea* differ either by a much longer discoidal cell I or (*Gayellinae*, *Euparagiinae*) by the marginal cell which is separated apically from the wing margin, and by the second recurrent vein received by the submarginal cell III. Submarginal cell I is much shorter than in the *Pompilidae* (including *Ceropalidae*). The body shape and the wing venation distinguish *sepultus* from the *Rhopalosomatidae*. Therefore, the species can be assigned only to the *Sphecidae*.



The identification of the tribe is based on the presence of an omaulus and a sternaulus, the nonpetiolate gaster, simple hindfemoral apex, and also the following details of the wing venation:

1. complete set of cells,
2. moderately large stigma,
3. apically pointed marginal cell,

4. portion of *R* between stigma and *RS* scarcely shorter than stigma,
5. nonpetiolate submarginal cell II,
6. median vein of forewing diverging before *cu-a*,
7. both recurrent veins received by submarginal cell II,
8. vein *cu-a* of hindwing interstitial, strongly curved.

One or several of the above features exclude all Sphecid tribes except *Gorytini*. The banded forewing and stout midfemur (as contrasted with more slender hindfemur) are also typical of many *Gorytini*.

#### IDENTIFICATION OF THE GENUS

Within *Gorytini*, the hindwing vein *cu-a* is long, strongly curved and interstitial (or nearly so) in *Afrogorytes*, *Handlirschia*, *Hoplisoides*, *Oryttus*, *Psammaecius*, *Psammaletes*, *Sagenista*, *Xerogorytes*, and also some *Gorytes*, *Liogorytes* and *Pseudoplisus*. All these genera except *Hoplisoides* and *Psammaecius* have the gaster more slender basally than *sepultus* (or even pedunculate).

The main difference between *Hoplisoides* and *Psammaecius* consists of thoracic structure: the acetabular carina is present in *Hoplisoides*, and the subomaulus and spiracular sulcus are present in *Psammaecius*. A spiracular sulcus is evident in *sepultus*, but the other two structures cannot be recognized with certainty because of the condition and orientation of the fossil. Nevertheless, the spiracular sulcus alone indicates unequivocally that the specimen belongs in *Psammaecius*. The interrecurrent veinlet of *M* is relatively long in *sepultus* and short in all *Psammaecius* according to BOHART and MENKE (1976), but actually it is scarcely longer than in *Psammaecius punctulatus* (VANDER LINDEN).

Some features of the holotype are unusual for *Psammaecius*: the forewing band is elongate transversely in *sepultus*, but it is elongate longitudinally in recent species. The narrow, parallelsided metapleuron (if we have interpreted it correctly) also distinguishes *sepultus* from extant species. The most unusual feature of *sepultus* is the sculpture of the propodeal side which is smooth before the spiracular sulcus and posteriorly, but has several vertical ridges just behind the sulcus. We have not found this kind of sculpture in any other member of *Gorytini*, though the ridges are somewhat similar in *Gorytes pleuripunctatus* COSTA and *Afrogorytes monstrosus* (HANDLIRSCH). These differences may indicate that *sepultus* should be assigned to a new genus rather than *Psammaecius*, but describing a new genus now seems premature to us.

## LITERATURE CITED

- BOHART, R. M., and A. S. MENKE, 1976, Sphecids wasps of the world. A generic revision, University of California Press, Berkeley, Los Angeles, London, 695 pp.
- COCKERELL, T. D. A., 1906, Fossil *Hymenoptera* from Florissant, Colorado, Bull. Mus. Comp. Zool., **50**: 33-58.
- EVANS, H. E., 1966, The comparative ethology and evolution of the sand wasps, Harvard University Press, Cambridge, Massachusetts, 526 pp.
- WILSON, M. W. H., 1978, Paleogene insect faunas of western North America, Quaest. Ent., **14**: 13-34.