

A NEW GENUS OF TACHINIDAE FROM THE PHILIPPINES (DIPTERA)

Pape, T. & H. Shima, 1993. A new genus of Tachinidae from the Philippines (Diptera). – Tijdschrift voor Entomologie 136: 77-81, figs. 1-5. [ISSN 0040-7496]. Published 1 July 1993. A new genus of Tachinidae, *Aporeomyia* gen. n., including only the type species *Aporeomyia antennalis* sp. n., is described from the Philippines. It is placed in the subfamily Tachininae, and possible phylogenetic relationships to other tachinine genera are discussed.

Correspondence: Dr. T. Pape, Zoological Museum, Universitetsparken 15, DK - 2100 Copenhagen, Denmark.

Key words. – Tachinidae, Philippines, new genus, new species.

The present study deals with two male specimens belonging to the Tachinidae family-group and showing a tripartition of the first flagellomere. Although possibly sexually dimorphic with the female first flagellomere unpartitioned, this feature makes the species easily recognizable (fig. 3). Tripartition of the first flagellomere occurs within the Tachinidae family-group in the family Tachinidae and in some undescribed Australian–New Guinean taxa of uncertain familial affiliation (see discussion below). However, the configuration of the tripartition is never fully identical to that seen in the present species. We take this opportunity to describe and name the taxon, and as is discussed in detail below the species does not fit very well into any of the named genera, for which reason a new genus is described.

TAXONOMIC PART

Aporeomyia gen. n.

Type species: *Aporeomyia antennalis* sp. n.

Etymology. – Gender: Feminine. Composed from the type locality, Mt. Apo of Mindanao, and the Greek, *oreos*, *oros* = mountain, and *myia* = fly.

Diagnosis. – Male: Head profile narrowed ventrally. Proboscis and palpus short. Antenna very large and with first flagellomere tripartite from base. Arista inserted on upper lobe at a point about 0.3 from base to tip. Antennal scape and pedicel raised above level of lunule. Prosternum bare. Subscutellum slightly swollen. Wing vein R₁ setulose in distal part, vein M almost straight and without a bend distal to cross-vein dm-cu, and vein Cu+A₁ extended to wing mar-

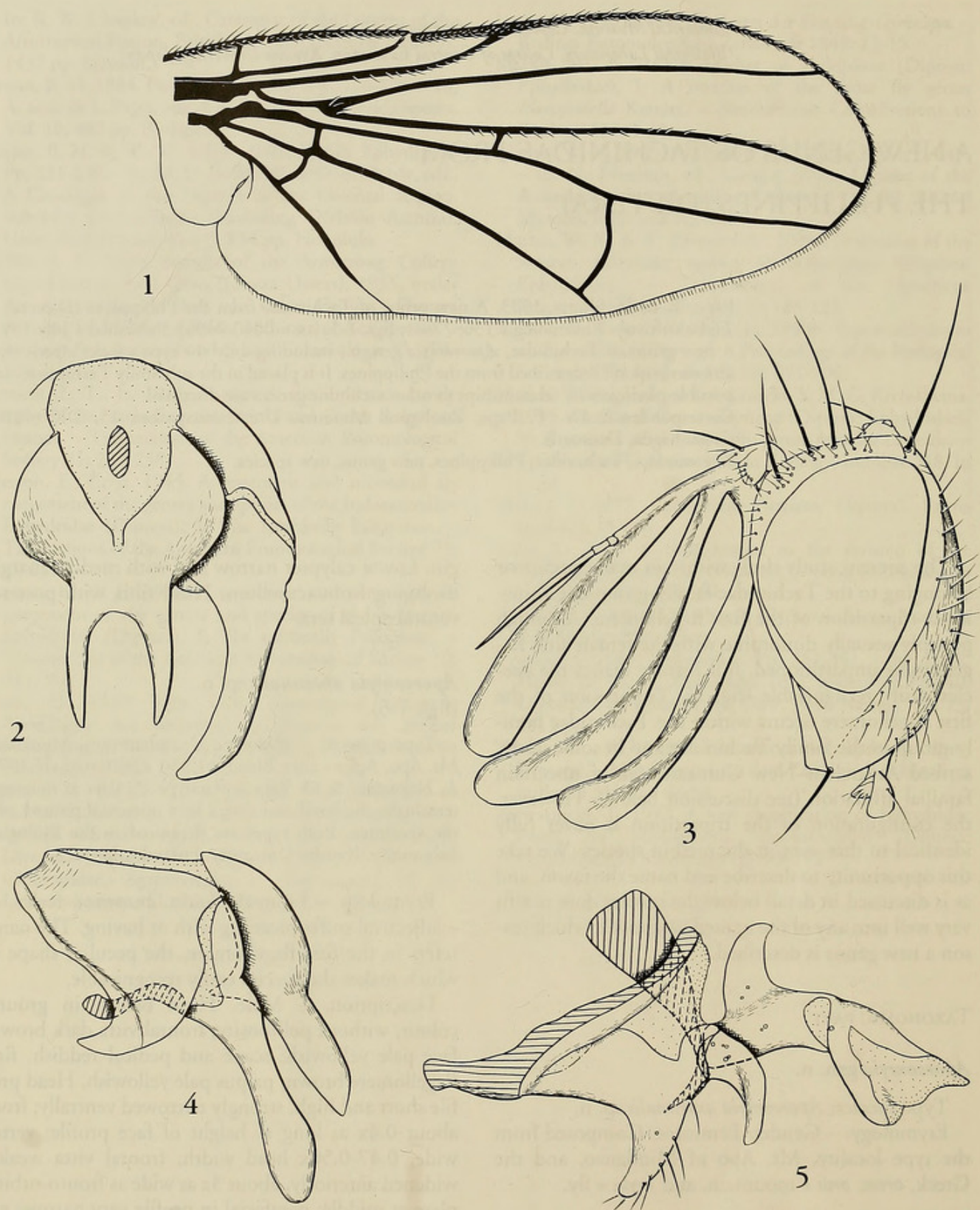
gin. Lower calypter narrow and with median margin diverging from scutellum. Hind tibia with postero-ventral apical seta.

Aporeomyia antennalis sp. n. (figs. 1-5).

Type material. – Holotype ♂: PHILIPPINES, Mindanao, Mt. Apo, Agko - Lake Binado, 1,350-2,300 m, 5.viii.1978, A. Nakanishi & O. Yata. – Paratype ♂, data as holotype, terminalia dissected and stored in a microvial pinned with the specimen. Both types are deposited in the Biological Laboratory, Kyushu University, Fukuoka, Japan.

Etymology. – From the Latin, *antenna* = feeler, *-is* = adjectival suffix meaning with or having. The name refers to the first flagellomere, the peculiar shape of which makes the species easily recognizable.

Description. – Male. Head brown in ground colour, without pollinosity; frontal vitta dark brown; face pale yellowish; scape and pedicel reddish, first flagellomere brown; palpus pale yellowish. Head profile short and high, strongly narrowed ventrally; frons about 0.4x as long as height of face profile; vertex wide, 0.47-0.50x head width; frontal vitta weakly widened anteriorly, about 3x as wide as fronto-orbital plate at middle; parafacial in profile very narrow; gena slightly less than 0.5x eye height, genal dilation obliquely occupying about lower 0.3 of gena; mouth opening reduced, about 0.75x as long as wide. Inner vertical seta strong, slightly less than eye height; 2 fine divergent postocellar setae; ocellar seta fine, proclinate, subequal in length to postocellar seta; no reclinate and proclinate orbital setae; 3-4 frontal setae, lowest seta nearly level with base of pedicel; 2-3 irregular rows of short fine hairs on anterior portion of



Figs. 1-5. *Aporeomyia antennalis*. – 1, right wing, dorsal view; 2, epandrium (in part), cerci and right surstylus; posterior view; 3, male head; 4, epandrium, surstylus and cercus, lateral view; 5, hypandrium, pre- and postgonite and aedeagus, lateral view.

fronto-orbital plate descending to upper 0.25 of para-facial; vibrissa fine and short, slightly more than 0.3x length of face; facial ridge with several fine short hairs just above vibrissa; occiput with short black hairs.

Antenna long, distinctly longer than face; first flagellomere tripartite, each lobe weakly widened apically, middle lobe slightly longer than others. Arista short, about 0.4x as long as upper lobe of first flagellomere,

inserted on basal 0.3 of upper lobe of first flagellomere; second aristomere about 2x as long as wide. Mouthparts strongly reduced; proboscis very short; labella small; palpus short, subequal in length to pedicel.

Thorax brown on dorsum except for pale brownish postpronotal lobe, pale brownish on pleura except for brownish posterior 0.5 of anepisternum and anterior 0.3 of katepisternum, without pollinosity. Dorsum with rather sparse short fine hairs except for bare area between rows of dorsocentral and intra-alar setae of postsutural scutum, pleura without hairs other than strong setae; 1 postpronotal seta; 2 notopleural setae; no acr seta; 1-2 + 2-3 dc setae; 0 + 1 ia seta; 1 supra-alar seta; proepisternum bare, with 1 fine proepisternal seta; 1 fine proepimeral seta; 2 + 2-1 katepisternal setae; katepimeron and katatergite bare; scutellum with 2 pairs of marginal setae, strong subapicals and short apicals; discal scutellar setae absent. Metathoracic spiracle rather small, anterior and posterior fringes subequal and not standing out from spiracular rim.

Wing hyaline, evenly tinged with pale brown; tegula and basicosta dark brown; lower calypter pale brownish yellow. Vein R_{2+3} joins costa near wing apex, giving a long third costal sector slightly more than 4x length of second; vein R_{4+5} joins costa slightly beyond wing apex; vein M straight from crossvein dm-cu to wing margin; last section of vein CuA_1 short, slightly more than 0.25 of crossvein dm-cu. Costa setulose dorsally and ventrally; vein R_1 setulose dorsally on distal half; vein R_{4+5} ventrally with 1-2 setulae at base, dorsally with several setulae at base as well as setulae from just proximal to crossvein r-m and almost to wing margin. Halter large, about 0.7x as long as lower calypter.

Legs pale brownish yellow; pulvilli whitish. Fore tibia with 1 fine p seta; mid tibia with 0 ad, 2 pd and 1 v setae. Claws and pulvilli very short.

Abdomen brownish in ground colour, without pollinosity; anterior 0.4 of syntergum 1+2, anterior 0.3 of terga 3-4 and anterior 0.25 of tergum 5 pale brownish; mid dorsal stripe dark and narrow; syntergum 1+2 rather long, only faintly excavated at base; sterna 2-3 exposed. Hairs short, fine, dense and recumbent on dorsum, longer and sparser on venter; tergum 2 with 2-3 lateral discal, 2 lateral marginal and 2 median marginal setae, all setae strong; tergum 3 with 2 rather fine lateral discal, 2 strong median and lateral discal setae; terga 4-5 each with 1-2 fine lateral discal setae and a row of strong marginal setae; sterna without strong setae.

Male genitalia. Cercal bases fused medially, apical prongs well separated and pointed; surstylus narrow and longer than cerci; epiphallus present; distiphallus rather short, with tapering unpaired dorsomedian process.

Length. Body, 3.7-4.5 mm; wing, 3.4-4.3 mm.

Female. - Unknown.

Biology. - Unknown.

Distribution. - Oriental Region: Philippines (Mindanao).

SYSTEMATIC DISCUSSION

Aporeomyia antennalis is unquestionably a member of the Tachinidae family-group or Oestroidea, the monophyly of which is discussed at length elsewhere (Griffiths 1972, McAlpine 1989, Pape 1992). Families of the Tachinidae family-group are in the main well defined, but many genera showing a combination of a slightly swollen subscutellum, oval or tongue-shaped lower calypteres, small metathoracic spiracles, and an obtuse (or missing) bend of vein M have been, and are still being, shuffled around amongst the tachinoid families, e. g., *Mimodexia* Rohdendorf (currently Rhinophoridae, Tschorsnig 1985a), *Bezzimyia* Townsend and *Malayia* Malloch (Tachinidae or Rhinophoridae, Pape 1992), and *Morinia* Robineau-Desvoidy (currently Calliphoridae, Rognes 1991). *Aporeomyia antennalis* possesses these four character states, which may be apomorphic groundplan states of the Rhinophoridae, and it has accordingly a rhinophorid appearance. The structure of the aedeagus, however, provides no support for a rhinophorid affiliation. In the Rhinophoridae, the aedeagus is generally slender, always equipped with a long epiphallus, and usually with paired dorsolateral processes. In *Aporeomyia* the aedeagus is rather short with a short and compact epiphallus, and with an unpaired, tapering dorsomedian process ('Fortsatz des Dorsalsklerits' of Tschorsnig [1985a, b]). Pape (1986: 27) recognized a single monophyletic group within the Rhinophoridae, defined by an unpaired dorsomedian process, but this group is part of a more inclusive group sharing a tripartite (and apomorphic) acrophallus not found in *Aporeomyia*. The groundplan of the possibly monophyletic Sarcophagidae + Tachinidae is characterized by an unpaired dorsomedian process (Pape 1992), but *Aporeomyia* does not share any synapomorphies with any of the sarcophagid subfamilies and cannot be included in this family. It is our experience that the male terminalia in general provide much more substantial evidence of phylogenetic relationships than the above-mentioned rhinophorid-like features. Thus, we consider an assignment to the Tachinidae as most probable, even though we have no clearcut evidence in support of this.

Fitting *Aporeomyia antennalis* into the subfamilial classification of the Tachinidae with no information on the structure of female terminalia, female reproductive system, and immatures (egg, first instar larva)

has to be preliminary. Of the four subfamilies generally applied, e. g. by Tschorsnig (1985b) and Wood (1987), perhaps only the Dexiinae and the Phasiinae are monophyletic taxa. Indeed, it has been stressed that at least the subfamily Tachininae very probably is not monophyletic ('sehr wahrscheinlich nicht monophyletisch'; Tschorsnig [1985b: 119]) or even 'almost certainly polyphyletic' (Crosskey 1980: 822-823).

Aporeomyia antennalis does not possess the aedeagal hinge characterizing the groundplan of the Dexiinae, nor any of the derived character states listed for the Phasiinae by Tschorsnig (1985b: 121). Also, it does not possess a setose prosternum as found in many (but not all) Exoristinae. *Aporeomyia antennalis* will key out to subfamily Tachininae in Crosskey's (1976: 11) comprehensive (given as 'alternative') key to subfamilies of Oriental Tachinidae, but mainly because it repeatedly fits the entry: 'Forms without such combination of characters present simultaneously'. Note that Pape (1992) used a broad concept of the Tachininae, including all species which embryonate their eggs in the uterus. With only males of *Aporeomyia* available, nothing can be deduced on female reproductive biology. We have chosen to place *Aporeomyia* in the Tachininae as this does not conflict with the general morphology of this subfamily (whether in the traditional sense or the broader sense used by Pape [1992]).

Assigning *antennalis* to a genus of its own deserves an explanation as monotypy in itself conveys little, if any, information. Often - as here - monotypic genera are erected to accommodate aberrant species which present insufficient and conflicting evidence for inclusion within already named genera.

The tripartite first flagellomere - in so far as this is of very rare occurrence in the Tachinidae - may be taken as evidence of phylogenetic relationship. *Trischidocera sauteri* Villeneuve is the only other Oriental species with a tripartite first flagellomere, and the head profile of *Aporeomyia antennalis* moreover resembles that of *T. sauteri* to the extent that both have the antennal insertion at or slightly above the level of upper eye margin, an almost horizontal frons, a short lower head margin and very short mouthparts (compare Crosskey 1976: fig. 50 with the present fig. 3). Many of these features, however, may be considered constraints imposed by the very long and tripartite first flagellomere. It is important to note that the first flagellomere of *A. antennalis* and *T. sauteri* reveals some structural differences: Firstly, *T. sauteri* has the first flagellomere basally bipartite with the lower lobe (i. e., that closest to the facial plate) further bipartitioned at a point about one fifth from its base, while in *A. antennalis* the three lobes of the first flagellomere all originate from a common point

at the base - or perhaps with the middle and upper lobes sharing a very short common base. Secondly, the arista is terminal in *T. sauteri* but inserted at 0.3 from the base in *A. antennalis*. Thus, for the tripartition to be homologous, i.e., for the two configurations to be connected in a transformation series, it is necessary to assume some fairly dramatic reorganizations of the first flagellomere. It may thus be at least as parsimonious to put up a transformation series between the bipartite first flagellomere of *Diglossocera bifida* Wulp (Crosskey 1976: fig. 51) and the tripartite flagellomere of *A. antennalis*. This is not to say that dramatic reorganizations are impossible; only that tripartition *per se* is difficult to use as a character (state) and consequently as an argument for phylogenetic relationship.

Whether or not *Trischidocera sauteri* and *T. atratula* (Malloch) are distinct species (see note by Crosskey 1976: 210) has no relevance for the present discussion, but when Chao & Zhou (1987) described *T. yunnanensis*, which has a markedly different head profile and a simple, and much shorter, first flagellomere, the genus seems defined mainly by the unique position of the arista apically on the first flagellomere. The displacement of the arista towards the distal part of the first flagellomere in *A. antennalis* is in itself evidence of phylogenetic relationship with *Trischidocera*, but a similar, although less pronounced, displacement occurs in the Oriental genera *Germariochaeta* Villeneuve (Crosskey 1976: fig. 39) and *Lophosiosoma* Mesnil, which constitute the tribe Germariochaetini. This tribe is interesting as the lower calypteres of its members are narrow and diverging, as is shown by Villeneuve (1937: fig. 1) for *Germariochaeta clavata* Villeneuve, and thus represent a possible synapomorphy with *Aporeomyia antennalis*. No further evidence, however, corroborates a sister-group relationship between *Aporeomyia antennalis* and the morphologically very different Germariochaetini, and the latter taxon is often considered closely related to *Triarthria* Stephens and its relatives, or to the Minthoini (Crosskey 1976).

A slightly swollen subscutellum, the small metathoracic spiracle, the narrow, diverging lower calypteres, the reduced bend of vein M, and the extension of the first anal vein towards the wing margin are character states shared with the Oriental *Malayia*. This genus was listed by Crosskey (1976: 163) as a tribally unplaced genus within the Tachininae together with *Trischidocera*. At least one of the two species included in *Malayia* possesses an aedeagus with separate dorsolateral processes, which have the extreme tip free of the aedeagal wall (the only male specimen of *Malayia* known is the single *M. fuscinervis* Malloch reported by Dear & Crosskey [1982: 134]; examined by TP). The aedeagus of *Malayia* thus pro-

vides a character state that, in combination with the rhinophorid-like structure of metathoracic spiracle, subscutellum, wing venation, and lower calypteres, actually is strong indication that *Malayia* should be transferred to the Rhinophoridae. Similarities also exist between *Aporeomyia antennalis* and the Australian-New Guinean taxon containing a dozen undescribed species and tentatively put in a separate (unnamed) tachinoid family by Colless & McAlpine (1991). Apart from possessing all the rhinophorid-like features mentioned above, these undescribed species have the antennal arista displaced towards apex, sometimes inserted very close to the tip (Colless & McAlpine 1991, fig. 39.38: c, d). Bi- and tripartition occurs in some of the undescribed species but is here of a very different appearance. Also, as in *Malayia*, the aedeagus has paired dorsolateral processes, which here is considered evidence that these species may possibly not belong to the Tachinidae.

In conclusion, we have not been able to find evidence in the morphology of *Aporeomyia antennalis* for a reliable inclusion within any named genus. Tripartition of the first flagellomere gives the species a superficial resemblance to the similarly equipped *Trischidocera sauteri*, but differences in configuration of the lobes weakens a hypothesis of homology. Other character states suggest a hypothesis of a sister-group relationship to the Germariochaetini, but several of the characters discussed are notoriously much prone to evolutionary homoplasy.

ACKNOWLEDGEMENTS

Dr. H.-P. Tschorsnig, Stuttgart, Mr. Stig Andersen, Copenhagen, and Dr. Verner Michelsen, Copenhagen, kindly read the manuscript and their suggestions are highly appreciated. We are also grateful to Mr. A. Nakanishi, Hyogo Natural History Museum, and Dr. O. Yata, Kyushu University, for making the material available.

REFERENCES

- Chao, C.-M. & S. Zhou, 1987. New species of tachinid flies from Hengduan Mountains of China (Diptera: Tachinidae). – *Sinozoologia* 5: 207-215. [In Chinese with English summary].
- Colless, D. H. & D. K. McAlpine, 1991. Diptera (Flies). – Pp. 717-786 in Naumann, I. E. et al. (eds.), *The insects of Australia*. Vol. 2. Melbourne University Press, vi + 543-1137.
- Crosskey, R. W., 1976. A taxonomic conspectus of the Tachinidae (Diptera) of the Oriental Region. – *Bulletin of the British Museum (Natural History) Entomology Supplements* 26: 1-357.
- Crosskey, R. W., 1980. Family Tachinidae. – Pp. 822-882 in R. W. Crosskey (ed.), *Catalogue of the Diptera of the Afrotropical Region*. British Museum (Natural History), London. 1437 pp.
- Dear, J. & R. W. Crosskey, 1982. A taxonomic review of the Tachinidae (Insecta, Diptera) of the Philippines. – *Steenstrupia* 8: 105-155.
- Griffiths, G. C. D., 1972. The phylogenetic classification of Diptera Cyclorrhapha with special reference to the structure of the male postabdomen. – *Junk Publ., The Hague*. 340 pp.
- McAlpine, J. F., 1989. Phylogeny and classification of the Muscomorpha. – Pp. 1397-1505 in J. F. McAlpine (ed.), *Manual of Nearctic Diptera*. Vol. 3. Research Branch, Agriculture Canada, Monograph No. 32, vi + 1333-1581.
- Pape, T., 1986. A phylogenetic analysis of the woodlouse-flies (Diptera, Rhinophoridae). – *Tijdschrift voor Entomologie* 129: 15-34.
- Pape, T., 1992. Phylogeny of the Tachinidae family-group (Diptera: Calypttratae). – *Tijdschrift voor Entomologie* 135: 43-86.
- Rognes, K., 1991. Blowflies (Diptera, Calliphoridae) of Fennoscandia and Denmark. – *Fauna Entomologica Scandinavica* 24: 1-272.
- Tschorsnig, H.-P., 1985a. Die Struktur des männlichen Postabdomens der Rhinophoridae (Diptera). – *Stuttgarter Beiträge für Naturkunde (A)* 375: 1-18.
- Tschorsnig, H.-P., 1985b. Taxonomie forstlich wichtiger Parasiten: Untersuchungen zur Struktur des männlichen Postabdomens der Raupenfliegen (Diptera, Tachinidae.). – *Stuttgarter Beiträge für Naturkunde (A)* 383: 1-137.
- Villeneuve, J., 1937. Myodaires supérieurs de Chine. – *Bulletin de la Musée Royal d'Histoire Naturelle Belgique* 13(34): 1-16.
- Wood, D. M., 1987. Tachinidae. – Pp. 1193-1269 in J. F. McAlpine (ed.), *Manual of Nearctic Diptera*. Vol. 2. Research Branch, Agriculture Canada, Monograph No. 28, vi + 675-1332.

Received: December 1992

Accepted: 26 January 1993



Pape, Thomas and Shima, H. 1993. "A new genus of Tachinidae from the Philippines (Diptera)." *Tijdschrift voor entomologie* 136, 77–81.

View This Item Online: <https://www.biodiversitylibrary.org/item/90033>

Permalink: <https://www.biodiversitylibrary.org/partpdf/67062>

Holding Institution

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Sponsored by

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.