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A new species of *Augyles* SCHIÖDTE, 1866 from Vietnam (Coleoptera: Heteroceridae)

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Abstract

Augyles gigas sp.n. (Coleoptera: Heteroceridae) from Vietnam is described and illustrated. A checklist of the species of Heteroceridae recorded from Vietnam is provided.

Key words: Coleoptera, Heteroceridae, *Micilus*, *Augyles*, *Heterocerus*, taxonomy, new species, Vietnam, checklist.

Introduction

During an ecological research conducted by the Faculty of Biology of the Hanoi National University of Education seven specimens of *Augyles* SCHIÖDTE, 1866 (Heteroceridae) were collected in a rice field. Eventually, these specimens were studied in a framework of a scientific collaboration between the Vietnam National Museum of Hanoi and the Natural History Museum of the University of Florence (Italy). The specimens turned out to belong to a new species, which described below.

Material and methods

Samples were collected following GHILAROV (1975) by digging holes with a size of 50 × 50 × 50 cm. The depth of water in the rice field was about 2 mm. The material was filtrated through a fine mesh (0.5–1.0 mm) stainer, cleaned and preserved in 90 % ethanol. Temperature, pH and NaCl have been measured using a handheld instrument PCD650.

Male genitalia were extracted after a brief immersion of the abdomen in a cold solution of potassium hydrate at 10 %; the genital pieces were included in a drop of DMHF (Dimethyl Hydantoin Formaldehyde) resin on a card pinned under the specimen. Habitus images were taken with a Nikon stereomicroscope SMZ-1/1B 80 ×; measurements were taken with the ocular micrometer of the stereomicroscope.

Acronyms:

CMF	Collection Cinzia Monte, Firenze, Italy
CMS	Collection Alessandro Mascagni, Scandicci, Firenze, Italy
MSNM	Museo Civico di Storia Naturale di Milano, Italy
MZUF	Museo di Storia Naturale (Sezione di Zoologia), Università di Firenze, Italy
NMW	Naturhistorisches Museum Wien, Austria
VNMN	Vietnam National Museum of Nature, Hanoi, Vietnam

Study area

The field study was conducted in May 2016 in northern Vietnam, at An Thanh commune, Tu Ky district, southeastern Hai Duong province. The weather at the study site was quite humid, the rainy season lasting from April to October. The annual rainfall in the area is around 1300–1700 mm; the average temperature is 23.3°C and the average humidity is around 85-87%.

In the study area, the water pH varied from 7.07 to 7.6, temperature from 31.5°C to 35.0°C, NaCl from 187.9 ppm to 303.1 ppm, total dissolved solids from 193.2 ppm to 308.1 ppm.

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Figs. 1–2: *Augyles gigas*, 1) holotype, 2) paratype α.

Augyles gigas sp.n.

TYPE MATERIAL: **Holotype** ♂ (VNMN): N VIETNAM, An Thanh commune, Tu Ky district, Hai Duong province, 20°48'8.0"N 106°27'2.5"E, 28.V.2016, leg. N.T. Ha. **Paratypes**: 2 ♂♂ (CMS, NMW), same locality data as holotype; 1 ♂, 2 ♀♀ (MZUF: 1 ♂, 1 ♀, VNMN: 1 ♀ [= paratype α]): same data as holotype, but 20°48'8.7"N 106°27'2.3"E; 1 ♀ (CMS), same data as holotype, but 20°48'9.0"N 106°27'2.0"E.

DESCRIPTION: Holotype ♂ (Fig. 1): Total length 5.8 mm (to apex of labrum); pronotum 2.4 mm wide; elytra 3.3 mm long, 2.5 mm wide across shoulders. Head dark brown, with dense whitish pubescence, and with longer scattered setae; mandibles large, with acute apex; eyes well developed, antennae with 11 antennomeres, apical seven antennomeres clubbed; clypeus without pair of anterior horns, with dense and short setae, longer laterally. Pronotum dark brown, about as wide as the base of elytra, rectangular, densely dotted, bordered posteriorly, dense whitish pubescence with setae longer laterally. Elytra densely punctate, with dense whitish pubescence, and with scattered longer setae; elytral markings as in Fig. 3. Legs brown, densely pubescent; tibiae with numerous spines and long setae. Abdomen brown, stridulatory arch marked; post-metacoxal line present. Aedeagus (0.9 mm long) and spiculum gastrale (V-shaped) as in Fig. 5.

Paratype ♀ (α) (Fig. 2): Total length 5.3 mm (to apex of labrum); pronotum 2.1 mm wide; elytra 3.3 mm long, 2.2 mm wide across shoulders; elytral markings as in Fig. 4. Externally similar to male, but mandibles smaller.

Paratypes ♂♂: Total length 5.3–5.7 mm (to apex of labrum); pronotum 2.1–2.3 mm wide; elytra 3.0–3.3 mm long, 2.2–2.4 mm wide across shoulders. Externally similar to holotype.

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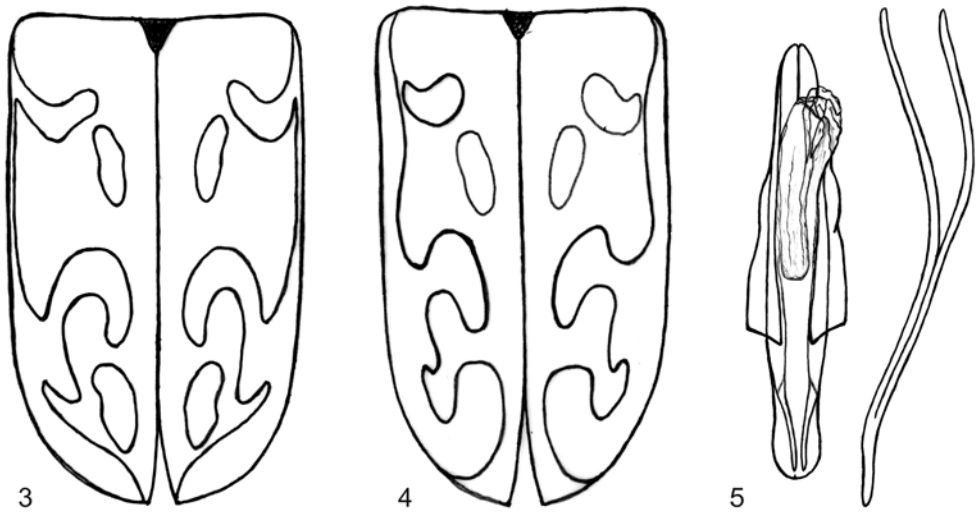

Figs. 3–5: *Augyles gigas*, 3) holotype, elytral markings, 4) paratype α, elytral markings, 5) holotype, aedeagus and spiculum gastrale.

Paratypes ♀♀: Total length 5.1–5.3 mm (to apex of labrum); pronotum 2.0–2.1 mm wide; elytra 3.2–3.3 mm long, 2.1–2.2 mm wide across shoulders. Externally similar to paratype α.

ETYMOLOGY: The specific epithet refers to the comparatively large size of this species.

DIFFERENTIAL DIAGNOSIS: *Augyles gigas* sp.n. is probably related to the *A. hispidulus* group by the shape of the male genitalia; however it differs in colour and shape of the elytral pattern and in the morphology of the aedeagus.

DISTRIBUTION: The new species is known at present only from a rice field (Fig. 6) at An Thanh commune, Tu Ky district, Hai Duong province, northern Vietnam.

Checklist of the Heteroceridae of Vietnam

Augyles anulatus (MASCAGNI, 1991): Hanoi (MASCAGNI 1995).

Augyles gigas (MASCAGNI, THANH BINH & HA 2017): An Thanh commune, Tu Ky district, Hai Duong province.

Augyles hiekei (MASCAGNI, 1995): Chiem-Hoa (MASCAGNI 1995); Hanoi (MASCAGNI 1995).

Augyles infimus (FAIRMAIRE, 1889): "Tonkin" (FAIRMAIRE 1889).

Augyles manfredjaechi (MASCAGNI, 1995): Nam Cat Tien National Park (MASCAGNI 2003); 40 km NW An Khe Buon Luoi (MASCAGNI 2003).

Heterocerus fenestratus (THUNBERG, 1784): "Tonkin" (CHARPENTIER 1979); Hanoi (MASCAGNI 1995); Thanh Moi (MASCAGNI 1995); Phu Tho prov., Xuan Son National Park, 500 m, 13./17.VI.2010, leg. Bartolozzi & Bambi (MZUF, MSNM, CMS, CMF) (unpublished data); Bac Kan prov., Ba Be National Park, 350 m, 3/8.VI.2011, leg. Bartolozzi, Bambi & Orbach (MZUF, CMS, CMF) (unpublished data); Cuc Phuong National Park, 20°15'01"N 105°42'31"E, 200 m, 3./5.V.2014, leg. Bartolozzi & Bambi (MZUF, CMS, CMF) (unpublished data).

Heterocerus lorenzevae MASCAGNI, 1993: Nam Cat Tien National Park (MASCAGNI 2003).

Heterocerus nepalensis MASCAGNI, 1993: Hanoi (MASCAGNI 1995); Cuc Phuong (MASCAGNI 1995).

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Heterocerus philippensis ssp. *javanicus* (GROUVELLE, 1896): Cuc Phuong (MASCAGNI 2003, MASCAGNI & SKALICKÝ 2007); Ben En National Park, 100 km SSW Hanoi, 40 km SW Than Hoa (MASCAGNI 2003, MASCAGNI & SKALICKÝ 2007).

Micilus minutissimus SAHLBERG, 1900: Yen Bai (MASCAGNI 2003). This records needs confirmation.

Fig. 6: Type locality of *Augyles gigas*.

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