

***Mattigomphus* gen. nov., a new gomphid genus from Indochina region, separated from *Anisogomphus* (Odonata: Gomphidae)**

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Abstract: A new gomphid genus *Mattigomphus* gen. nov. is described. The new genus consists of two species (*M. tamdaoensis* (Karube, 2001) distributed in northern Vietnam and *M. pinratani* (Hämäläinen, 1991) distributed in northern Thailand) first described and so far placed in *Anisogomphus* Selys, 1858. The genus is characterized mainly by a peculiar male penis (prolonged median segment, reduced posterior lobe and very simple depressed glans) and cerci.

Key words: New genus, Odonata, Anisoptera, Gomphidae, *Mattigomphus* gen. nov., Indochina.

Introduction

The systematic problem around *Merogomphus* Martin, 1904 (sensu lato) and *Anisogomphus* Selys, 1858 and their relationships had been already pointed out by some authorities (Fraser, 1934; 1940; Chao, 1990) but was not studied for a long time. The second author reconsidered this problem to some extent and made it clear that the genus *Merogomphus* was artificial as comprised unrelated species (Kosterin, 2016). He redefined *Merogomphus* (sensu stricto) as including: *pavici* Martin, 1904 (the type species), *longistigmus* (Fraser, 1922), *vandykei* Needham, 1930, *femoralis* Laidlaw, 1931, *vespertinus* Chao, 1999, and *torpens* (Needham, 1930). Then he established the genus *Euthygomphus* Kosterin, 2016 with species having simple cerci, as including *E. martini* (Fraser, 1922) (the type species), *parvus* (Krüger, 1899), *konxingai* (Chao, 1954), *chaoi* (Liu, 1991), *jinggangshanus* (Liu, 1991), *yunnanensis* (Zhou & Wu, 1992) and *schorri* Kosterin, 2016.

However, a similar problem remained concerning *Anisogomphus* (sensu lato), which still is heterogeneous as including several species group, e.g. the species group of *A. pinratani* Hämäläinen, 1991 and *A. tamdaoensis* Karube, 2001.

The first author noticed heterogeneity of *Anisogomphus* long time ago, but insufficient specimens for comparison and information of *Anisogomphus* spp. made the result pending. Presently almost all species group in *Anisogomphus* s.l. have been determined. Here we establish a new genus for one of the remarkable group presently being included to *Anisogomphus*.

***Mattigomphus* gen. nov.**

(Figs. 1–15)

Type species. *Merogomphus tamdaoensis* Karube, 2001.

Etymology. The name *Mattigomphus* is a word composed of the generic name *Gomphus* (the type species of Gomphidae) and the given name *Matti*, as dedicated to Dr. Matti Hämäläinen, a famous Finnish odonatologist mainly studying Caloptera damselfly but also focusing Odonata fauna of Thailand. He first discovered and described the species *pinratani* belonging to this new genus.

Species included. *M. tamdaoensis* (Karube, 2001) (*Anisogomphus*), *M. pinratani* (Hämäläinen, 1991) (syn. *Merogomphus chaoi* Yang & Davies, 1993).

Diagnosis.

Medium to large sized gomphids. General appearance similar to *Anisogomphus* spp.: last four abdominal segments

expanded, legs long with well developed spines (Figs. 1, 2, 9). Cerci brown with a pale part, teardrop shaped, with a strong spine at the tip that is about 1/3–1/2 length of their length, with neither a conspicuous ventral protuberance nor a process as seen in *Anisogomphus* (e.g. its type species *A. occipitalis* (Selys, 1854)) and other related genera (*Labrogomphus* Needham, 1931 and *Notogomphus* Selys, 1858), nor a lateral process as seen in *Merogomphus*, *Anisogomphus* (*A. yanagisawai* Sasamoto, 2015 and *A. neptunus* Karube & Kompier 2016); In lateral view ventral side of cercus almost straight with an outer basoventral prominence or small tubercles at inner ventral edge (Figs. 3, 4, 10, 11). Epiproct arms are generally of the *Anisogomphus*-style, bilobed and widely opened outwards, but very large, strongly diverging and protruding latero-posteriorly, more depressed and with blunt, rounded apices (Figs. 3, 4, 10, 11). Accessory genitalia: anterior hamuli slender with a strong posterior hook at apex; posterior hamuli broad and gently S-shaped with a strong hook anteriorly (Figs. 5, 14). Penis. Vesicle (V1) triangularly protrudes ventrally; stem (V2) long, faintly curving inwards; median segment (V3) prolonged and well developed, its length nearly equal to stem; posterior lobe reduced, forming a simple mid-dorsal ridge; glans (V4) very simple, depressed, in ventral view rectangular without cornua and protrusion; apical part rather expanded laterally, with apex broadly open (Figs. 6, 7, 12, 13). Female without peculiar character differing from other genera.

Key to the species of Mattigomphus.

Body large (male: 50.3–52.3 mm including appendages; female 50.1–55.7 mm incl. app.). Male: 10th abdominal segment with a truncated apex. Cerci rather slender and clearly separated from each other at base, with an outer basoventral prominence; epiproct arms broad, with a nearly semicircular apex; apex of 10th abdominal segment truncated. Female: occipital margin smooth, without convex protrusion at middle (Fig. 8) ----- *tamdaoensis*

Body medium-sized (male: 44–45 mm incl. app.; female 43.5–48 mm incl. app.). Male: 10th abdominal segment with a bilobated apex. Cerci expanded and touching each other at base, without basoventral prominence but with two small ventral tubercles; epiproct arms more slender with a narrower and less blunt apex; apex of 10th abdominal segment bilobed. Female: Occipital margin with a convex protrusion at middle (Fig. 15) ----- *pinratani*

Notes.

The new genus is mainly characterized by a distinctive penile organ with a reduced posterior lobe. Such structure is never seen in any species of *Anisogomphus* (Fig. 16), *Euthygomphus* and *Merogomphus* (Fig. 17). The male cerci are also peculiar. In *Anisogomphus* s. str. they are simple, rod-shaped or conical in dorsal view but with a ventral process or protuberance in lateral view (however, *A. yanagisawai* and *A. neptunus* have a lateral rather than ventral processes on the cercus). The new genus has teardrop-shaped cerci without large ventral structures or with a smooth basoventral prominence but with an apical strong spine.

Taxonomical history.

The first described species, *pinratani*, was placed to *Anisogomphus* (Hämäläinen, 1991) because of its broadly diverging epiproct arms (but in spite of having neither tubercle nor ventral process on the cerci).

The second species, *chaoi*, was placed to *Merogomphus* (Yang & Davies, 1993), perhaps, because of the similarity of the male penis glans to that of *Merogomphus pavici*, which has the glans depressed in lateral view, but actually the structure is different (Fig. 17): the median lobe strongly expanded in apical part, the posterior lobe developed, protruded ventrally; the base of the glans bilobated, not depressed and with a small bill-shaped apical process. Also the female ovipositor of *chaoi* looks similar to *Merogomphus torpens* (Needham, 1930). Later Kosterin (2016), based on the original descriptions, came to the conclusion that *chaoi* is a junior synonym of *pinratani*.

While describing the third species, *tamdaoensis*, Karube (2001) followed the treatment by Yang & Davies (1993), and placed it to *Merogomphus*. Kosterin (2016) transferred *tamdaoensis* to the genus *Anisogomphus*, and pointed out at their peculiarity.

Grouping of Anisogomphus species.

Judging by the external morphology (e.g. the male appendages, accessory genitalia, and penile organ), the remaining members of *Anisogomphus* can be separated in several species group, as follows:

* *Occipitalis* group: *occipitalis* (Selys, 1854), (type species of *Anisogomphus*), *caudalis* Fraser, 1926.

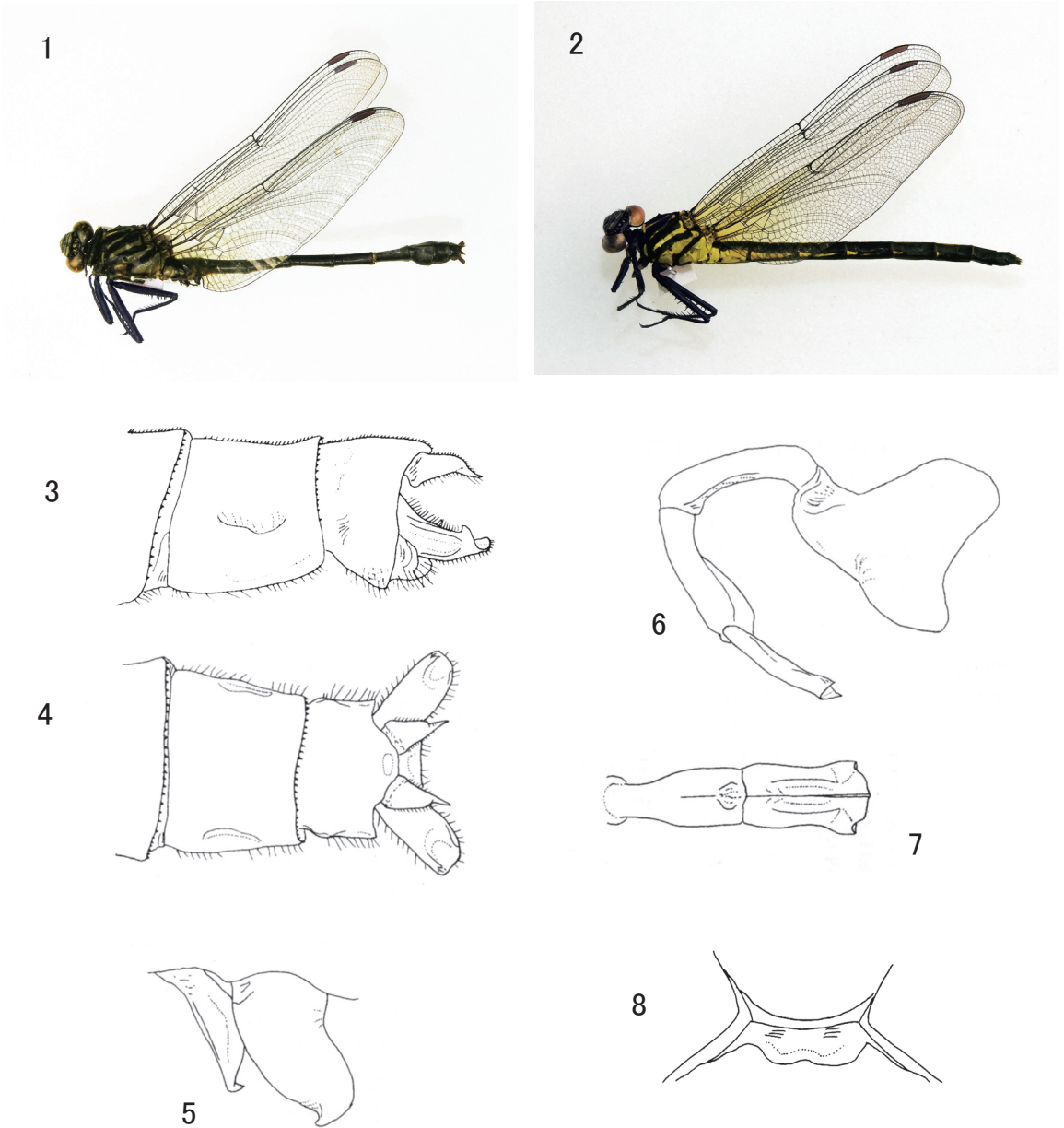
- * *Orites* group: *orites* Laidlaw, 1922, *anderi* Lieftinck, 1948, *nitidus* Yang & Davies, 1993.
 - * *Bivittatus* group: *bivittatus* (Selys, 1854), *flavifacies* Klots, 1947, *forresti* (Morton, 1928), *maacki* (Selys, 1872), *resortus* Yang & Davies, 1996, *yingsaki* Makbun, 2017.
 - * *Yanagisawai* group: *yanagisawai* Sasamoto, 2015, *neptunus* Karube & Kompier, 2016.
- Species unknown to us: *solitarius* Lieftinck, 1971, *vulvalis* Yousuf & Yunus, 1977

The systematic treatment of these species groups will comprise a future paper.

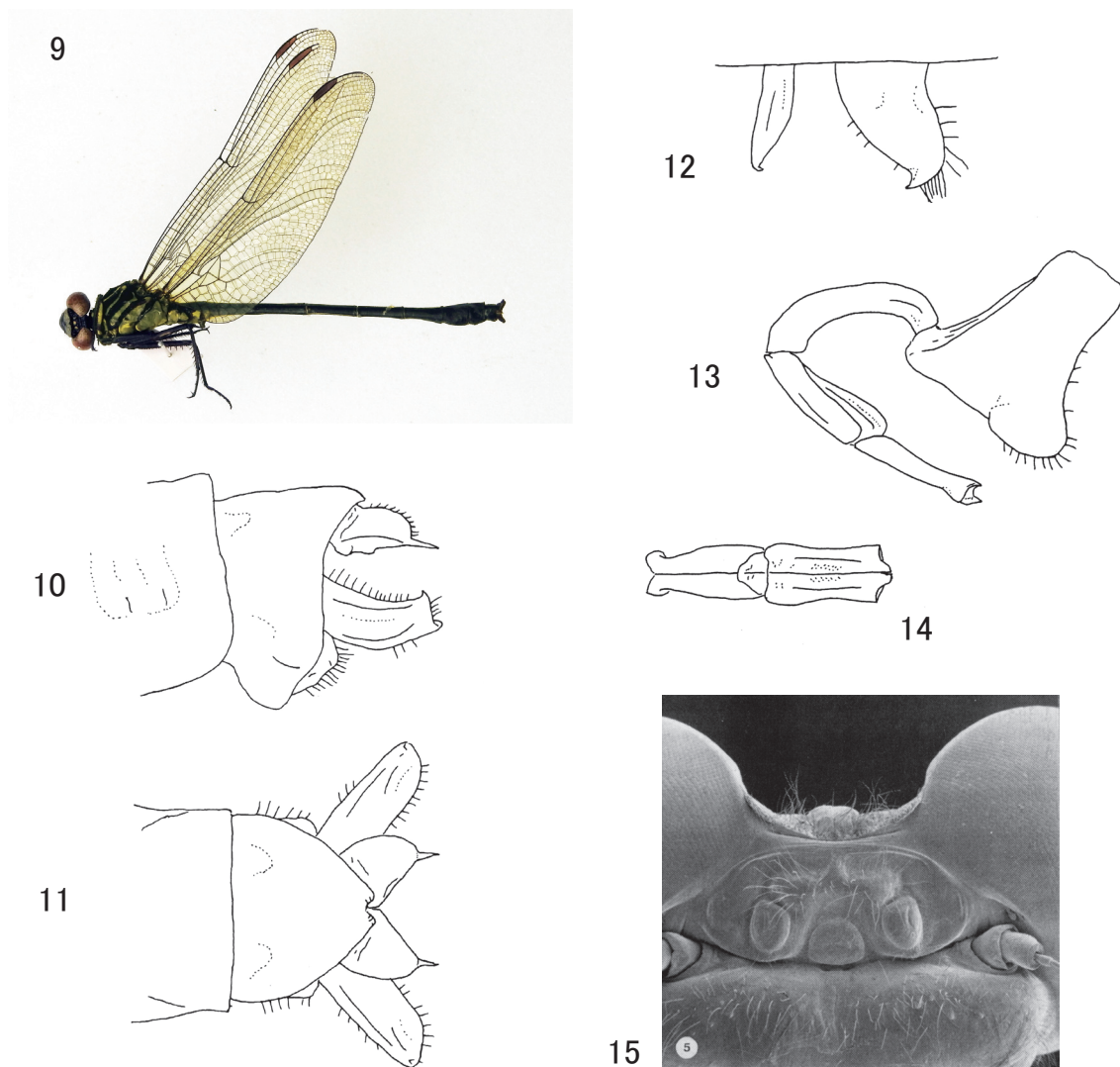
References

- Chao, H.-f., 1990. *The Gomphid Dragonflies of China (Odonata: Gomphidae)*. 486 pp., The Science and Technology Publishing House, Fuzhou.
- Dijkstra, K.-D. & V. Clausnitzer, 2014. The dragonflies and damselflies of eastern Africa. Handbook for all Odonata from Sudan to Zimbabwe. *Studies in Afrotropical Zoology*, **298**: 263 pp.
- Fraser, F.C., 1934. *The Fauna of British India including Ceylon and Burma, Odonata. Vol. II.* 442 pp., Taylor and Francis Ltd., London.
- Fraser, F.C., 1940. A comparative study of the penes of the family Gomphidae (Order Odonata) *The Transaction of the Royal Entomological Society of London*, **90**(20): 541–550.
- Hämäläinen, M., 1991. *Anisogomphus pinratani* n. sp. aus Nord-Thailand (Odonata: Gomphidae). *Entomologische Zeitschrift*, **101**(22) 413–432.
- Karube, H., 2001. Three new species of Gomphidae from Vietnam. *Odonatologica*, **30**(3): 271–279.
- Karube, H. & T. Kompier, 2016. Occurrence of a new gomphid dragonfly *Anisogomphus neptunus* sp. nov., from northern Vietnam. *Tombo*, **58**: 35–39.
- Klots, E.B., 1947. Chinese dragonflies (Odonata) in the American Museum of Natural History. *American Museum Novitates*, **1341**: 1–15.
- Kosterin, O. E., 2016. Reconsideration of the genera *Merogomphus* Martin, 1904, and *Anisogomphus* Selys, 1857, including erection of a new genus, with a new species and discussion of additional specimens from Cambodia. *Zootaxa*, **4171**(1): 51–76.
- Makbun, N., 2017. *Anisogomphus yingsaki* (Odonata: Gomphidae) sp. nov., a new gomphid species from Thailand. *Zootaxa*, **4306**(3): 437–443.
- Sasamoto, A., 2015. *Anisogomphus yanagisawai* sp. nov., a new gomphid dragonfly from northern Thailand (Odonata: Anisoptera: Gomphidae). *Zootaxa*, 3904(3): 421–426.
- Yang, B. & Davies, D.A.L., 1993. Gomphid dragonflies of Yunnan, China, with descriptions of new species and some views on the origin of the group (Anisoptera: Gomphidae). *Odonatologica*, **22**(1), 45–62.

摘要： 苴部治紀・Oleg E. Kosterin：インドシナ地域からのサナエトンボ科の新属（トンボ目：サナエトンボ科）—インドシナ地域からサナエトンボ科の新属 *Mattigomphus* gen. nov. を記載した。*Mattigomphus* 属は、北部ベトナムから記載された *tamdaoensis* (Karube, 2001) と北部タイから記載された *pinratani* (Hämäläinen, 1991) の2種が所属している。これらの種はこれまで *Merogomphus* 属と *Anisogomphus* 属に所属していた（前者はその後 *Anisogomphus* 属に移動）。本新属は、♂の尾部付属器の形状や交尾器の形状によって、他の *Anisogomphus* 属の種とは明確に区別される。



Figs. 1–8. *Mattigomphus tamdaoensis* : 1. Male habitus in lateral view ; 2. Female habitus in lateral view ; 3. Caudal appendages in lateral view; 4. Caudal appendages in dorsal view; 5. Accessory genitalia in lateral view; 6. Penis in lateral view; 7. Distal segment of penis in ventral view; 8. Female occiput (without hairs).



Figs. 9–15. *Mattigomphus pinratanai*: 9. Male habitus in lateral view; 10. Caudal appendages in lateral view; 11. Caudal appendages in dorsal view; 12. Accessory genitalia in lateral view; 13. Penis in lateral view; 14. Distal segment of penis in ventral view; 15. Female occiput (Hämäläinen, 1991).

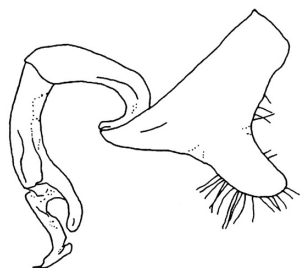


Fig. 16. *Anisogomphus caudalis*: Male penis in lateral view. Fig. 17. *Merogomphus pavici*: Male penis in ventral view.