

Review of the Genus *Brachyanax* (Diptera: Bombyliidae), with a Revised Key to Species

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ABSTRACT

A revised key to species of *Brachyanax* is given. Systematic notes on Walker, Doleschall, and Brunetti types are presented. The male genitalia of *B. aterrimus* are described and illustrated for the first time and the following names synonymized with *aterrimus*: *Anthrax proferens*, *A. yamashiroensis*, *A. philippinensis*, *Brachyanax magnipennis*, *B. oceanicus*, and *B. papuanus*. The following species are newly combined with *Brachyanax*: *Brachyanax ater*, *B. aterrimus*, and *B. gentilis*. *Brachyanax hemipenthes*, n. sp., from Sabah is described and illustrated.

INTRODUCTION

Since my original description and treatment of the genus *Brachyanax* (Evenhuis 1981), I have examined material from various sources, including a long series of specimens from Australia and Walker specimens lodged in the Museum of Victoria, Abbotsford, Australia. This study has resulted in the following new combinations and synonyms presented herein. Eleven species are now recognized in the genus, and its distribution, formerly thought to be confined to the western Pacific, now extends to India.

A revised key to species is presented below, and 1 new species is described and its wing illustrated. Systematic notes are given for some species, and the male genitalia of *B. aterrimus* are described and illustrated for the first time.

SYSTEMATICS

Key to the Species of *Brachyanax*

1. Abdominal tergite I with dense black pile, no white or yellow hairs present; mesopleuron predominantly black pilose (yellow pilose in *hemipenthes*, n. sp.) 2
- Abdominal tergite I with white to yellow pile, brown to black pile may be intermixed; mesopleuron predominantly white to yellow pilose, black hair, if present, restricted to upper (notopleural) and posterior margins 5
2. Anterior wing infuscation extending only to end of vein R₁; mesopleuron predominantly yellow pilose; propleuron yellow pilose ... (Sabah) ***hemipenthes*, n. sp.**
- Anterior wing infuscation extending beyond end of vein R₁ to wing tip, either heavily or narrowly connected to wing tip spot; mesopleuron predominantly black pilose 3
3. Anterior wing infuscation heavily coalesced with wing tip infuscation, leaving only slight hyaline area in 1st submarginal cell ... (Krakatau) ***perniger*** Evenhuis & Yukawa
- Anterior wing infuscation narrowly connected to wing tip infuscation or interrupted by large hyaline area at end of vein R₁ 4
4. Wing infuscation narrowly connected to spot at wing tip ... (India) ***gentilis*** (Brunetti), **n. comb.**

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- Anterior wing infuscation interrupted by large hyaline area at end of vein R_1 . . . (Sabah) *thelestrephones* Evenhuis
5. Third posterior cell of wing hyaline; alula reduced 6
Third posterior cell of wing infuscated, at least basally; alula normal or reduced 7
6. Infuscation of wing extending uninterrupted to end of marginal cell; anal cell entirely infuscated . . . (Laos) *costalis* Evenhuis
Infuscation of wing extending distally only to end of vein R_1 , hyaline beyond; anal cell with apex hyaline . . . (Bonin Is) *chichijimensis* Evenhuis
7. Sternites with coppery to magenta tomentum in addition to sparse white pile and tomentum; 1st submarginal cell completely infuscated . . . (Solomon Is) *aterrima* Doleschall, **n. comb.** (in part)
Sternites with white or black to brown tomentum, no coppery or magenta tomentum present; white pile dense basally; 1st submarginal cell often hyaline medially 8
8. Vein R_4 with trace of appendix in hyaline portion of wing at bend in vein; anterior infuscation with large hyaline area from end of vein R_1 to wing tip, spot of infuscation at wing tip not coalesced with basal infuscation . . . (Philippines) *bifuscatipennis* (Evenhuis & Arakaki)
Vein R_4 without appendix in hyaline portion; anterior infuscation slightly interrupted beyond end of vein R_1 , or coalesced with wing tip infuscation 9
9. Abdominal tergite I all yellow to white pilose, no black hairs present; propleuron all yellow to white pilose . . . (Australia) *ater* (Roberts), **n. comb.**
Abdominal tergite I with some brown to black hairs intermixed with yellow to white pile; propleuron all yellow to white pilose or with some darker hairs intermixed 10
10. First submarginal cell completely infuscated; propleuron all yellow to white pilose . . . (New Guinea) *leucostigma* (Wulp)
First submarginal cell hyaline medially; propleuron all white to yellow pilose or with some black to brown hairs intermixed . . . (widespread in western Pacific) *aterrimus* Doleschall, **n. comb.** (in part)

***Brachyanax ater* (Roberts), new combination**

Anthrax ater Roberts, 1928: 140.

Brachyanax australensis Evenhuis, 1981: 1987. **New synonymy.**

Since the original description of *australensis* Evenhuis (1981), a long series of flies found sleeping in a clump on a twig in northern Queensland were collected and sent to me by Dr. D.H. Colless, CSIRO, Canberra. This interesting lot, along with some additional Australian material, proved to represent the species *Anthrax ater* Roberts. Considerable variation in wing infuscation and head pile color is evident in the "sleeping specimens" series. Examination of male genitalia revealed that all the specimens were conspecific. Direct comparison of type material of *australensis* with material identified as *ater* showed the 2 species to be conspecific; the variation in wing infuscation and head pile color in *australensis* was well within that found in the "sleeping specimens" series from Queensland, hence the new synonymy above.

***Brachyanax aterrimus* (Doleschall), new combination**

Fig. 1

Anthrax aterrima Doleschall, 1858: 93.—Bowden, 1975: 175.

Anthrax proferens Walker, 1859: 113.

Anthrax yamashiroensis Matsumura, 1916: 334, 335. **New synonymy.**

Anthrax philippinensis Evenhuis & Arakaki, 1980: 318. **New synonymy.**

Brachyanax magnipennis Evenhuis, 1981: 195. **New synonymy.**

Brachyanax oceanicus Evenhuis, 1981: 197. **New synonymy.**

Brachyanax papuanus Evenhuis, 1981: 197. **New synonymy.**

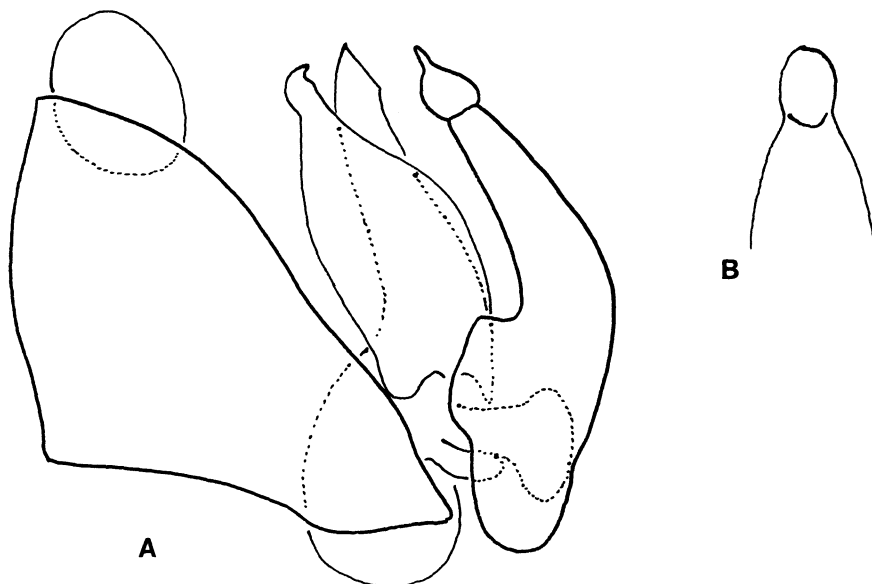


Fig. 1. Male genitalia of *Brachyanax aterrimus*: A, lateral view; B, dorsal view of aedeagus.

Doleschall (1858), in describing *Anthrax aterrima*, appended the following to the description: “*Amboina*. Zoo het schijnt zeldzaam. *Makassar* (Wallace).” This statement says that Doleschall based *aterrima* on specimens from 2 localities (Amboin and Makassar) and that the species appeared to be rare. A.R. Wallace, in fact, met Doleschall on Amboin Island in December 1857, and this is where Doleschall must have seen the Makassar specimens he records as collected by Wallace. That this species was based on specimens from 2 localities appears to have been missed by subsequent workers (e.g., Bowden [1975] listed only the Amboin Island type locality). Moreover, that Doleschall based his species on specimens from Wallace’s collection from Makassar has a bearing on the type status of both *aterrima* and *proferens* Walker. Walker (1859) (not 1860, as erroneously stated in Bowden [1975]) described *proferens* from “. . . insects collected at Makassar [sic] in Celebes, by Mr. A.R. Wallace . . .”; however, in his next paper (1860: 149) he made *proferens* a junior synonym of *aterrima* (undoubtedly because Walker realized that Doleschall had based *aterrima*, in part, on Wallace-collected specimens that he had named *proferens*). In the Museum of Victoria, Abbotsford, Australia, are 3 Walker specimens under the name *Anthrax proferens* (for a description of the history of the Walker collection at the Museum of Victoria, see Walker [1985]). One of these 3, a male (the sex described by Walker), is from Makassar. It carries a round label with “Mak.” handwritten by Wallace, and a square label below it (now folded) with “*Anthrax proferens* Celebes” in Walker’s handwriting. The other 2 specimens in the Museum of Victoria are females and are not part of the type series of either *proferens* or *aterrima*. They carry round labels with “Bac.” [=Batchian] and “Amb.” [=Amboin], respectively, and square labels with “*Anthrax proferens*” and the locality in Walker’s handwriting, as in the Makassar specimen noted above. The labels on these specimens correspond to the collecting localities recorded in Walker (1860 [Amboin], 1861 [Batchian, etc.]); thus the specimens undoubtedly belong to the material collected by Wallace, which was recorded by Walker in those papers. The British Museum (Natural History), London (BMNH) also has material of *proferens* in its collection, with only 1 male from Makassar. Doleschall’s material of *aterrima*, if it exists, should be located in the Naturhis-

torisches Museum in Vienna. In light of evidence presented here, this material should be considered as syntypes. The male specimen from Makassar under the label *proferens* in the Museum of Victoria is considered here both a syntype of *proferens* and of *aterrima*. It is here designated the lectotype male of Doleschall's *aterrima* and Walker's *proferens*. The male *proferens* in the BMNH should also be considered a syntype of both *aterrima* and *proferens* and is designated here as paralectotype of each.

Brachyanax aterrimus is widespread in the western Pacific and exhibits much variation. Examination of types of *philippinensis*, *magnipennis*, *oceanicus*, and *papuanus*, and comparisons with *aterrimus* as well as with type notes and the description of *yamashiroensis*, show that all these species are conspecific; the amount of variation exhibited in tergal and propleural pile color all falls within the amount seen in long series of specimens of *oceanicus* from the same locality, as well as in the 3 "*proferens*" specimens in the Museum of Victoria. Dissections of the male genitalia of *magnipennis*, *oceanicus*, and *aterrimus* (the only species with males available for genitalic examination) corroborate the synonymy above.

A small series of specimens (3 females, 1 male) from Rennel Island in the Solomons, sent by Dr. Leif Lyneborg, Zoologisk Museum, Copenhagen, key to *magnipennis* using the key to species in Evenhuis (1981). However, the Rennel I specimens are all much smaller (4.0–6.0 mm in length) than the unique type of *magnipennis* (11.0 mm). *Brachyanax magnipennis* appears to be distinct from other *Brachyanax* species by virtue of the wing pattern and coppery to magenta tomentum on the body, the latter especially evident on the abdominal sternites. The genitalia of the single male from the Rennel I series were examined and show no differences from those of *aterrimus*. Because of the similarity in genitalic structure, I am tentatively placing *magnipennis* as a junior synonym of *aterrimus*. Further morphological studies from longer series of males will, I hope, resolve its proper placement in the genus.

The genitalia of *aterrimus* are described below for the first time.

Male genitalia (Fig. 1) in lateral view with basistylus linear-ovate, large notch medially, basal projection large, subtriangular, rounded apically; dististylus small, onion-shaped, with small apical hook; epiphallus with small recurved hooklike process apically near aedeagal tip; aedeagus fairly straight to tip, apex truncate; aedeagal bulb large; basal apodeme small, axe-shaped, directed dorsally; lateral rami short, linear; epandrium subtriangular; cercus large, well exerted.

***Brachyanax gentilis* (Brunetti), new combination**

Argyramoeba gentilis Brunetti, 1909: 449; 1920: 230.

Hemipenthes gentilis (Brunetti): Bowden 1975: 178.

Based on recent examination of the holotype male, it is confirmed that the species described by Brunetti (1909) as *Anthrax gentilis* belongs in *Brachyanax*. Bowden (1975) listed it as a *Hemipenthes* (which it superficially resembles), but antennal and venational characters exclude it from that genus. The type male, erroneously reportedly in the Pusa Collection, Pusa, India, was seen by me in the British Museum (Natural History), London. The female mentioned by Brunetti as being in the Indian Museum (Calcutta) may be there but has not been located. No new material of this species has been seen.

***Brachyanax hemipenthes* Evenhuis, new species**

Fig. 2

A single female from Sabah found in the collection of the Bishop Museum is an undescribed species. It belongs to the *thelestrephones* group of species with black pile on abdominal

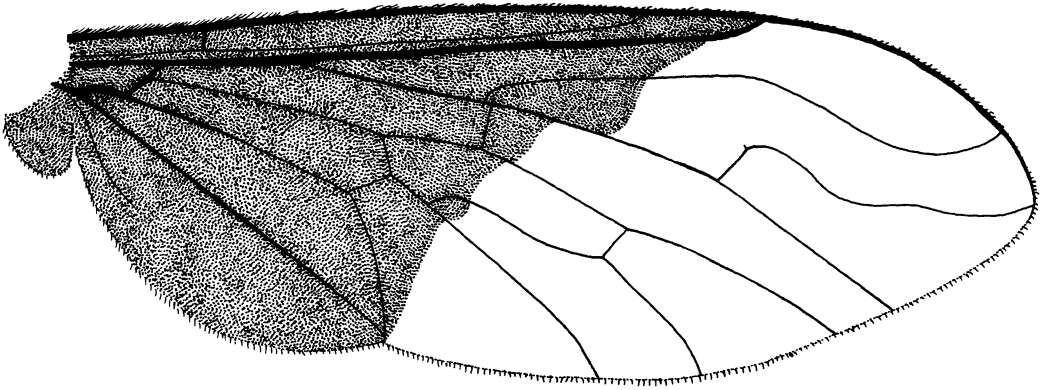


Fig. 2. Wing of *Brachyanax hemipenthes*.

tergite I; it can easily be separated from the 3 species in that group (*gentilis*, *perniger*, and *thelestrephones*) by the abbreviated wing infuscation.

FEMALE. *Lengths.* Body 5.0 mm; wing 6.0 mm. *Head.* Black, front slightly cinereous pollinose along inner eye margin; black pilose, some white pile immediately below antenna on face and on mentum and lower occipital fringe; antennae normal for genus with black hairs on antennal segments I and II. *Thorax.* Black, cinereous pollinose on pleura, postalar callus brown; sparse black pilose on scutum, sparse yellow and black tomentose anteriorly, laterally, and posteriorly; scutellum black with sparse, long yellow tomentum laterally; pre- and postalar bristles black; pleura yellow to brownish pilose and long yellow tomentose, the latter especially on sternopleuron, black hairs on notopleural and posterior portions of mesopleuron; propleuron white pilose; halter dark brown. *Legs.* Black; fore coxa white tomentose, black hairs present apically; mid and hind coxae with sparse golden scales and black hairs; claws black; pulvilli as long as claws. *Wing* (Fig. 2) infuscated black basally, hyaline apically; infuscation extending distally to end of vein R_1 , just beyond rm crossvein, to extreme base of 3rd posterior cell and all of anal cell; vein R_4 with small appendix at bend; anal cell closed before wing margin by a short stalk; rm crossvein at basal $\frac{1}{3}$ of discal cell; squama dark brown with sparse short brown hairs. *Abdomen.* Black; tergite I black pilose, densest laterally, white tomentose patch posterolaterally; tergites II–VII black tomentose, sparse black pilose, pile densest laterally; tergite V with white tomentose patch posterolaterally; sternum white pilose and tomentose basally, brown pilose and tomentose apically; genitalia not dissected.

Type data. Holotype ♀ (BPBM 13630) from "N. BORNEO" (= MALAYSIA [SABAH]): Tawau: Quoin Hill, Forest Camp, 1.3–5 km WSW of Cocoa Res. Stn, 9–20.VII.1962 (Y. Hirashima). Type in the Bishop Museum, Honolulu.

Remarks. The type specimen is in fair condition and is pinned with a minuten to a small cork mount. The left wing is torn on the apicoanterior margin, and the right foreleg beyond the coxa and both midlegs beyond the coxae are missing. The abdomen is folded under somewhat, making it difficult to examine the sternum.

Though this specimen is unique and from the type locality of *thelestrephones*, I do not hesitate to describe it as new because of the extreme difference in wing infuscation compared to the other species in the *thelestrephones* species group and the predominantly yellow pile of the mesopleuron. The infuscation pattern of the wing resembles some species of the genus *Hemipenthes* Loew, hence its specific epithet.

Brachyanax perniger Evenhuis & Yukawa

Brachyanax perniger Evenhuis & Yukawa, 1986: 454.

No new material of this species has been seen, but since it was described after the original generic treatment, the citation for the original description is given above for reference. The male genitalia described in Evenhuis & Yukawa (1986) easily separate this species from others in the genus by the strong 90° bend at the apex of the aedeagus. The infuscation pattern, in addition to other characters given in the key above, should also aid in its identification.

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