ACTA ENTOMOLOGICA
MUSEI NATIONALIS PRAGAE
2024
64(1): 67–78
doi: 10.37520/aemnp.2024.006
ISSN 1804-6487 (online) – 0374-1036 (print)
www.aemnp.eu

RESEARCH PAPER

Marine bugs (Hemiptera: Heteroptera: Gerromorpha) from Vietnam, with description of a new species of *Hermatobates* (Hermatobatidae)

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Accepted:
29th March 2024

Published online:
15th June 2024

Abstract. This paper presents the inventory of exclusively marine Heteroptera species, including taxa of three families of Gerromorpha, Hermatobatidae, Veliidae, and Gerridae, from Vietnam. A new species of coral treaders, *Hermatobates sanho* sp. nov. from the southern area of Vietnam is described. *Xenobates murphyi* Andersen, 2000 and *Xenobates singaporensis* Andersen, 2000 are recorded from the country for the first time.

Key words. Hemiptera, Heteroptera, Gerromorpha, Gerridae, Hermatobatidae, Veliidae, marine bugs, new records, new species, Vietnam, Oriental Region

Zoobank: http://zoobank.org/urn:lsid:zoobank.org:pub:1554A224-51F6-4810-9A2E-4CA4EDCA11EE

Introduction

Marine bugs (Insecta, Heteroptera) are among the few groups of insects that are successful in colonizing various saline aquatic habitats and are the only group with species inhabiting the surface of the open ocean (the oceanic species of *Halobates* Eschscholtz, 1822). In this paper, the exclusively marine, semiaquatic species (infraorder Gerromorpha) are referred to as marine bugs. There is also a number of shore bugs (infraorder Leptopodomorpha) occurring at sea shores, and some species of true aquatic bugs (infraorder Nepomorpha: Corixidae and Micronectidae) that chiefly inhabit freshwater can also withstand brackish water (Cheng 1976). Among more than 2,100 described species of semiaquatic bugs, around 130 species are exclusively marine (Polhemus & Polhemus 2008). There are five families of Gerromorpha with representatives inhabiting marine habitats, namely Hermatobatidae, Veliidae, Gerridae, Mesoveliidae, and Hebridae (Andersen 1999, Chen et al. 2005).

A recent study by Armisén et al. (2022) on the phylogeny of Gerromorpha based on transcriptomic data suggested the transfer of two subfamilies, Haloveliinae and Microveliinae, from Veliidae into the family Gerridae. However, the taxon sampling in their study was limited (e.g., Haloveliinae and Microveliinae were represented by only three and one genera, respectively) and many important ingroup genera of Veliidae were not included in the analysis, which is insufficient for a more conclusive resolution of the systematics of paraphyletic Veliidae and Gerridae. Therefore, pending further phylogenetic studies with more extensive taxon sampling that would warrant a formal re-classification of Veliidae and Gerridae, in the present paper, we adhere to Andersen's (1982) classification of Veliidae and Gerridae. On a side note, Jehamalar et al. (2024) used the name Haloveliidae, indicating the recognition of a taxon at family rank, without providing clarification or justification regarding the basis of their decision, and notably, they did not refer to the work by Armisén et al. (2022).

The majority of marine bugs belong to two families, Veliidae and Gerridae. Marine species of Veliidae inhabit mangrove swamps (Fig. 5A), intertidal pools on rocky shores and coral reefs, thus they are called mangrove bugs (e.g., *Xenobates* Esaki, 1927) and coral bugs (*Halovelia* Bergroth, 1893 and *Haloveloides* Andersen, 1992), respectively. Marine species of Gerridae, also called mangrove skaters (e.g., *Asclepios* Distant, 1915 and several species of the subfamily Trepobatinae), sea skaters and ocean skaters (*Halobates* spp.) are commonly found on the water surface of estuaries, mangrove swamps, and coastal lagoons (Figs 5A, 5B), the near-shore sea surface and the open ocean surface (Chen et al. 2005, Andersen & Cheng 2004). The family Hermatobatidae contains only one pantropical genus, *Hermatobates* Carpenter, 1892, with 13 species

described to date (Polhemus & Polhemus 2012, Luo et al. 2019). *Hermatobates* species inhabit intertidal coral reef flats and can be found on the water surface during low tides, thus dubbed "coral treaders" (Andersen & Weir 2000, Polhemus & Polhemus 2012). There are also several species of Mesoveliidae and Hebridae that inhabit mangrove habitats, e.g., *Nereivelia* J. Polhemus & D. Polhemus, 1989 and some species of *Hebrus* Curtis, 1833 (Andersen 1999, Polhemus & Polhemus 1989, Yang & Murphy 2011). In addition, some chiefly freshwater species are also known to sometimes occur in brackish habitats, e.g., *Mesovelia* Mulsant & Rey, 1852 and *Microvelia* Westwood, 1834 (Andersen 1999).

The fauna of marine bugs in Southeast Asia has been documented in several taxonomic studies on various taxa, e.g., the studies on marine genera of Haloveliinae (*Halovelia*, *Haloveloides* and *Xenobates*) by Andersen (1989a,b, 1992, 2000) and Jehamalar et al. (2024), on *Halobates* by Andersen & Cheng (2004), on *Hermatobates* by Polhemus & Polhemus (2012), on marine Haloveliinae of the Philippines by Zettel (2003, 2006) and Zettel et al. (2021), etc. Vietnam is located at the transition between the continental Asia and the Malay Archipelago, with a long coastline and various types of marine habitats, and is expected to harbour high diversity of marine bugs. However, the marine bug fauna of Vietnam is still poorly studied, with little information about species composition and distribution. Hitherto, 12 marine bug species have been reported from Vietnam (Polhemus & Cheng 1982, Cheng 1989, Zettel & Chen 1996, Andersen & Cheng 2004, Zettel & Tran 2006, Tran et al. 2023), but the distribution of these species has been largely based on sporadic collection data.

The present paper aims to fill in some gaps of knowledge about the diversity and distribution of marine bugs in Southeast Asia by providing a preliminary annotated list of exclusively marine semiaquatic bugs (Gerromorpha: Hermatobatidae, Veliidae, and Gerridae) from Vietnam, based on our collections in several localities in the country since the early 2000s. A new species, *Hermatobates sanho* sp. nov., is described. *Xenobates murphyi* Andersen, 2000 and *X. singaporensis* Andersen, 2000 are reported from Vietnam for the first time. New, additional local distribution records of other species are also reported.

Material and methods

All specimens are apterous. Most specimens are preserved in alcohol. Some specimens were dry-mounted on cardboards after being dissected for examination of the genitalia. Specimens are deposited in the following collections:

MNHN	National Museum of Natural History, Paris, France;
NHMW	Natural History Museum, Vienna, Austria;
ZRC	Zoological Reference Collection, Lee Kong Chian Natural History Museum, National University of Singapore, Singapore;
ZVNU	Zoological Collection of Biological Museum, VNU University of Science, Hanoi, Vietnam.

Colour photographs of preserved specimens were taken using the Visionary Digital imaging system in the Lee Kong Chian Natural History Museum, Singapore. For scanning electron microscope (SEM) photography, specimens were sputter-coated with platinum, then photographed by the JEOL JSM-7600F FESEM microscope, at the Laboratory of Electron Microscopy and Microanalysis, Hanoi University of Science and Technology (HUST).

Terminology for the description of *Hermatobates* follows Andersen & Weir (2000) and Polhemus & Polhemus (2012). For the morphometric dimension of the process on the posterior margin of the metasternum (metasternal process), the basal width of the process is at the base of the process on the posterior margin of the metasternum; the length of the process is measured from the apical margin to the base of the process (see Fig. 4A). All measurements in text descriptions and scale bars in colour photographs of preserved specimens are in millimetres, and scale bars in SEM photographs are in micrometres. Identification of other genera, i.e., *Halovelia*, *Xenobates*, *Halobates*, and *Asclepios* was based on keys and taxonomic descriptions in Andersen (1989a,b, 1992, 2000), Andersen & Cheng (2004), Zettel (2003, 2006), Zettel et al. (2021), and Tran et al. (2023).

Results

Family Hermatobatidae Coutière & Martin, 1901
Genus *Hermatobates* Carpenter, 1892

Hermatobates sanho sp. nov.

(Figs 1–4)

Hermatobates schuhi (provisional identification): Polhemus & Polhemus (2012): 232 and fig. 25 (record from Vietnam).

Type material. Holotype: ♂, **VIETNAM: Bà Rịa-Vũng Tàu:** Côn Đảo Archipelago, Hòn Bà Island, 08°38.617′N 106°33.227′E, 15.iv.2010, Tran A.D. et al. leg., TAD1013 (ZVNU). Paratypes: **VIETNAM:** 5 ♂♂ 9 ♀♀, same locality data as holotype (3 ♂♂ 7 ♀♀ in ZVNU, 2 ♂♂ 2 ♀♀ ZRC). **Additional (non-type) material. VIETNAM:** 29 nymphs, same locality data as holotype (ZVNU).

Description. ***Size*** (mm). Males: length 3.75–4.40 (holotype: 4.10), maximum width 1.95–2.37 (holotype: 2.20). Females: length 3.55–3.70 mm, maximum width 1.90–1.98 mm.

Colour (Figs 1, 2). Body and legs covered with silvery pubescence. Ground colour of dorsum generally brown to dark brown, venter light brown to brown. Anterior part of head dark brown, posterior margin of head light brown forming indistinct light brown transverse band. Antennae generally brown to dark brown, basal two-thirds of segment I yellowish. Legs generally brown to light brown, except for mostly yellowish fore coxa, fore tibia and all trochanters.

Apterous male (holotype). Body fusiform, length about 1.86× greatest width across thorax (4.10 : 2.20). Head length 0.26× greatest width across eyes (0.40 : 1.50). Eyes small, eye width [= (head width – interocular width) / 2] about 0.24× interocular width (0.24 : 1.02). Antenna: total length 0.81× body length; lengths of antennal segments I–IV: 1.10 : 1.00 : 0.60 : 0.61; segment I 2.75× head length (1.10 : 0.40), slightly thicker than segments II–IV; combined length of all antennal segments 0.81× total length of

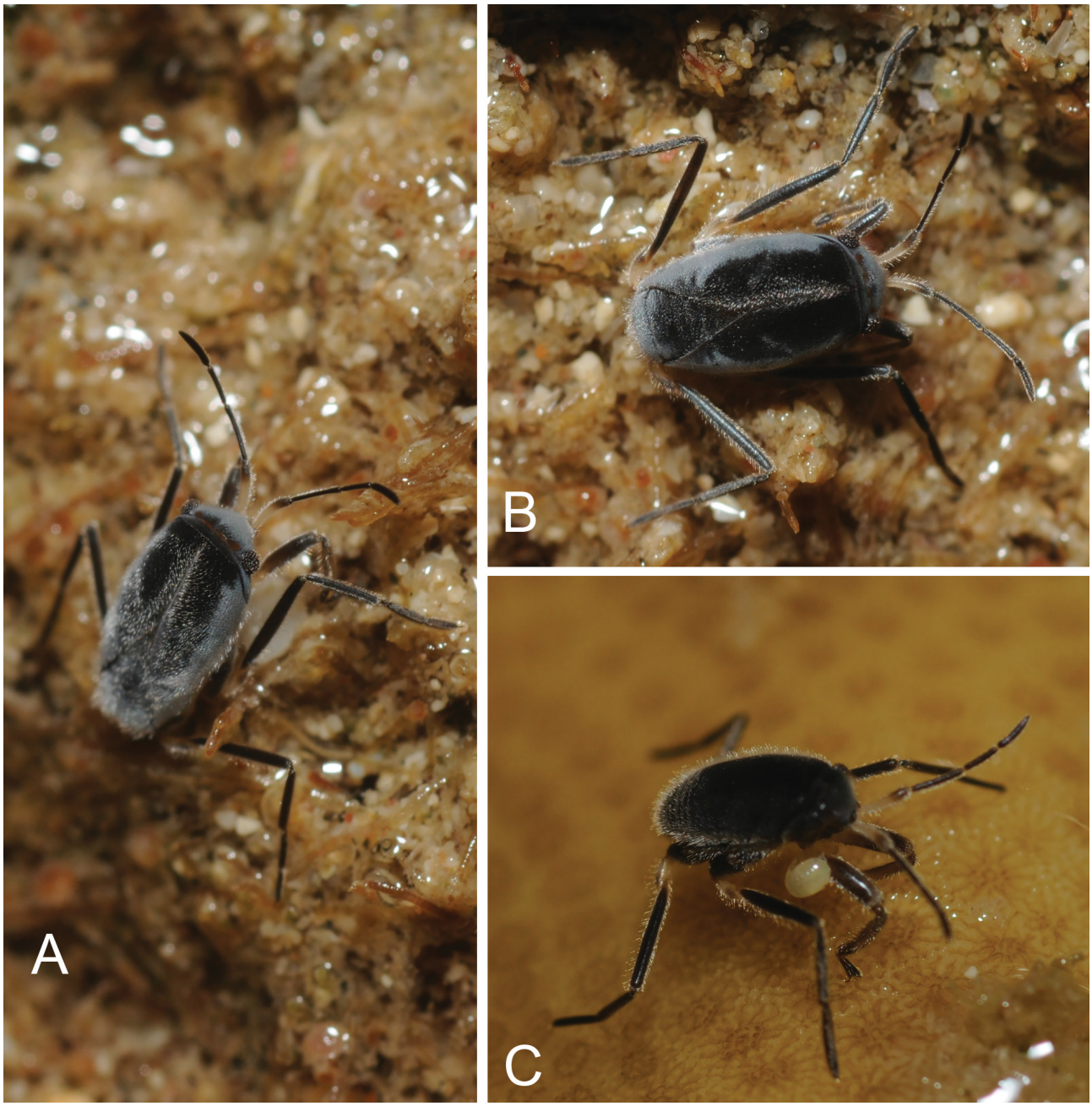

Fig. 1. In-situ photographs of *Hermatobates sanho* sp. nov. A–B – a female resting on the edge of an intertidal pool, side view and top view. C – a nymph feeding on a small crustacean prey and resting on emerged hard coral during low tide.

body (3.31 : 4.10). Pronotum short, median length 0.42× eye width (0.10 : 0.24); posterior margin curved backward laterally and straight in middle. Meso- and metanotum simple. Metasternum with isosceles trapezoidal process on posterior margin (Figs 3D, 4A–C); ratio of apical width to basal width of process 0.38; ratio of length to apical width of process 0.73; metasternal process with numerous, short, stout papillae and interspersed with a few long, pointed densely-packed tufts of setae (Figs 4C–F).

Lengths of leg segments (femur : tibia : tarsus I : tarsus II : tarsus III): fore leg: 1.90 : 1.75 : 0.07 : 0.13 : 0.30; middle leg: 2.40 : 1.55 : 0.16 : 0.75 : 0.55; hind leg: 2.73 : 1.60 : 0.15 : 0.68 : 0.61. Fore trochanter with small tooth near distal end (Fig. 3B). Fore femur incrassate, width 0.65, flexor side with long, spur-like black tooth at base, broad distally bifid black tooth before apex, and mostly regular row of 15 small black teeth between these large teeth (Figs 3A, B). Fore tibia nearly straight, on flexor margin: black tooth at basal curve, followed by black bifid tooth after basal curve, then by large, stout black tooth in basal third, and low, broad black tooth in distal third; depression between large tooth (int basal third) and bifid tooth as wide as depression on bifid tooth; row of small black denticles from distal two-thirds towards apex of tibia (Figs 3A, B). Middle trochanter with slender and black spine distally. Middle femur thickened in middle (width 0.30), flexor

Fig. 2. Habitus of *Hermatobates sanho* sp. nov., male.

side with eight spatulate, paddle-like spines in basal half, followed by ca. 10 almost straight stout spines (Fig. 3C). Hind femur slightly thickened in centre (width 0.38), trochanter and femur simple, without spines.

Abdomen short, length from abdominal scent orifice to tip 0.85, lengths of abdominal terga IV–VII: 0.09 : 0.13 : 0.21 : 0.32. Genitalia: large, length 0.79; styliform processes of abdominal segment VIII with hook-shaped apex and on inner surface of sub-apical part with a few long setae (Figs 3E, 4G); pygophore with triangular basal margin curved upwards; parameres plate-shaped, asymmetrical, left paramere smaller than right paramere.

Apterous female. Body fusiform, length about 1.89× body width (3.60 : 1.90). Head length 0.28× head width across eyes (0.40 : 1.45), eyes rather small, eye width 0.23× interocular width (0.23 : 1.00). Antenna relatively shorter than in male, total length 0.66× body length (2.37 : 3.60); lengths of antennal segments I–IV: 0.67 : 0.75 : 0.50 : 0.45; segment IV about 1.12× head length (0.45: 0.40). Pronotum short, median length 0.43× eye width (0.1 : 0.23); metasternum not modified.

Legs relatively shorter and slenderer than in male. Lengths of leg segments (femur : tibia : tarsus I : tarsus II : tarsus III): fore leg: 1.06 : 1.03 : 0.04 : 0.08 : 0.26; middle leg: 1.80 : 1.04 : 0.12 : 0.54 : 0.44; hind leg: 1.88 : 1.04 : 0.10 : 0.54 : 0.52. Fore trochanter simple, without spines. Fore femur thickened in middle (width 0.22) and with row of 16–18 small black teeth on flexor side. Fore tibia almost straight, without teeth. Middle trochanter simple, without spines. Middle femur thickened in middle (width 0.20) with row of 15–20 small black spines in basal two-thirds, among which first 6–9 spines in basal part of femur longer than distal ones (number of spines variable among individuals). Hind femur slightly thickened in middle (width 0.16), without spines.

Abdomen length from abdominal scent orifice to apex: 0.92; lengths of abdominal terga IV–VII: 0.14 : 0.20 : 0.25 : 0.26. Abdominal sterna II–VII forming large sub-rectangular plate, length 0.61, posterior margin slightly produced medially. Genital segments concealed by sternal plate, except for apically-rounded proctiger.

Comparative notes. *Hermatobates sanho* sp. nov. belongs to the *H. weddi* species group sensu Polhemus & Polhemus (2012), as the male has a well-developed metasternal process with papillae and fore tibia with multiple teeth in the basal part (one bifid tooth and a large tooth or two sub-basal teeth and a large tooth). Within this species group, *H. sanho* sp. nov. is most similar to *H. weddi* China, 1957 (widespread from the seas of the Lesser Sunda Islands and western Australia to Polynesia), *H. schuhi* Polhemus & Polhemus, 2012 (from Ryukyu Islands), and *H. lingyangjiaoensis* Luo, Chen & Wang, 2019 (from Paracel Islands) in having (in the male) an isosceles trapezoidal metasternal process (which is situated on the posterior margin of the metasternum and sloping towards the base of genitalia) and fore tibia with either one bifid tooth or two sub-basal teeth followed by a large tooth.

The new species can be separated from these species mentioned above, based on the set of the following characteristics. The general shape and morphometric ratios

Table 1. Comparative morphology of *H. sanho* sp. nov., *H. weddi* China, 1957, *H. schuhi* J. Polhemus & D. Polhemus, 2012, and *H. lingyangjiaoensis* Luo, Chen & Wang, 2019.

	***H. sanho* sp. nov.**	***H. weddi***	***H. schuhi***	***H. lingyangjiaoensis***
Male metasternal process: papillae and setae	with many short, stout papillae, interspersed with a few long, pointed densely-packed tufts of setae	a few large, short and stout papillae	many short and stout papillae	very few (sparse), short, stout papillae
Male metasternal process: ratio of apical width to basal width	0.38	0.34	0.43	0.35
Male metasternal process: ratio of length to apical width	0.73	0.67	0.90	0.57
Armature in basal part of male fore tibia	depression between sub-basal bifid tooth and large tooth as wide as depression on bifid tooth	depression between sub-basal bifid tooth and large tooth wider than depression on bifid tooth	depression between sub-basal bifid tooth and large tooth wider than depression on bifid tooth	bifid tooth narrower than depression on bifid tooth (in male with larger fore legs)
Male middle femur, flexor side	8 spatulate, paddle-like spines in basal half, followed by ca. 10 almost straight stout spines	ca. 20 spatulate, paddle-like spines	20–24 almost straight stout spines	4–6 spatulate, paddle-like spines at basal third, followed by at least 18 slender and straight spines
Styliform process of male abdominal segment VIII	hook-shaped apex more strongly curved, and inner surface of sub-apical part with fewer long setae	hook-shaped apex more strongly curved, and inner surface of sub-apical part with fewer long setae	hook-shaped apex longer, curved at ca. 90° and inner surface of sub-apical part with more setae	apex less developed, shorter and sub-triangular, not forming hook
Female middle femur, flexor side	15–20 spines	few tiny, barely visible black teeth basally	ca. 7 spines	ca. 12 spines

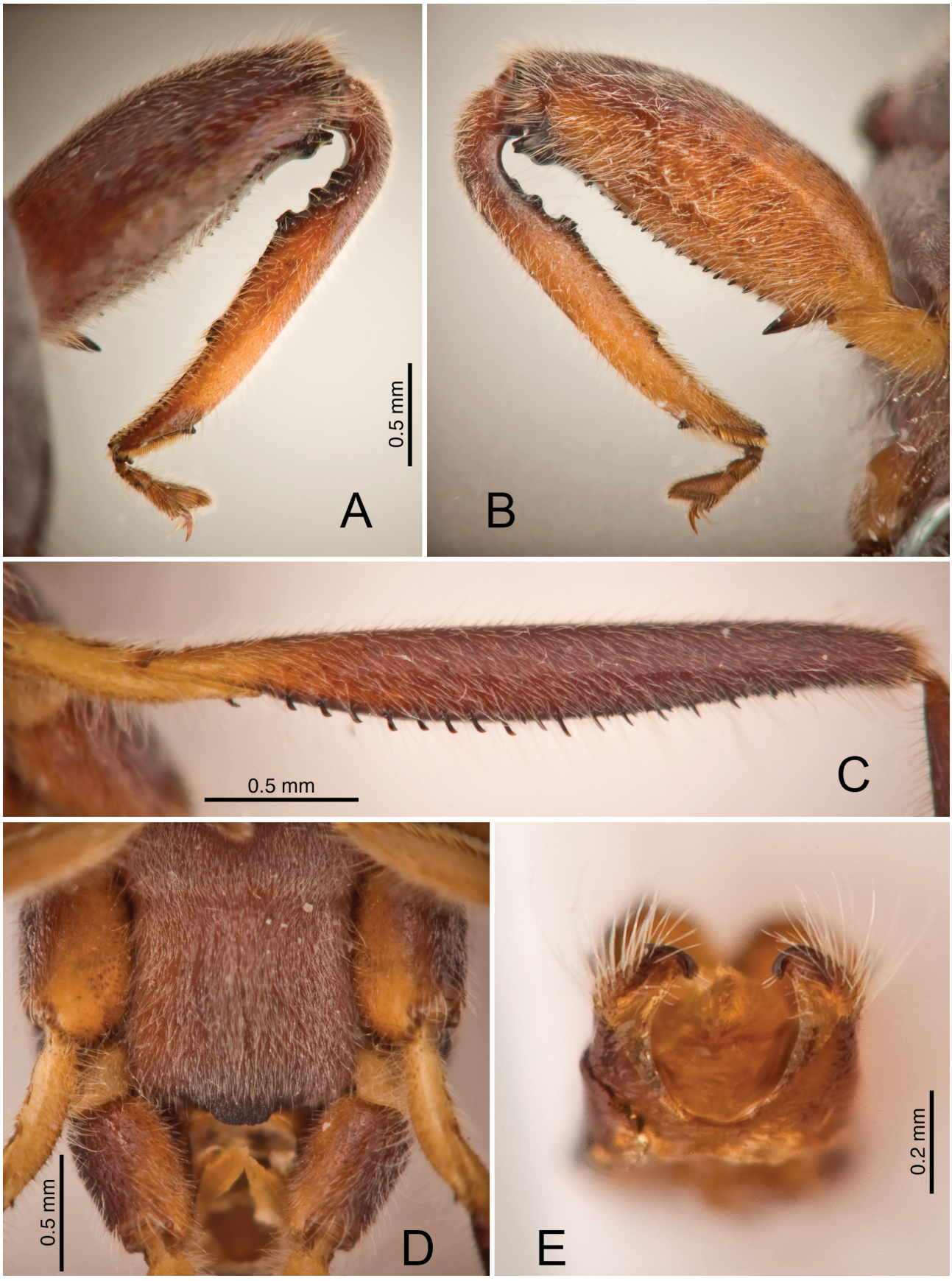

Fig. 3. Morphological features of *Hermatobates sanho* sp. nov., male. A–B – right fore leg (A – dorsal view, B – ventral view), C – middle femur, D – ventral view showing metasternum, E – styliform processes of abdominal segment VIII.

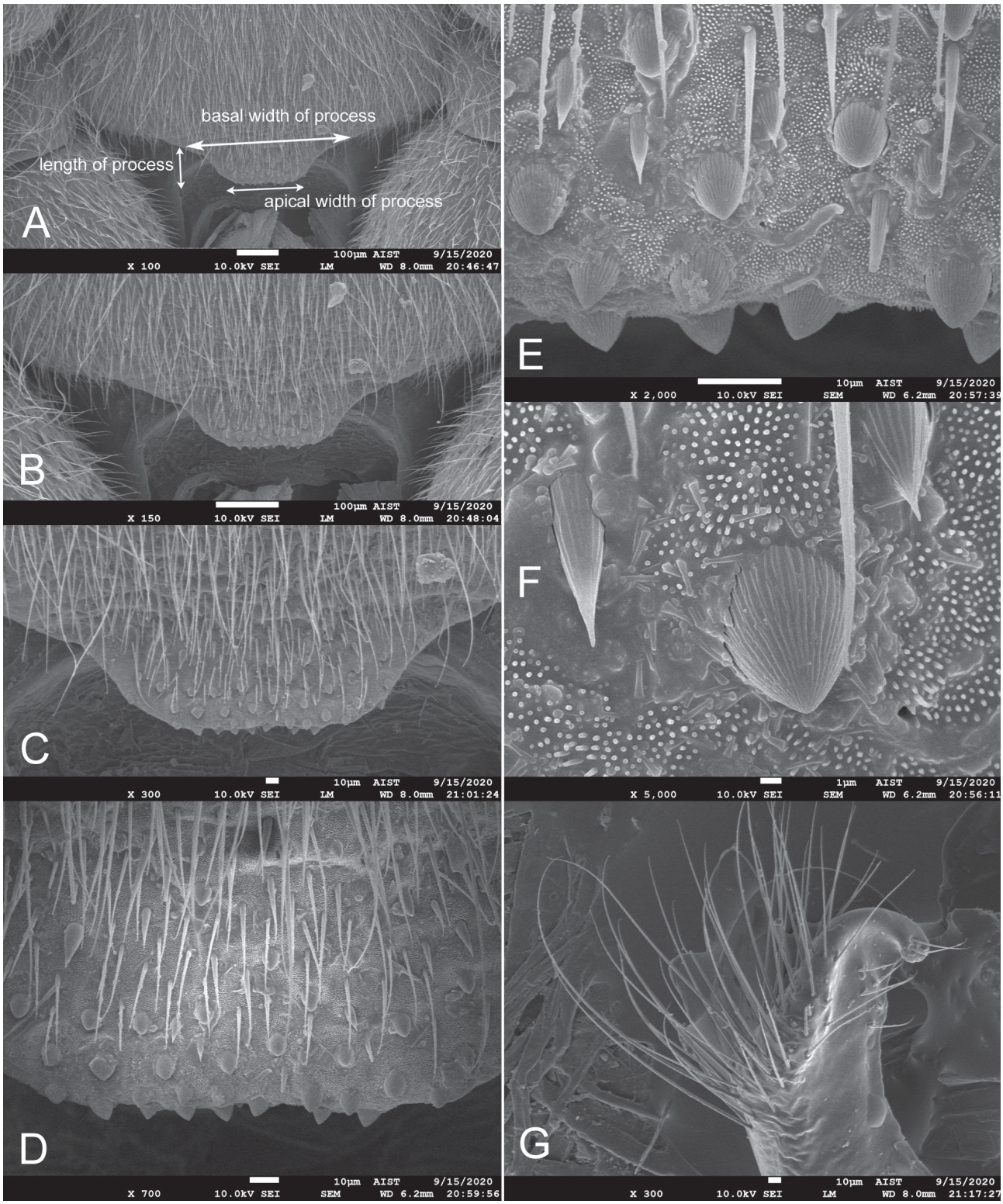

Fig. 4. Scanning electron micrographs of morphological features of *Hermatobates sanho* sp. nov., male. A–D – metasternal process at different magnifications; E–F – papillae on metasternal process at different magnification; G – styliform process of abdominal segment VIII.

of the metasternal process of *H. sanho* sp. nov. are more similar to that of *H. weddi* than to that of the other two species. However, the papillae pattern in *H. sanho* sp. nov. is distinctly different from that in *H. weddi*, *H. schuhi*, and *H. lingyangjiaoensis*. In *H. sanho* sp. nov., there are a few long, slender, and pointed densely-packed tufts of setae (which appear to have a similar structure as papillae but are of smaller diameter) scattered and interspersed with short and stout papillae (which are more densely situated). In *H. weddi*, there are only a few scattered, large papillae; in *H. lingyangjiaoensis*, there are only a few scattered, smaller papillae. In *H. schuhi*, there are also numerous, densely-situated short and stout papillae, and very few long, slender, and pointed densely packed tufts of setae, but these tufts are restricted to the base of the metasternal process.

The armature in the basal part of the male fore tibia of *H. sanho* sp. nov. is more similar to that of *H. lingyangjiaoensis* than to those of *H. weddi* and *H. schuhi*. In both *H. weddi* and *H. schuhi*, the flexor margin of the basal part of male fore tibia has a broad, bifid tooth (which is referred to as "protuberance" in Polhemus & Polhemus (2012) and Luo et al. (2019)), followed by a depression, which is about as wide as or wider than the width of the bifid tooth, then a large stout tooth (which was referred to as "tubercle" in Polhemus & Polhemus (2012) and Luo et al. (2019)). In both *H. sanho* sp. nov. and *H. lingyangjiaoensis*, in the basal part of the male fore tibia, there are two round sub-basal teeth, which are clearly separated from each other by a shallow depression, then followed by a depression and a large, stout tooth distally. However, in *H. sanho* sp. nov., the depression from the second sub-basal tooth (the first one is the nearer to the base of the tibia) to the large stout tooth is wider than the depression between two sub-basal teeth, while in *H. lingyangjiaoensis*, the depression between the second sub-basal tooth and the large stout tooth is distinctly narrower than the depression between two sub-basal teeth.

The styliform process of the male abdominal segment VIII of *H. sanho* sp. nov. is very similar to that of *H. weddi* in having a short, somewhat hook-shaped apex and the inner surface of the sub-apical part with a few long setae (cf. Polhemus & Polhemus 2012: fig. 6B). This structure is clearly different in *H. schuhi* and *H. lingyangjiaoensis*. In *H. schuhi*, the apex is longer, curved at approximately 90° and the inner surface of sub-apical part has more setae (see Polhemus & Polhemus 2012: fig. 6A). In *H. lingyangjiaoensis*, the apex of the styliform process is less developed, shorter, and sub-triangular (see Luo et al. 2019: figs 17–19).

Other structural differences between *H. sanho* sp. nov., *H. weddi*, *H. schuhi*, and *H. lingyangjiaoensis* include the type and number of spines on the male middle femur and the female middle femur.

The male middle femur of *H. sanho* sp. nov. has a row of ca. 20 spines on the flexor side, including eight spatulate, paddle-like spines in the basal half, then followed by ca. 10 almost straight stout spines in the distal part, and a few shorter spines. Whereas, in *H. weddi,* the male middle femur has a row of ca. 20 spatulate, paddle-like spines; in *H. schuhi*, it has 20–24 almost straight stout spines along the flexor side, some near the base are with hooked tips; in *H. lingyangjiaoensis*, it has at least 24 spines, of which only 4–6 spatulate, paddle-like spines are in basal third, followed by slenderer and straight spines distally.

The female middle femur of *H. sanho* sp. nov. has 15–20 small spines on the flexor side, while that of *H. schuhi* has around seven small spines, and that of *H. lingyangjiaoensis* has around 12 small spines. The female middle femur of *H. weddi* has only a few tiny, barely visible black teeth basally.

The morphological comparison of the species of *H. weddi* species group is summarised in Table 1 below.

Etymology. The epithet *sanho* is from the Vietnamese words "san hô", meaning corals, with reference to the typical habitat of *Hermatobates*, which are intertidal coral reef flats.

Habitat. Specimens of *H. sanho* sp. nov. were collected at night, during low tide on an intertidal reef flat at Côn Đảo Archipelago, approximately 85 km off the coast of southern Vietnam. The reef flat is characterized by a combination of corals, small rocks and sandy bottom. The specimens were observed either resting on edge of the shallow intertidal pools (Fig. 1) or moving swiftly between these pools.

Distribution. Vietnam: Côn Đảo. Polhemus & Polhemus (2012: 232 and fig. 25) referred to a provisional record of *H. schuhi* from Vietnam which relied on the correspondence with the second author of the present paper (Tran A.D.). This reference is indeed based on the same specimens which are now formally determined as *H. sanho* sp. nov.

Hermatobates lingyangjiaoensis Luo, Chen & Wang, 2019

General distribution. Luo et al. (2019) described this species from the Paracel Islands (as the Ling Yang Jiao Islands) in the South China Sea. These islands are known as Hoàng Sa in Vietnam and as such, we here include this species in the Vietnamese fauna.

Family Veliidae Amyot & Serville, 1843
Subfamily Haloveliinae Esaki, 1930
Genus *Halovelia* Bergroth, 1893

Halovelia bergrothi Esaki, 1926

Material examined. VIETNAM: Bà Rịa – Vũng Tàu: 1 ♂ 1 ♀, Côn Đảo Archipelago, Hòn Bà Island, 08°38.617′N 106°33.227′E, 15.iv.2010, Tran A.D. et al. leg., TAD1013 (ZVNU).

Distribution in Vietnam. Nha Trang (Zettel & Tran 2006), Côn Đảo (first record).

General distribution. Cambodia, Philippines, New Guinea, Bismarck & Solomon Archipelagos, New Caledonia, and Pacific Islands (Andersen 1989a).

Halovelia malaya Esaki, 1930

Material examined. No material available.

Distribution in Vietnam. Khánh Hoà (Nha Trang) (Zettel & Tran 2006).

General distribution. Southern Thailand, Peninsular Malaysia (Andersen 1989b).

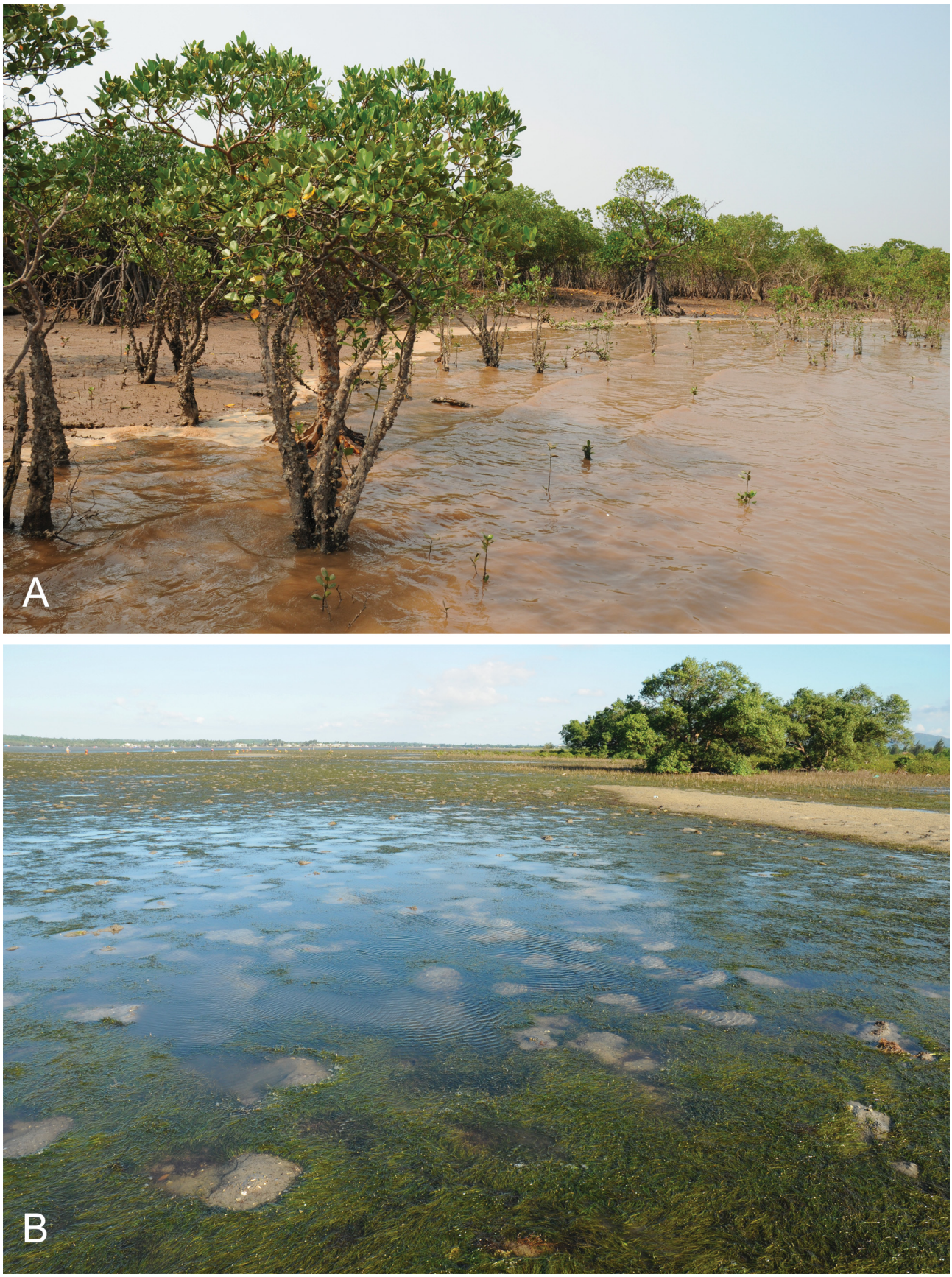

Fig. 5. Photos of representative coastal marine habitats in Vietnam. A – mangroves in Quảng Ninh Province, northern Vietnam, habitat of *Xenobates murphyi* Andersen, 2000 and *Asclepios* spp. B – intertidal sea grass in Trường Giang Lagoon, Quảng Nam Province, central Vietnam, habitat of *Asclepios apicalis* (Esaki, 1924) and *Halobates hayanus* White, 1883.

Genus *Haloveloides* Andersen, 1992

Haloveloides sundaensis Andersen, 1992

Material examined. VIETNAM: Bà Rịa – Vũng Tàu: 4 ♂♂ 9 ♀♀, Côn Đảo Archipelago, Hòn Bà Island, 08°38.617′N 106°33.227′E, 15.iv.2010, Tran A.D. et al. leg., TAD1013 (ZVNU).

Distribution in Vietnam. Nha Trang (Zettel & Tran 2006), Côn Đảo (first record).
General distribution. Southern Thailand, Peninsular Malaysia, Bintan, Sarawak, Java (Andersen 1992, Zettel & Tran 2009).

Genus *Xenobates* Esaki, 1927

Xenobates mandai Andersen, 2000

Material examined. VIETNAM: Hồ Chí Minh City: Same as in Zettel & Tran (2006).

Distribution in Vietnam. Hồ Chí Minh City (Cần Giờ mangroves) (Zettel & Tran 2006).
General distribution. Singapore, Peninsular Malaysia (Langkawi Island), Thailand (Gulf of Thailand) (Andersen 2000, Zettel & Tran 2009, Nakthong & Vitheepradit 2022).

Xenobates murphyi Andersen, 2000

Material examined. VIETNAM: Quảng Ninh: 5 ♂♂ 3 ♀♀, Tiên Yên, Đồng Rui, 27.viii.2011, Tran A.D. leg., TAD1118 (ZVNU); 14 ♀♀, Tiên Yên, Đồng Rui, Ba Hòn mangroves, 27.viii.2011, Tran A.D. leg., TAD1119 (ZVNU); 11 ♀♀, Tiên Yên, Đồng Rui, mangroves, site 1, 21°14.494'N 107°24.367'E, 13.ix.2019, Nguyen T.A.N. & Nguyen V.P. leg., ĐR1901 (ZVNU); 1 ♀, Tiên Yên, Đồng Rui, mangroves, site 2, 21°15.283′N 107°24.585′E, 12.ix.2019, Nguyen T.A.N. leg., ĐR1902 (ZVNU); 1 ♂, Tiên Yên, Đồng Rui, mangroves, site 2, 21°11.591′N 107°23.389′E, 21.i.2021, Nguyen T.A.N. leg., ĐR2104 (ZVNU); 5 ♂♂ 17 ♀♀, Quảng Yên, Minh Thành, mangroves, 20°58.579′N 106°52.857′E, 3.xii.2020, Nguyen T.A.N. leg., QY2001 (ZVNU). **Hải Phòng:** 1 ♂ 6 ♀♀, Cát Bà Island, Xuân Đám, 20°45.735′N 106°58.537′E, 30.vi.2023, Duong V.C. leg. (ZVNU).

Distribution in Vietnam. First records for Vietnam: Quảng Ninh, Hải Phòng.
General distribution. Singapore, Peninsular Malaysia, Thailand (Gulf of Thailand), Borneo (Sabah), Philippines (Andersen 2000, Zettel & Tran 2009, Zettel et al. 2021, Nakthong & Vitheepradit 2022).

Xenobates singaporensis Andersen, 2000

Material examined. VIETNAM: Bà Rịa – Vũng Tàu: 1 ♂ 10 ♀♀, Côn Đảo Archipelago, Côn Sơn Island, Đầm Tre area, mouth of stream and mangroves, 08°44.696′N 106°39.123′E, 14.iv.2010, Tran A.D. et al. leg., TAD1010 (ZVNU); 11 ♂♂ 19 ♀♀, Côn Đảo Archipelago, Bảy Cạnh Island, mangroves, 08°40.125′N 106°40.933′E, 14.iv.2010, Tran A.D. et al. leg., TAD1011 (ZVNU).

Distribution in Vietnam. First record for Vietnam: Côn Đảo.
General distribution. Singapore, Thailand (Gulf of Thailand) (Andersen 2000, Nakthong & Vitheepradit 2022).

Family Gerridae Leach, 1815
Subfamily Halobatinae Bianchi, 1896
Genus *Asclepios* Distant, 1915

Asclepios annandalei Distant, 1915

Material examined. VIETNAM: See Tran et al. (2023).

Distribution in Vietnam. Hồ Chí Minh City (Cần Giờ mangroves), Côn Đảo (Tran et al. 2023).
General distribution. India, Sri Lanka, Thailand, Malaysia (Sabah), Singapore (Andersen & Cheng 2004, Román-Palacios et al. 2020, Nakthong & Vitheepradit 2022).

Asclepios apicalis (Esaki, 1924)

Material examined. VIETNAM: Quảng Ninh: 8 ♂♂ 7 ♀♀, Cô Tô Island, 20°59.516′N 107°46.437′E, 9.vii.2023, Nguyen T.A.N. leg., CT2301 (ZVNU). **Hải Phòng:** 7 ♂♂ 6 ♀♀, Cát Bà Island, Xuân Đám, 20°45.735′N 106°58.537′E, 30.vi.2023, Duong V.C. leg. (ZVNU); 3 ♂♂ 3 ♀♀, Cát Bà Island, Gia Luận, 20°50.665′N 106°58.784′E, 2.vii.2023, Nguyen T.A.N. leg., CB2305 (ZVNU). For additional material examined see Tran et al. (2023).

Distribution in Vietnam. Hải Phòng (first record), Quảng Ninh, Thái Bình, Nam Định, Quảng Nam (Tran et al. 2023). Previous records of *A. apicalis* from Vietnam by Zettel & Chen (1996) and Andersen & Cheng (2004) belong to *Asclepios esakii* Tran, Le & Nguyen, 2023.
General distribution. Taiwan, Korea, Japan, China (Hainan, Hong Kong) (Andersen & Cheng 2004, as *A. shiranui*).

Asclepios esakii Tran, Le & Nguyen, 2023

Type material examined. See Tran et al. (2023).

Additional material examined. VIETNAM: Hải Phòng: 1 ♂, Cát Bà Island, Xuân Đám, 20°45.735′N 106°58.537′E, 30.vi.2023, Duong V.C. leg. (ZVNU); 2 ♂♂ 2 ♀♀, Cát Bà Island, Gia Luận, 20°50.665′N 106°58.784′E, 2.vii.2023, Nguyen T.A.N. leg. (ZVNU).

Distribution in Vietnam / General distribution. Quảng Ninh, Hải Phòng, Thái Bình, Nam Định (Zettel & Chen 1996, Andersen & Cheng 2004, Román-Palacios et al. 2020, reported as *A. apicalis*; and Tran et al. 2023).

Genus *Halobates* Eschscholtz, 1822

Halobates flaviventris Eschscholtz, 1822

Material examined. VIETNAM: Khánh Hoà: 1 ♂ 1 ♀, "VIETNAM, Cauda nr. Nhatrang, leg. R. Serène, coll. H. Nouvel, nr.L.272" (NHMW); 1 ♂ 2 ♀♀, "Chevey / No.2" (MNHN); 5 ♂♂ 2 ♀♀, "Chevey / No.3" (MNHN); 7 ♂♂ 1 ♀, "Chevey / No. 4" (MNHN); 1 ♂, "Chevey / No.6" (MNHN); 6 ♂♂ 2 ♀♀, "Chevey / No.8" (MNHN); 2 ♂♂, "Chevey / No.10" (MNHN).

Remarks. All specimens in MNHN were placed in the box "Gerrides marins d'Indo-chine (coll. Poisson via coll. B. Ehanno)", which also included other marine veliids (see Zettel & Tran 2006). These specimens were labelled with "Chevey" and a locality number (from 1 to 10) and there were additional sheets of paper in the box with descriptive details about localities (in French) for

each number. Based on these notes, the localities were in Nha Trang and nearby areas (central coast of Vietnam) (for details, see Zettel & Tran 2006: 86).
Distribution in Vietnam. Khánh Hoà (Nha Trang) (Zettel & Chen 1996).
General distribution. Indian Ocean and West Pacific Ocean (Andersen & Cheng 2004, Román-Palacios et al. 2020).

Halobates germanus White, 1883

Material examined. VIETNAM: Khánh Hoà: 12 ♂♂ 20 ♀♀, Trường Sa (Spratly Islands), Song Tử Tây (Southwest Cay), 11°24.950′N 114°19.513′E, 4.x.2020, Nguyen T.T. leg. (ZVNU); 19 ♂♂ 21 ♀♀, ca. 110 km off the coast of Quảng Ngãi Prov.; 14°53.853′N, 110°04.450′E, 26.ix.2021, Nguyen T.T. leg. (ZVNU); 36 ♂♂ 46 ♀♀, Trường Sa (Spratly Islands), 10°41.997′N 113°49.000′E, 29.x.2021, Nguyen T.T. leg. (ZVNU); 13 ♂♂ 16 ♀♀, Trường Sa (Spratly Islands), Tizard Bank, Nam Yết Island, 10°10.538′N 114°21.912′E, 30.ix.2021, Nguyen T.T. leg. (ZVNU).

Distribution in Vietnam. Vietnam (Cheng 1989: fig. 3, Ikawa et al. 2012: fig. 6, and this study).
General distribution. Atlantic, Pacific, and Indian Ocean (Andersen & Cheng 2004, Román-Palacios et al. 2020, Kment & Carapezza 2022).

Halobates hayanus (White, 1883)

Material examined. VIETNAM: Khánh Hoà: 2 ♂♂, "VIETNAM, Cauda nr. Nhatrang, leg. R. Serène, coll. H. Nouvel, nr.L.272" (NHMW); 1 ♂, "Chevey / No.4" (MNHN); 1♀, "Chevey / No.8" (MNHN); 1 ♂ 2 ♀♀, "Chevey / No.9" (MNHN). **Quảng Nam:** 10 ♂♂ 12 ♀♀, Núi Thành, Trường Giang Lagoon, Tam Giang, 8.v.2012, Tran A.D. leg. (ZVNU). **Bà Rịa – Vũng Tàu:** 1 ♂ 2 ♀♀, Côn Đảo Archipelago, Bảy Cạnh Island, mangroves, 08°40.125′N 106°40.933′E, 14.iv.2010, Tran A.D. et al. leg., TAD1011 (ZVNU); 1 ♂ 1 ♀, Côn Đảo Archipelago, Hòn Bà Island, 08°38.617′N 106°33.227′E, 15.iv.2010, Tran A.D. et al. leg., TAD1013 (ZVNU).

Remarks. For specimens deposited in MNHN, see Remarks under *Halobates flaviventris*.
Distribution in Vietnam. Khánh Hoà (Nha Trang) (Zettel & Chen 1996), Quảng Nam, Côn Đảo (first records).
General distribution. Indian Ocean and West Pacific Ocean (Andersen & Cheng 2004, Román-Palacios et al. 2020, Kment & Carapezza 2022).

Halobates micans Eschscholtz, 1822

Distribution in Vietnam. Vietnam (Cheng 1989: fig. 1, Ikawa et al. 2012: fig. 6).
General distribution. Atlantic, Pacific, and Indian Ocean (Andersen & Cheng 2004, Román-Palacios et al. 2020).

Halobates sericeus Eschscholtz, 1822

Distribution in Vietnam. Central Vietnam (Quảng Trị) (Polhemus & Cheng 1982).
General distribution. Pacific Ocean, amphi-tropical (Andersen & Cheng 2004, Román-Palacios et al. 2020).

Discussion

The present paper has reported one species new to science (*Hermatobates sanho* sp. nov.) and two first records for Vietnam (*Xenobates murphyi* Andersen, 2000 and *X. singaporensis* Andersen, 2000) along with additional provincial records for four species. The records of *X. murphyi* from northern Vietnam have extended the known distribution range of this taxon significantly northwards, close to the Tropic of Cancer, and into the subtropical climate. *Xenobates singaporensis* was previously considered to be restricted to Singapore, being only recently reported from the coastal area of Thailand (in the Gulf of Thailand) (Andersen 2000, Nakthong & Vitheepradit 2022), and has now been reported from Southern Vietnam. However, two oceanic species of *Halobates*, *H. micans* and *H. sericeus*, which were previously reported from Vietnam were not obtained in the course of this study. The results indicate that the fauna of marine bugs in Vietnam as well as neighbouring areas has not been adequately investigated. On the other hand, this study has only dealt with exclusively marine taxa of three gerromorphan families (Hermatobatidae, Veliidae, and Gerridae), while no sample of marine taxa of Mesoveliidae and Hebridae has been obtained. Likewise, species of the shore bugs (Leptopodomorpha) and true water bugs (Nepomorpha) that are associated with marine or brackish habitats were not addressed during this study. Therefore, the results are still preliminary. Further studies relying on more extensive sampling of representative marine and brackish habitats in Vietnam are needed to gain a more comprehensive understanding of the fauna and the diversity of marine bugs in Southeast Asia.

Acknowledgements

We are grateful to Dr Nguyen Duc Dung at the Laboratory of Electron Microscopy and Microanalysis, Hanoi University of Science and Technology (HUST) for supporting us in taking SEM photographs; to Mr Nguyen Tai Tu (Institute of Tropical Ecology, Vietnam-Russia Tropical Center) for collecting and providing samples of *Halobates germanus*. Tran Anh Duc sincerely thanks the director board of Con Dao National Park for granting permission to conduct a field survey in 2010. He also thanks Dr Tan Heok Hui, Dr Zeehan Jaffar, Ms Tan Kai-xin, and Dr Paul Chen (all National University of Singapore), and Dr Nguyen Van Tu (Institute of Tropical Biology, Hồ Chí Minh City) for facilitating and assisting during field work in Con Dao. He also thanks Dr Eric Guilbert (Muséum National d'Histoire Naturelle, Paris, France) for hosting his visit to the museum to study specimens of aquatic Heteroptera in 2005.

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