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Odontosphex Arnold, a Genus of the Philanthinae, with a Key to the Tribes and Genera of the Subfamily[1]

(Hymenoptera : Sphecidae)

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The late G. Arnold described the genus *Odontosphex* in 1951 for a new species from the west African country of Mauritania. This species, *O. bidens*, still is known only by the holotype male. Arnold assigned *Odontosphex* to the subfamily Larrinae, but stated that the midtibia had two apical spurs, a feature not found in any other larrine. Recently, Manfredo Fritz of Valparaiso, Chile, sent me some Sphecidae for identification collected in Argentina. In this material were several species which appeared to fit Arnold's diagnosis of *Odontosphex* except that

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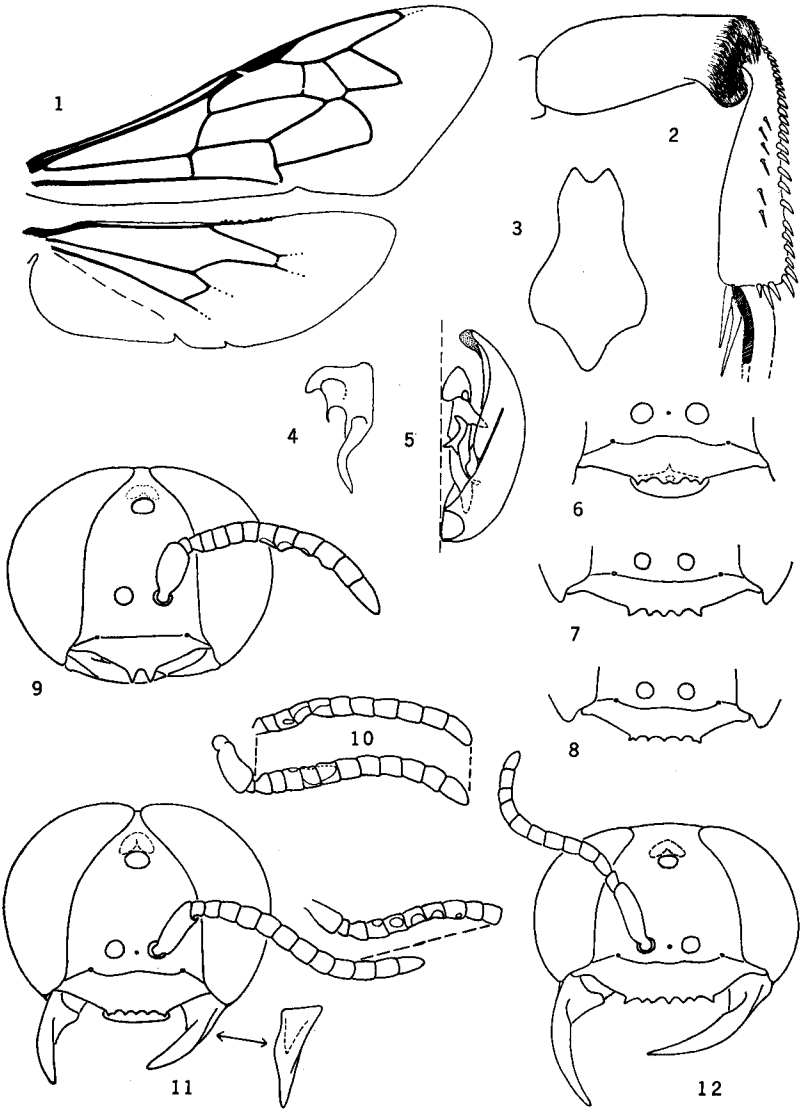

Fig. 1. Wings of *Odontosphex willinki*. Fig. 2. Femur and tibia of left hindleg of *Odontosphex paradoxus*. Fig. 3. Sternite VIII of *Odontosphex paradoxus* (holotype). Fig. 4. Penis valve of *Odontosphex willinki* (holotype). Fig. 5. Ventral view of right half of genitalia of *Odontosphex paradoxus* (holotype). Figs. 6–8. Clypeus of: 6, *O. fritzi* male (holotype); 7, *O. fritzi*, female; 8, *O. willinki*, female.

they had one midtibial spur. Dr. I. H. H. Yarrow of the British Museum (Natural History) examined Arnold's type for me and found that *O. bidens* has only one midtibial spur, not two as stated by Arnold. Dr. Yarrow kindly arranged a loan of *O. bidens*, and my examination of it confirmed his finding of only one midtibial spur. Furthermore, comparison of *O. bidens* with the Argentine species has demonstrated that they are congeneric and that the true relationship of *Odontosphex* is with the Philanthinae.

The inclusion of *Odontosphex* in the Philanthinae prompted a review of the tribal classification of the subfamily. The results of this study are illustrated by the key to tribes and genera at the end of this paper. The reasons for the classification presented here will be thoroughly discussed in a world revision of the genera of the Sphecidae now being prepared for publication by R. M. Bohart and the author.

ACKNOWLEDGMENTS.—I would like to thank the Trustees of the British Museum and Dr. I. H. H. Yarrow for the loan of the holotype of *Odontosphex bidens*.

ODONTOSPHEX Arnold

DIAGNOSIS.—Inner orbits of the eyes strongly converging above, eyes nearly holoptic in male being separated at vertex by a midocellus diameter or less (Figs. 9, 11); midocellus normal; lateral ocelli vestigial and located very close to midocellus, each represented only by a longitudinally oriented, weakly impressed line which is situated on a polished prominence; antenna short, flagellomeres about as long as wide, some flagellomeres in male usually bearing flattened, polished areas ventrally; antennal sockets not contiguous with frontoclypeal suture (suture often indistinct between tentorial pits however); frons between antennal sockets with a small tubercle; clypeus transverse, free margin dentate medially; mandible simple, without inner teeth or outer notch; labrum transverse, free margin visible below clypeus when not folded; mouthparts short, palpi 6–4; occipital carina complete, meeting hypostomal carina at its apex; pronotal collar thin, closely appressed to, and much below scutum; mesopleuron without episternal sulcus or other landmark sulci (some females with scrobal sulcus weakly indicated); propodeum about as long as scutum, dorsal enclosure defined, triangular, with a median longitudinal carina, apex of enclosure extending onto vertical posterior face; female foretarsus essentially symmetrical, with a feeble rake composed of widely spaced, short spines; midcoxae nearly contiguous; midtibia with one apical spur; hindfemur obliquely truncate apically, truncation kidney-shaped in female (Fig. 2), truncation weaker in male but femur with an apicoventral process;

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Fig. 9. Anterior view of head of *Odontosphex bidens* Arnold (holotype). Fig. 10. Two views of male antenna of *Odontosphex fritzi* (holotype). Figs. 11–12. Anterior view of head of *Odontosphex paradoxus*: 11, male (holotype) with two views of antenna and mandible; 12, female.

pulvilli rather small, equal on all legs in both sexes; forewing with three submarginal cells, the second receiving both recurrent veins, marginal cell narrowly truncate apically, appendiculate (Fig. 1); media of hindwing arising before crossvein cu-a, jugal lobe large, about four-fifths as long as anal area (Fig. 1); gaster sessile, tergites and sternites simple, female with a well defined pygidium the surface of which is smooth and devoid of hair, female gastral tergite V covered with long, decumbent, hairlike setae which project posteriorly; gastral sternite VIII of male as in Figure 3; volsella with a digitus and cuspis (Fig. 5); aedeagus as in Figure 4.

DISTRIBUTION.—Northwest Africa and southern South America. The discovery of *Odontosphex* in Argentina is very interesting zoogeographically, and would seem to indicate that the genus is a relict.

DISCUSSION.—Arnold (1951) related *Odontosphex* to the larrine genus *Tachysphex* and admittedly there is a similarity in general body form. The deformed lateral ocelli and rather large hindwing jugal lobe enhance Arnold's hypothesis, but other features of *Odontosphex* are not at all larroid. Most important among these are: 1) media of hindwing arising before crossvein cu-a, 2) volsella of male genitalia with a digitus and cuspis, and 3) the form of the eighth male sternite (Fig. 3).

Except for *Scapheutes*, a rather atypical larrine genus of the tribe Bothynostethini, the media of the hindwing always arises after crossvein cu-a in the Larrinae. The volsella is simple in all larrines (e.g. without a digitus and cuspis) and often greatly reduced. An eighth sternite of the type found in *Odontosphex* is unknown in the Larrinae although the form of the sternite in few *Paranysson* shows some similarity.

To find groups which possess the hindwing and genitalic characteristics of *Odontosphex* one is led to the Astatinae and Philanthinae. However, the two midtibial spurs in the Astatinae as well as the inner subapical mandibular tooth and presence of pygostyles argue against placing *Odontosphex* in this subfamily. On the other hand, *Odontosphex* fits very well into the Philanthinae and in fact is very similar to the Old World genus *Pseudoscolia*, differing from it mainly in having deformed ocelli, a larger jugal lobe and nearly contiguous midcoxae. Both genera have obliquely truncate hindfemora, simple mandibles, similar eighth male sternites and lack an episternal sulcus. In addition, some of the articles of the male antenna are usually flattened ventrally in both taxa. The only features of *Odontosphex* which are not typical of the Philanthinae are the deformed ocelli and the form of the clypeus (without a trapeziform lobe between tentorial pits). This suggests that *Odontosphex* be placed in a new tribe, the Odontosphecini. A key to

the tribes and genera of the Philanthinae is given at the end of this paper to illustrate my current ideas on the classification of the subfamily.

Species differences in *Odontosphex* are found in the antenna of the male, and the structure of the clypeal free margin in both sexes. Aside from these head features the species are very similar, and females are especially difficult to separate. Slight differences in scutal punctation are apparent in the females, but these are difficult to evaluate because in two of the three species in which the female is known, this sex is represented by a single specimen, and two females in the third species.

Odontosphex paradoxus Menke, new species

HOLOTYPE MALE.—Length 7 mm.

Color: Black, mandible yellowish at middle, reddish at tip; tegula transparent; gastral segments II–III and sternite IV reddish brown; tarsi faintly reddish; wings clear, veins yellowish basally, light brown beyond.

Vestiture: Frons and clypeus covered with short, dense silver hair; gena and mesosoma with sparser short silver hair (scutellum and posterior two-thirds of scutum glabrous); gaster with sparse, changeable silver hair.

Structure: Eyes separated at vertex by slightly less than one-fourth the transverse diameter of median ocellus (1.5 : 8); flagellomere II about same length as IV, flagellomeres II–VI with flattened polished areas ventrally, that of IV largest and concave, that of VI very small (Fig. 11); clypeal free margin with five small teeth, lateralmost tooth weakly bidentate.

FEMALE.—Length 7.5 mm.

Color: As in male except gaster entirely reddish and only hindtarsus reddish.

Vestiture: As in male but decumbent hair-like setae of tergite V dark brown.

Structure: Clypeal free margin with seven teeth (Fig. 12); scutal punctation much sparser around parapsidal line, scutum impunctate medioposteriorly.

TYPES.—*Holotype male* and one female paratype collected at MASCASIN, LA RIOJA, ARGENTINA by F. Walz. Both specimens deposited in the collection of the University of California, Davis.

Odontosphex fritzi Menke, new species

HOLOTYPE MALE.—Length 6 mm.

Color: Black; mandible yellowish apically; tegula transparent; wings clear, veins yellowish basally, brownish beyond.

Vestiture: As in *paradoxus*.

Structure: Eyes separated at vertex by nearly the transverse diameter of median ocellus (7 : 9.5); flagellomere II about two-thirds the length of IV, flagellomeres III–V with flattened polished areas, that of III small, those of IV–V large and concave (Fig. 10); clypeal free margin with a small dimpled median lobe and a weakly bidentate lateral tooth (Fig. 6).

FEMALE.—Length 7 mm.

Color: Differs from male as follows: gastral tergite I apically, II, and III

laterally, reddish; sternites II–III, and apex of VI, reddish; hindfemoral truncation, hind tibia and all tarsi reddish.

Vestiture: As in *paradoxus* except decumbent hair of tergite V reddish brown.

Structure: Clypeal free margin with five teeth, lateralmost tooth largest, acute and pointing obliquely (Fig. 7); scutal punctation sparser at parapsidal line and medioposteriorly.

TYPES.—*Holotype male* and one paratype female collected at LAMARQUE, RIO NEGRO, ARGENTINA by U. Fritz. Both specimens deposited in the personal collection of Manfredo Fritz, Valparaiso, Chile. This species is named in honor of Señor Manfredo Fritz in recognition of his work on the Sphecidae of Argentina.

Odontosphex willinki Menke, new species

HOLOTYPE MALE.—Length 6 mm.

Color: Black; mandible yellow in middle, reddish at tip; tegula transparent; gastral sternites II–III reddish, tergites I–III with faint reddish apically; hind femoral process, hind tibia and all tarsi, reddish; wings clear, veins yellowish basally, brown beyond.

Vestiture: As in *paradoxus*.

Structure: Eyes separated at vertex by nearly the transverse diameter of median ocellus (5.5 : 7.5); length of flagallomere II equal to length of IV, flagellomeres without polished flat areas; clypeal free margin with five teeth, the lateral most tooth weakly bidentate (similar to Figure 11).

FEMALE.—Length 7 mm.

Color: As in male except gastral tergite I apically, II, and VI, reddish, sternites II–III reddish, rest of gaster black.

Vestiture: As in male but decumbent hair-like setae of tergite V reddish.

Structure: Clypeal free margin with five teeth, lateral most tooth weakly bidentate (Fig. 8); scutal punctation only slightly less dense at parapsidal line and medioposteriorly.

TYPES.—*Holotype male* and one paratype female collected at LAMARQUE, RIO NEGRO, ARGENTINA by U. and M. Fritz. One paratype female with same data collected by the Fritz brothers. The type and one paratype will be deposited in the Instituto Miguel Lillo, Tucuman, Argentina. The other paratype will go to the M. Fritz collection, Valparaiso, Chile. This species is named in honor of Dr. Abraham Willink, a specialist in Argentine wasps.

KEY TO THE SPECIES OF ODONTOSPHEX[2]

1. Males, antenna with 13 articles 2
   Females, antenna with 12 articles 5
2. Free margin of clypeus with two large teeth (Fig. 9); flagellomeres VI–IX with flattened polished areas ventrally, VI–VII enlarged ventrally

[2] *O. bidens* is known only by the male.

(Fig. 9); Africa ..... *bidens* Arnold
Free margin of clypeus with four or more small teeth (Figs. 6, 11); Argentina 3
3. Flagellomeres without polished areas ..... *willinki* Menke
Some flagellomeres with ventral polished areas 4
4. Flagellomeres II–VI with polished areas; eyes separated at vertex by slightly less than one-fourth the transverse diameter of median ocellus ..... *paradoxus* Menke
Flagellomeres III–V with polished areas; eyes separated at vertex by nearly the diameter of median ocellus ..... *fritzi* Menke
5. Clypeal free margin with seven distinct teeth (Fig. 12) ..... *paradoxus* Menke
Clypeal free margin with five teeth, lateral most tooth sometimes weakly bidentate (Figs. 7–8) 6
6. Lateral clypeal tooth broad, apex bidentate (Fig. 8) ..... *willinki* Menke
Lateral clypeal tooth sharply acuminate (Fig. 7) ..... *fritzi* Menke

KEY TO TRIBES AND GENERA OF THE PHILANTHINAE

(tribes and subtribes followed by an asterisk are proposed as new)

1. Apex of hindfemur flattened forming a kidney shaped plate, or obliquely truncate, or with an apicoventral process; episternal sulcus absent or very short; volsella variable 2
Apex of hindfemur normal; episternal sulcus present and usually extending nearly to ventral region of mesopleuron; volsella with a digitus and cuspis 6
2. Mesopleuron with a broad deep horizontal sulcus which runs from scrobe to a point below pronotal lobe; media of hindwing arising after cu-a; volsella simple, without digitus and cuspis ..... tribe Cercerini 3
Mesopleuron without a horizontal sulcus; media of hindwing arising before cu-a; volsella with a digitus and cuspis 5
3. Outer veinlet (r–m_3) of third submarginal cell meeting marginal cell near its midpoint 4
Outer veinlet of third submarginal cell meeting marginal cell near or at its apex; New World ..... *Eucerceris* Cresson
4. Second submarginal cell petiolate; Cosmopolitan ..... *Cerceris* Latreille
Second submarginal cell four sided, not petiolate; Mediterranean Region ..... *Nectanebus* Spinola
5. Lateral ocelli normal; second recurrent vein of forewing received by third submarginal cell; jugal lobe of hindwing about one-half length of anal area; midcoxae widely separated; Mediterranean Region ..... tribe Pseudoscoliini* ..... *Pseudoscolia* Radoszkowski
Lateral ocelli strongly deformed, nearly obsolete, second recurrent vein received by second submarginal cell; jugal lobe large, nearly as long as anal area; midcoxae nearly contiguous; North Africa, Argentina ..... tribe Odontosphecini* ..... *Odontosphex* Arnold
6. Inner orbit of eye sharply angulate or notched (may be weak in some male *Philanthus* but eyes strongly converge towards vertex) ..... tribe Philanthini 7
Inner orbit not interrupted by a sharp angle 8

7. Gaster sessile, first segment expanding rapidly from base; Old and New World ..... *Philanthus* Fabricius

   Gaster petiolate, first segment long and slender although usually nodose apically; New World ..... *Trachypus* Klug

8. First recurrent vein of forewing received by second submarginal cell, second recurrent received by third submarginal; maxillary palpi with 6 articles, labial with 4; antennal sockets not contiguous with frontoclypeal suture, usually separated by at least one-half the diameter of the socket; male without pygostyles ..... Tribe Aphilanthopsini (new status) 9

   First recurrent vein received by first submarginal or interstitial between submarginals I and II, second recurrent interstitial between II and III; maxillary palpi with 5 articles, labial with 3; antennal sockets essentially contiguous with frontoclypeal suture; male with pygostyles; very tiny Mediterranean and Transcaspian wasps (2–4.5 mm) ..... Tribe Eremiaspheciini* ..... *Eremiaspheciium* Kohl

9. Media of hindwing arising after cu-a; inner orbits of eyes bowed inward slightly (towards midline); pronotal collar about as high as scutum; North America ..... subtribe Aphilanthopsina 10

   Media of hindwing arising before cu-a; inner orbits bowed outward; pronotal collar much below scutum and closely appressed to it; Mediterranean Region ..... subtribe Philanthinina* ..... *Philanthinus* Beaumont[3]

10. Female pygidium triangular, apex rounded; sternite VI of female simple, not concave nor apically emarginate; posterior apex of triangular plate of metanotum (plate between lateral metanotal depression and base of hindwing) not projecting beyond hind margin of metanotum ..... *Aphilanthops* Patton

    Female pygidium quadrate, surface concave; female sternite VI with a hypopygium, concave, apex emarginate; posterior apex of triangular plate of metanotum projecting beyond hind margin of metanotum (only slightly in *Listropygia* but basal flagellomeres in male strongly flattened) 11

11. Ocellocular distance equal to two lateral ocellus diameters or more; female pygidium without a medioapical knob; basal male flagellomeres cylindrical; sternites III–V of male not densely clothed with wool-like hair ..... *Clypeadon* Patton

    Ocellocular distance slightly greater than diameter of lateral ocellus; female pygidium with a medioapical knob; basal male flagellomeres strongly flattened; sternites III–V of male clothed with dense wool-like hair ..... *Listropygia* Bohart

LITERATURE CITED

ARNOLD, F. 1951. Sphecidae and Pompilidae collected by Mr. K. M. Guichard in West Africa and Ethiopia. Bull. Brit. Mus. (Natur. Hist.), Entomol., 2(3): 95–183.

[3] This was originally proposed as a subgenus of *Philanthus* by Beaumont but should be given generic status.