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Autor(en): **Vecht, J. van der**

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Paraliris, an Oriental genus of mite-bearing larrine wasps (Hym., Sphecidae, Larrinae)

J. VAN DER VECHT
«Andrena», Burg. Vermeerlaan 4, NL-3881 GZ Putten

Paraliris, an Oriental genus of mite-bearing larrine wasps (Hymenoptera, Sphecidae, Larrinae) - Descriptions and geographical distribution are given for the three species of the genus *Paraliris: kriechbaumeri* KOHL, *truncatus* n. sp. and *sycorax* (SMITH) (? = *facetus* BINGHAM).

The genus *Paraliris* KOHL was based on a single female of a larrine wasp, *P. kriechbaumeri,* which was supposed to have been collected in South Africa (KOHL, 1884: 362). In 1897 this author published a more extensive description of the genus, at the end of which he remarked to have seen another female of this species in the Museum of Natural History of Vienna, originating from the Felder collection and alleged to have come from Sikkim (KOHL, 1897: 352-354).

Long before this, F. SMITH (1857: 102) described as *Larrada sycorax* a female wasp collected by A. R. WALLACE in Borneo, which much later was recognized as belonging to the genus *Paraliris.* A third species, *Paraliris facetus,* was described by BINGHAM (1897: 208) from specimens collected in Burma and Tenasserim. This last author mentioned both sexes, but did not give any information on the male characters.

Several years ago examination of the type of *P. kriechbaumeri,* kindly made available by the authorities of the zoological museum of Munich, showed that this specimen is conspecific with a series of *Paraliris* collected in several localities in the Indonesian island of Java. Since no additional *Paraliris* have ever been found in Africa, it is certain that the type was mislabelled and that the range of the genus is restricted to the Oriental region, where it is now known to occur from Sikkim and Burma to Java and Borneo.

The present paper deals with the taxonomy and some interesting properties of the known species of *Paraliris;* for a recent description and discussion of the relationships of the genus see BOHART & MENKE (1976: 230, 250). It should be noted that the description of the mandibles needs correction (see below under *P. sycorax).*

The material used for this study is mainly preserved in the British Museum (Natural History), London (BM) and in the «Rijksmuseum van Natuurlijke Historie», Leiden (ML); my sincere thanks are due to the authorities of these institutes. I am indebted to Dr. A. S. MENKE for several corrections and useful suggestions.

KEY TO THE SPECIES

Females

1. Base of gastral sternite 2 without median prominence, its outline in profile nearly straight (fig. 11). Anterior margin of clypeus with small median incision

(fig. 15). Mandible not notched on ventral side (fig. 14). Metanotum and dorsal surface of propodeum flattened, the latter without median carina. Wings moderately infuscated. Length 14–17 mm. - Java. ..... *kriechbaumeri* KOHL

- Base of gastral sternite 2 with median prominence (fig. 21). Wings rather strongly infuscated. 2

2. Mandible notched on ventral side (fig. 22). Anterior margin of clypeus weakly arcuate, rarely with very shallow median emargination. Propodeum with fine median carina, which is most distinct on anterior half and often ends at some distance from apex. Scutum near posterior angles somewhat more coarsely and closely punctate than in the other species. Pygidium with more or less distinct median keel, narrowly rounded at apex, at base sparsely punctate, distal part densely striato-punctate. Length 15–17 mm. - Continental Asia, Sumatra, Borneo. ..... *sycorax* (SMITH)

- Mandible not notched on ventral side. Propodeum without median carina. Anterior margin of clypeus: fig. 19. Pygidium without median keel, very slightly convex, apex truncate with rounded angles (fig. 20). Length 21 mm. - East Borneo. ..... *truncatus* spec. nov.

Males

1. Mandible not notched on ventral side (fig. 16), proximal tooth very weakly developed, subapical tooth moderately large, but reduced or absent in large specimens (figs. 3, 4). Teeth on anterior margin of clypeus far apart (fig. 17). Propodeum without carina on dorsal area. Base of gastral sternite 2 without median prominence. Genitalia: figs. 5–8. Length 14–22 mm. - Java. ..... *kriechbaumeri* KOHL

- Mandible notched on ventral side (figs. 22, 24), proximal and subapical teeth large. Teeth on anterior margin of clypeus less far apart (fig. 25). Dorsal area of propodeum with median carina. Base of gastral sternite 2 with median prominence. Genitalia: figs. 26, 27. Length 16–20 mm. - Continental Asia, Sumatra, Borneo. ..... *sycorax* (SMITH)

Note: the unknown male of *Paraliris truncatus* will probably be recognizable by the absence of propodeal carina and mandibular notch, and the presence of a basiomedian prominence on gastral sternite 2.

Paraliris kriechbaumeri KOHL (figs. 1–17)

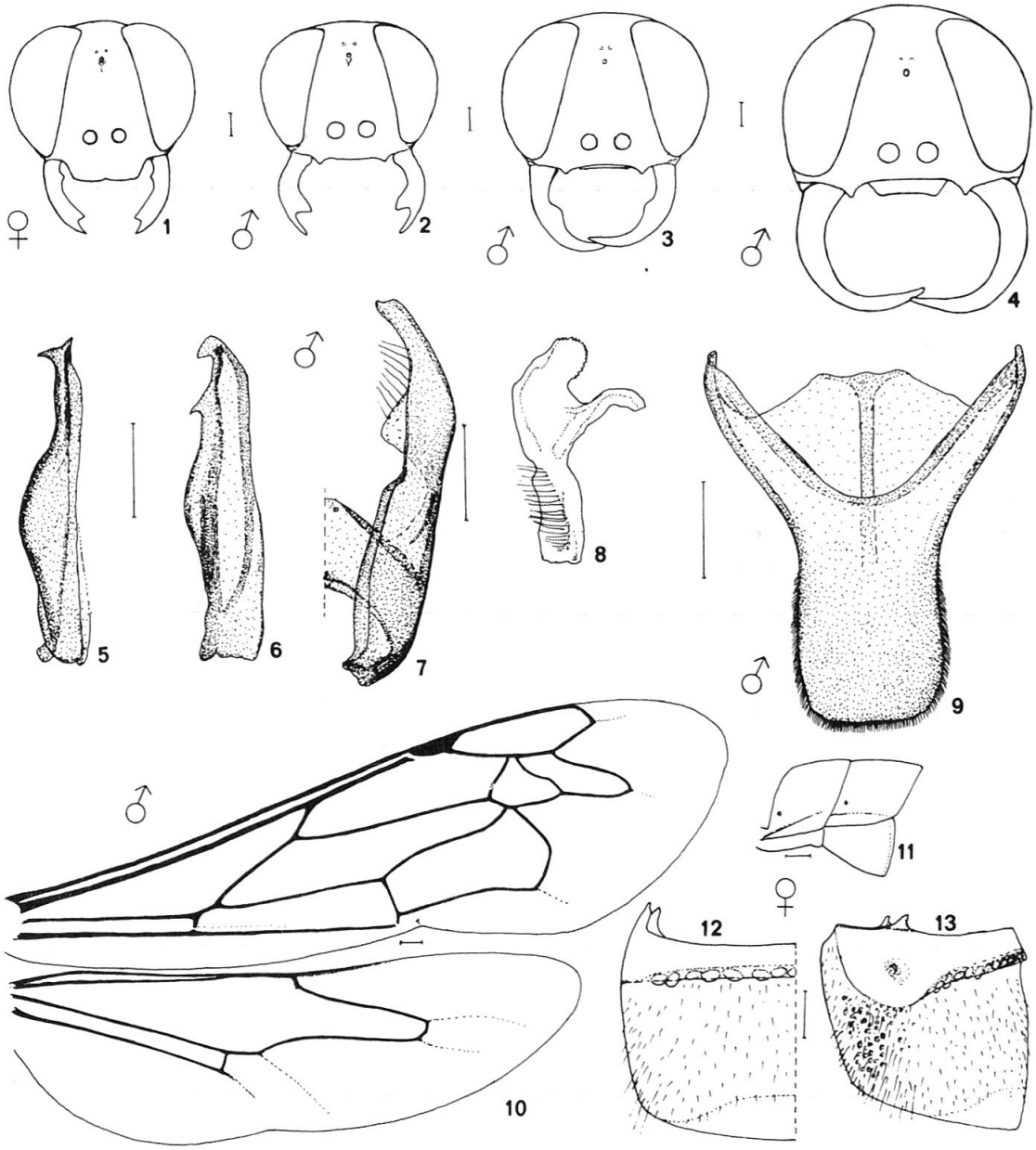
Paraliris kriechbaumeri KOHL, 1884, Verh. zool.-bot. Ges. Wien *33:* 362, ♀ - Cape Province, Africa (Zool. Samml. München); 1885, Verh. zool.-bot. Ges. Wien *34:* 259–261; 1897, Annln. naturh. Mus. Wien *11* (1896): 352–354. - ARNOLD, 1923, Ann. Transv. Mus. *9:* 250 (translation of KOHL's description). BOHART & MENKE, 1976, Sphecid wasps of the world: 250.

Larra kriechbaumeri (KOHL); DALLA TORRE, 1897, Cat. Hym. *8:* 669.

Material. - Type ♀, with oblong white label: illegible name of 6 letters, ending in «dau», Cap, *«Haliotus diversus* HAGB.», a blue one «Capland» and a white label *«Paraliris kriechbaumeri* KOHL» (locality labels undoubtedly incorrect). - West Java: 1 ♀ Depok, 27 Sept. 1936, H. R. A. MULLER (ML); 2 ♀ South Suka-

bumi, March 1933, local collector, 1 ♂ Djampang Wetan, Radjamandala, Oct. 1936, 1 ♀ 1 ♂ Djampang Tengah, Tjiangsana, Sept. 1936, Mrs. M. E. WALSH, ex coll. J. VAN DER VECHT (ML). - East Java: 2 ♀ 1 ♂ Malang, March and May 1933, J. G. BETREM (ML); 1 ♀ Ledokombo, May 1941 (BM, 1950-413).

Allometric growth. - Figures 2-4 illustrate that in unusually large males (from Radjamandala 18 mm, from Tjiangsana 22 mm) the shape of the mandibles changes. J. DE BEAUMONT (1943) discussed this allometric growth or «croissance disharmonique» in several Sphecidae. Since it was this study which convinced me



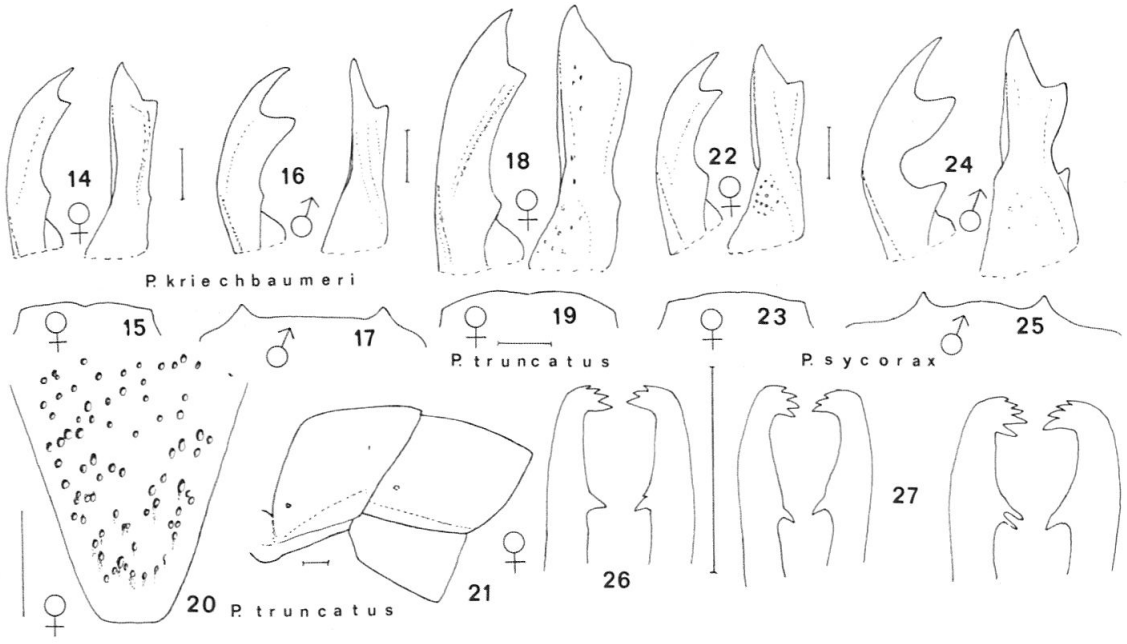
Figs. 1-13: *Paraliris kriechbaumeri:* head of ♀ (1); head of ♂ of specimens 15, 18, and 22 mm long resp. (2-4); dorsal view of right half of aedeagus (5); do., lateral view (6); dorsal view of left paramere (7); volsella (8); terminal sternites of largest ♂ (9); wings of largest ♂ (10); lateral view of gastral segments 1 and 2 of ♀ (11); left half of gastral tergite 3 of ♀ with acarinarium (12); do., lateral view (13). Scale lines represent 0.5 mm.

that the two giant *Paraliris* are indeed conspecific with the smaller specimens collected in Java, I am glad to present at this occasion another example of this interesting phenomenon.

Paraliris truncatus spec. nov. (figs. 18–21)

♀ - In general appearance very similar to *P. kriechbaumeri* and agreeing with this species in having no median carina on dorsal area of propodeum. It is distinctly larger, however, and the wings are considerably darker, about as in *P. sycorax*. With the latter it also agrees in having a median prominence at base of gastral sternite 2 (fig. 21). Some other characters are: emargination of clypeus wide and very shallow (fig. 19); mandible not notched on ventral side, proximal tooth short, rounded, incision between subapical and apical tooth shallow (fig. 18). Tubercle at apex of dorsal area of propodeum slightly larger than in the other species. Punctures on scutum and on dorsal surface of gastral tergites shallow and sparse. Pygidium shiny, with fine punctures, only near apex with some shallow, elongate, impressions; impunctate margin narrow near middle, gradually widening towards apex, which is slightly raised and truncate with rounded angles (fig. 20).

The unique type is a female collected by Mrs. M. E. WALSH at Batan bessi, sea level, East Borneo, ex coll. J. VAN DER VECHT (ML).



Figs. 14–17: *Paraliris kriechbaumeri:* left mandible of ♀, frontal and lateral view (14); anterior margin of clypeus of ♀ (15); left mandible of ♂ (normal size) (16); anterior margin of clypeus of ♂ (17) (normal size).

Figs. 18–21: *Paraliris truncatus,* ♀: left mandible, frontal and lateral view (18); anterior margin of clypeus (19); major part of pygidium (20); lateral view of gastral segments 1 and 2 (21).

Figs. 22–27: *Paraliris sycorax:* mandible of ♀, frontal and lateral view (28); anterior margin of clypeus of ♀ (23); mandible of ♂, frontal and lateral view (24); anterior margin of clypeus of ♂ (25); lateral view of tips of the two halves of aedeagus of ♂ from Borneo (26); do. of two ♂♂ from Kedah Peak, Malaysia (Malaya) (27). Scale lines represent 0.5 mm.

Paraliris sycorax (SMITH) (figs. 22–27)

Larrada sycorax SMITH, 1857, J. Linn. Soc., Zool. *2:* 102, ♀ - Borneo (Serawak) (Oxford University Museum).

Larra sycorax KOHL, 1885, Verh. zool.-bot. Ges. Wien *34:* 245. - DALLA TORRE, 1897, Cat. Hym. *8:* 674.

Paraliris sycorax BOHART & MENKE, 1976, Sphecid wasps of the world: 250.

Material. - Type ♀, with label «Sar» (Oxford University Museum). - Malaysia (Malaya): Kedah, 2 ♀ 2 ♂ Kedah Peak, 3000–3500 ft, March 1928, H. M. PENDLEBURY (BM, 1 ♂ ML); 1 ♀ Kedah Peak, 1000 m, 16–19 Febr. 1963, M. A. LIEFTINCK (ML); Perak: 1 ♀ Mt. Kledang, 2600 ft, Nov. 1916 (BM); Selangor: 1 ♀ Bukit Kutu, 3300–3500 ft, March 1931, H. M. PENDLEBURY (BM), 1 ♀ Sungei Pomsom, Ulu Langat, 2 Sept. 1928, H. T. PAGDEN (BM).

Asymmetric genitalia. - In some males of this species the two parts of the aedeagus differ in the number of apical teeth and in the shape of the subapical tooth, as shown in figs. 26 and 27.

Paraliris facetus BINGHAM, 1897 *(faceta),* Hym. Brit. India *1:* 208, ♀ ♂, described from Burma and Tenasserim, is perhaps a synonym of *P. sycorax,* but this matter deserves further study.

Acarinaria. - So far as I know, it has not yet been recorded that in *Paraliris* gastral tergites 2–5 of ♀ and 2–6 of ♂ have a thin transparent lamella near the base (figs. 12, 13). The space under this structure is often inhabited by numerous hypopial mites.

It is of interest that the presence of acarinaria, well known to occur in *Xylocopa* and in many Eumenidae nesting in wood, has also developed in this sphecid genus, which, because of the absence of a tarsal rake, is thought to be a twig nester (BOHART & MENKE, 1976: 250). This appears to support the idea that such nests are particularly susceptible to mouldiness and that the mites may be beneficial to the host by feeding on fungus spores. Further research on this subject is very desirable.

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