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Description of the female of *Davidius monastyrskii* Do, 2005 from the Central Highlands of Vietnam (Odonata: Gomphidae)

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Abstract

The first description of the female of *Davidius monastyrskii* Do, 2005 is made, based on a specimen from the Central Highlands of Vietnam (Mang Yang District, Gia Lai Province).

Key words: Odonata, Gomphidae, *Davidius monastyrskii*, female, Vietnam

Introduction

The gomphid genus *Davidius* Selys, 1878 is represented in Vietnam by only three species: *D. fruhstorferi* Martin, 1904, *D. monastyrskii* Do, 2005 and *D. trox* Needham, 1931. All are known from the high altitude mountain areas of northern Vietnam (Do 2005; Karube 2014; Kompier 2019; Fig. 12 in this study). Do (2005) questioned the identity of the male specimen of "*Davidius trox*" from Lao Cai Province listed in Asahina (1996) because it did not match exactly the available illustrations of *D. trox* or *D. zhoui* Chao, 1995 in China. Recently Kompier (2019) provided photos of the appendages and genital ligula of *D. trox* in Yen Bai Province which resembles the illustrations of the specimen of Asahina's "*D. trox*". It is likely the Asahina's and Kompier's "*Davidius trox*" belong to the same species but it is still questionable whether the Vietnamese "*D. trox*" is the same taxon as the southern Chinese and northern Thai one (Kompier 2019). Among the species known from Vietnam, *Davidius monastyrskii* is known only from the description of Do (2005) based on male specimens. During a field trip in the Central Highlands of Vietnam, we collected a pair of mating *Davidius* specimen in which the structures of the male can be identified it as *D. monastyrskii*. Therefore the female of *D. monastyrskii* is described here for the first time. The discovery of this species in the Central Highlands of Vietnam extends the geographic distribution of *Davidius monastyrskii* by about 950 km south from its type location.

Material and Methods

A pair of mating *Davidius* was collected in May 2019 from the Central Highlands of Vietnam. Specimens were preserved by submersion in 100% acetone for 8–12 hours

after 2 days kept in envelopes. After removal from the acetone the specimens were dried at room temperature and each specimen was stored in a rectangular clear envelope with its data printed on a card.

Morphological terminology follows Garrison et al. (2006).

Axiocam Erc 5s on a Zeiss Stemi 508 Stereo Microscope was used to make colour photos and the black and white illustrations were drawn using Adobe Photoshop 7.0.

Results

The body coloration and all structural features of the examined male specimen of *Davidius monastyrskii* from the Central Highlands of Vietnam fit well with its original description except in the following characteristics: (1) the curved process on the ventral surface of cerci is thinner in the holotype (Fig. 3 in Do 2005) but robust with the apical half strongly developed in the Central Highlands male (Figs 8, 10); (2) in lateral view the cercus is clearly shorter than the length of either S10 or the paraprocts of the holotype (Fig. 3 in Do 2005) while in our examined specimen, the cercus is approximately as long as either S10 or the paraprocts (Fig. 8). Since we have not examined the type specimens of *Davidius monastyrskii* and the differences between the holotype and our examined male specimen seem to be minimal, we consider the specimens from the Central Highlands of Vietnam to be *Davidius monastyrskii*.

The female of this species will be described as following:

Davidius monastyrskii Do, 2005 (Figures 1–12)

Examined specimens. 1♂, 1♀ (in tandem), mountain top near the headquarters of Kon Ka Kinh National Park (14°15'31.0" N, 108°22'43.7" E, 1489 m a.s.l.) in Ayun Commune, Mang Yang District, Gia Lai Province, Vietnam, 21.iv.2019, To Van Quang leg.

Description of female

Head (Figs 3–4). Labium, post clypeus and frons entirely black; mandible bases yellow, genae dark yellowish; anteclypeus grayish centrally, black laterally; antennae entirely black. Vertex and occiput all black with yellowish ocelli.

Thorax (Fig. 2). Pterothorax entirely black. Synthorax black with extensive yellow marking extending from mesepisternum to metepimeron as in Fig. 2.

Legs (Fig. 2). Stoutly built, entirely black.

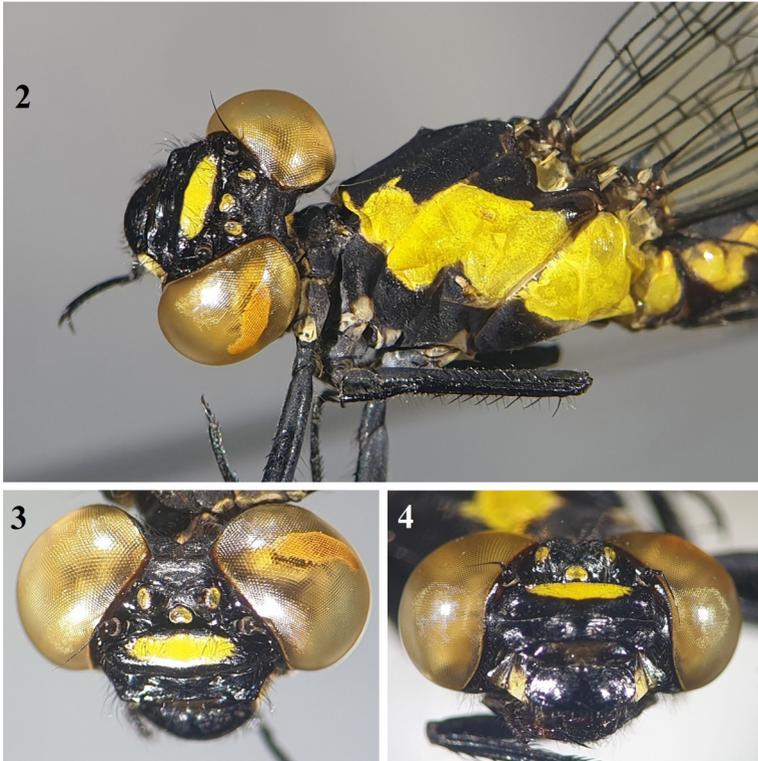
Wings (Fig. 1). Forewing with 12–13 Ax, 13 Px; hindwing with 9 Ax and 10 Px. The tip of right fore- and hindwings are missing. Pterostigma brown, covering about 4 and 3,5 underlying cells in forewing and hindwing respectively.

Abdomen. (Fig. 1) black with yellowish marking as follows: Laterally S1 with a large spot; S2–4 with yellowish markings laterally as shown in Fig. 1; S5–6 black with a tiny spot anteriorly at each segment; S7–10 entirely black. Cerci conical, slightly longer than S10, black basally, the rest dark brownish (Figs 5–6). Vulvar scale broad, prominent in lateral view, as long as sternum of S9, slightly divided at apex (Fig. 7).

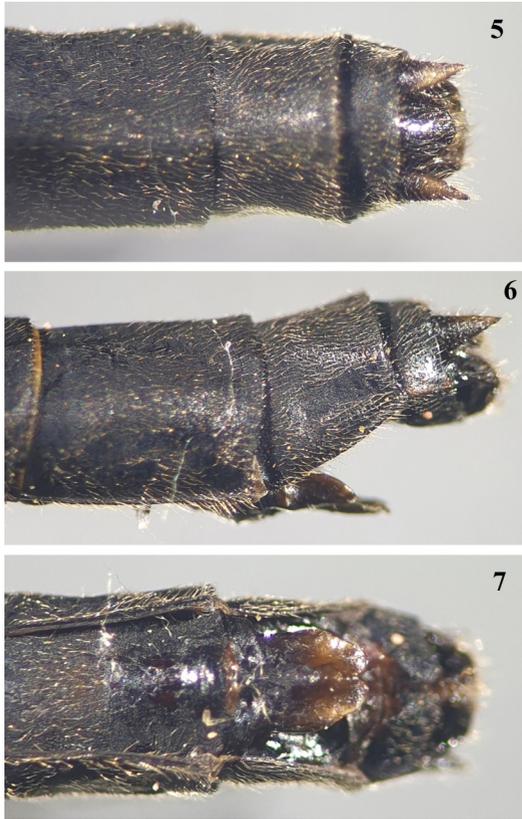
Measurements (in mm). Abdomen (incl. appendages) 24.0. Hindwing 22.5.



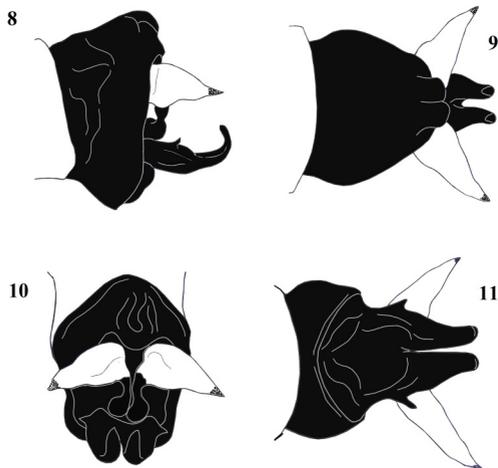
Figure 1. Habitus of *Davidius monastyrskii*, female. Scale bar 1 cm.



Figures 2–4. *Davidius monastyrskii*, female. (2), head and thorax, lateral view; (3) head, dorsal view & (4) head, frontal view.



Figures 5–7. Terminal segments of the abdomen of the female of *Davidius monastyrskii* in (5), dorsal view; (6), lateral view & (7) ventral view.



Figures 8–11. Appendages of the male of *Davidius monastyrskii* in (8), lateral view; (9), dorsal view; (10), posterior view & (11), ventral view.

Habitat and Ecology

The pair of *D. monastyrskii* was found at a very narrow, density vegetated stream with little water in a humid, pristine forest.

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Figure 12. Distribution map of the three *Davidius* species in Vietnam (based on Asahina 1997; Do 2005; Karube 2014; Kompier 2019; this study).

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