

**Faunistical notes on the water measurer *Hydrometra*
LATREILLE, 1796 (Insecta: Heteroptera: Hydrometridae)
from Vietnam and Hainan Island**

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Abstract

This study reports new distribution data for nine *Hydrometra* species from Vietnam, including three new records for the country: *H. albolineata* (SCOTT, 1874), *H. jaczewskii* LUNDBLAD, 1933 and *H. ripicola* ANDERSEN, 1992. In addition, four species of *Hydrometra* are reported from Hainan Island (China) for the first time: *H. gilloglyi* POLHEMUS & POLHEMUS, 1995, *H. greeni* KIRKALDY, 1898, *H. jaczewskii* LUNDBLAD, 1933, and *H. longicapitis* TORRE-BUENO, 1927.

Key words: Heteroptera, Hydrometridae, *Hydrometra*, new records, Vietnam, China, Hainan.

Zusammenfassung

Diese Studie berichtet die Verbreitung von neun Arten der Gattung *Hydrometra* in Vietnam, darunter drei Arten, die erstmals für dieses Land gemeldet werden: *H. albolineata* (SCOTT, 1874), *H. jaczewskii* LUNDBLAD, 1933 und *H. ripicola* ANDERSEN, 1992. Außerdem erfassen wir Daten der Gattung *Hydrometra* für die Insel Hainan im südöstlichen China: Vier Arten werden erstmals nachgewiesen: *H. gilloglyi* POLHEMUS & POLHEMUS, 1995, *H. greeni* KIRKALDY, 1898, *H. jaczewskii* LUNDBLAD, 1933 und *H. longicapitis* TORRE-BUENO, 1927.

Introduction

Hydrometridae contains three subfamilies (Hydrometrinae, Heterocleptinae and Limnobatodinae), seven genera and over 120 species (CHEN & al. 2005). The cosmopolitan genus *Hydrometra* LATREILLE, 1796, also known as water measurers, marsh treaders or walking sticks (ANDERSEN 1992), belongs to Hydrometrinae. Species of *Hydrometra* have very slender, elongate bodies and extremely prolonged heads (ANDERSEN 1982). The genus occurs in lowland and highland areas, living near the vegetated margins of standing water bodies or in stream reaches with low flow velocities. The biology and ecology of *Hydrometra* has been reviewed by ANDERSEN (1982), POLHEMUS & POLHEMUS (1995), CHEN & al. (2005), and YANG & ZETTEL (2005).

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The hydrometrid fauna of Indochina and the Western Malay Archipelago was revised by POLHEMUS & POLHEMUS (1995). YANG & ZETTEL (2005) presented a revised key for the Southeast Asian species. Additional distributional records and descriptions of new *Hydrometra* species from Southeast Asia were provided by SITES & POLHEMUS (2003), VITHEEPADIT & al. (2003), ZETTEL & YANG (2004), YANG & ZETTEL (2005), ZETTEL (2006), and CHENG & al. (2006). To date, there is a total of 19 species reported from Southeast Asia (YANG & ZETTEL 2005).

In Vietnam, the fauna of *Hydrometra* remains poorly studied. HUNGERFORD & EVANS (1934) and POLHEMUS & POLHEMUS (1995) listed a combined total of five species. More recently, YANG & ZETTEL (2005) listed a sixth species from Vietnam. Based on our field surveys in Vietnam during 2003–2005 and in 2009, and after examination of the *Hydrometra* specimens in the Hungarian Natural History Museum, Budapest, we can now report three more new records for Vietnam: *H. albolineata* (SCOTT, 1874), *H. jaczewskii* LUNDBLAD, 1933 and *H. ripicola* ANDERSEN, 1992. Thus the total number of *Hydrometra* species from Vietnam is now nine. Based on the literature available for neighbouring regions, we expect more *Hydrometra* species will be recorded from Vietnam in the future.

The *Hydrometra* fauna of China was previously reported by CHEN & ANDERSEN (1998) and LIU (2000) but only one species, *H. lineata* ESCHSCHOLTZ, 1822 was reported from Hainan Island (CHEN & ANDERSEN 1998). Here we present another four *Hydrometra* species that are recorded from Hainan for the first time: *H. gilloglyi* POLHEMUS & POLHEMUS, 1995, *H. greeni* KIRKALDY, 1898, *H. jaczewskii* LUNDBLAD, 1933, and *H. longicapitis* TORRE-BUENO, 1927. Of the four species, *H. gilloglyi* is reported from whole China for the first time; the other three were previously reported from other parts of China (CHEN & ANDERSEN 1998, LIU 2000, CHENG & al. 2006).

The species in this study (except *H. albolineata*) can be identified by using the key of YANG & ZETTEL (2005).

Materials have been deposited in the following museums or collections:

- HNHM Hungarian Natural History Museum, Budapest, Hungary
 MNHN Muséum National d'Histoire Naturelle (National Museum of Natural History), Paris, France
 NHMW Natural History Museum, Vienna, Austria
 ZMHU Zoological Museum, Hanoi University of Science, Vietnam
 ZRC Zoological Reference Collection, National University of Singapore

Distribution records of *Hydrometra* species

Hydrometra albolineata (SCOTT, 1874)

Limnobates albolineata (SCOTT, 1874: 447 (type locality: Japan).

Hydrometra greeni var. *suensoni* HUNGERFORD & EVANS, 1934: 110, pl. 8. Nomen nudum (POLHEMUS 1992: 442).

Material examined from Vietnam: **Bac Can Prov.:** 1 male (macropterous), Ba Be NP, tourist camp, 17.X.1999, leg. Sziráki Gy., No. 133 (HNHM). **Hoa Binh Prov.:** 4 males 1 female (macropterous), Hoa Binh, 21.X.1986, leg. Vásárhelyi T., No. 83 (HNHM). **Ha Noi City:** 1 female (macropterous), Yen So, SW

of Hanoi, 23.IV.1966, leg. Topál Gy., No. 149 (HNHM); 1 female (macropterous), Ho Tay, 28.X.1986, leg. Vászárhelyi T., No. 116 (HNHM). **Son La Prov.:** 2 females (macropterous), Vietnam, Moc Chau, 800 m, 25-27.X.1986, leg. Vászárhelyi T., No. 96 (HNHM); 1 female (macropterous), Moc Chau, 850 m, 26.X.1986, leg. Vászárhelyi T., No. 112 (HNHM); 2 females (macropterous), Moc Chau, 800 m, 26.X.1986, leg. Vászárhelyi T., No. 103 (HNHM). **Ninh Binh Prov.:** 2 females (macropterous), Cuc Phuong, Ninh Binh, 11.-17.V.1986, leg. Vászárhelyi T. (HNHM); 1 female (macropterous), Cuc Phuong, 400 m, on light, 17.X.1986, leg. Vászárhelyi T., No. 69 (HNHM).

Remarks: One of us (Herbert Zettel) directly compared the listed specimens from the Hungarian Natural History Museum with two females from "Soochow, China", which were labelled as paratypes of "*Hydrometra albolineata suenisoni*" by HUNGERFORD & EVANS. The name "*greeni* var. *suenisoni*" was first mentioned by HUNGERFORD & EVANS (1934) on plate VIII, but in the legend (p. 110) the authors clearly explained that they regarded the illustration as belonging to *H. albolineata*, but not wish to describe a new taxon. Consequently, POLHEMUS (1992) treated *suenisoni* as a nomen nudum and the name fell into synonymy with *H. albolineata*. *Hydrometra albolineata* was generally regarded as an East Palaearctic species with records from Korea, China and Japan (CHEN & ANDERSEN 1993, ANDERSEN 1995). For this reason it was not included in the keys of POLHEMUS & POLHEMUS (1995) and YANG & ZETTEL (2005). The only key including the species is by HUNGERFORD & EVANS (1934), which considers it close to the Australian *H. strigosa* (SKUSE, 1893) and *H. insularis* HUNGERFORD & EVANS, 1934, a synonym of *H. orientalis*. However, the length of the first antennal segment does not sufficiently distinguish *H. albolineata* and *H. orientalis*. By having the bluntly angled anteclypeus (acute in *H. orientalis*) and the more prominent corners of segment 8 in males (see HUNGERFORD & EVANS 1934: pl. VIII), *H. albolineata* more closely resembles *H. lineata* ESCHSCHOLTZ, 1822 than *H. orientalis* (see characters given by GAPUD & al. 2003 and YANG & ZETTEL 2005 to distinguish *H. lineata* and *H. orientalis*); however, the parallel sides of tergite 7 in females (posteriorly strongly convergent in *H. lineata*) and differences in pilosity of sternite 7 in males (see HUNGERFORD & EVANS 1934: pl. VIII) are sufficient to distinguish *H. albolineata* from *H. lineata*.

***Hydrometra annamana* HUNGERFORD & EVANS, 1934**

Hydrometra annamana HUNGERFORD & EVANS, 1934: 68 (type locality: "Annam, Laos").

Hydrometra taipehana DRAKE, 1951: 102 (type locality: Formosa). Synonymised by MIYAMOTO (1964).

Material examined from Vietnam: **Son La Prov.:** 2 males (macropterous), Moc Chau, 800m, 25.-27.X.1986, leg. Vászárhelyi T., No. 96 (HNHM); 1 male 1 female (macropterous), Vietnam, Moc Chau, 800 m, 26.V.1986, leg. Vászárhelyi T., No. 103 (HNHM). **Vinh Phuc Prov.:** 1 male (macropterous), Vietnam, Tam Dao, 250 m, 13.X.1986, leg. Vászárhelyi T., No. 43 (HNHM); 1 female (macropterous), Vietnam, Tam Dao, 200 m, 12.X.1986, leg. Vászárhelyi T., No. 34 (HNHM). **Hanoi City:** 1 male (macropterous), Ho Tay, 28.X.1986, leg. Vászárhelyi T., No. 116 (HNHM); 4 males 2 females (macropterous), Ho Tay, on light, 8.X.1986, leg. Vászárhelyi T., No. 4 (HNHM); 1 male (brachypterous), Yen So, SW of Hanoi, 20.IV.1966, leg. Topál Gy., No. 107 (HNHM). **Hoa Binh Prov.:** 1 male (macropterous), Hoa Binh, 500 m, 21.X.1986, leg. Vászárhelyi T., No. 83 (HNHM); 1 male (macropterous), Hoa Binh, 100 m, 20.IV.1986, leg. Vászárhelyi T., No. 86 (HNHM). **Ha Nam Prov.:** 2 males (macropterous), Tuong Linh, 24.-28.V.1966, leg. Topál Gy., No. 565, collected by lamp (HNHM); 1 male (macropterous), Tuong Linh, near Phu Ly, 19.-23.V.1966, leg. Topál Gy., No. 523, collected on lamp (HNHM); 1 male (macropterous), Vietnam, Tuong Linh, near Phu Ly, 19.-23.V.1966, leg. Topál Gy., No. 435, collected on lamp (HNHM). **Ninh Binh Prov.:** 2 males 1 female (macropterous), Cuc Phuong, 19.V.1986, leg. Vászárhelyi T., No. 81 (HNHM); 1 male 1 female (macropterous), Vietnam, Cuc Phuong, 400 m, on light, 17.X.1986, leg. Vászárhelyi T., No. 69 (HNHM).

Gia Lai Prov.: 1 female (macropterous), Gia Lai-Kontum, 40 km NW An Khe, Buon Luoi, 14°10'N, 108°30'E, 620 - 750 m, 28.3.-12.4.1995, leg. P. Pacholátko & L. Dembicky (NHMW). **Dak Lak Prov.:** 1 male (macropterous), Yok Don National Park, a stream ca. 2 km west of Dak Min lake, 22.II.2005, leg. Tran A.D. & Tan H.H., THH05-10 (ZRC). **Lam Dong Prov.:** 1 male (macropterous), Lam Dong, 14 km SW Bao Loc, 18.-29.V.1994, leg. P. Pacholátko & L. Dembicky (NHMW); 1 male (macropterous), Da Lat, a stream running into Dankia lake, 21.V.2003, leg. Tran A.D., TAD0330 (ZRC). **Dong Nai Prov.:** 2 males 1 female (brachypterous), Dong Nai Prov., Nam Cat Tien, Bau Chim, 14.V.2001, leg. Tan H.H. et al., THH0133 (ZRC); 1 male (macropterous), Vinh Cuu, Ma Da, Rang Rang, Ma Da stream, 6.V.2003, leg. Tran A.D., TAD0308 (ZRC); 5 males 2 females (macropterous), Vinh Cuu, Ma Da, small pond (Ho Bom) near Suoi Sai, 7.V.2003, leg. Tran A.D., TAD0312 (ZRC); 2 males 1 female (macropterous), Vinh Cuu, Hieu Liem, Ma Da stream, 8.V.2003, leg. Tran A.D., TAD0313 (ZMHU).

Remarks: The type locality of *H. annamana*, "Annam, Laos" is dubious, either in central Vietnam or in Laos. During the French colonial period in Indochina, the name "Annam" was used to refer broadly to central Vietnam. *Hydrometra annamana* is a widely distributed species in northern and southern Vietnam. Despite the fact that it has not been recorded in central Vietnam, it is expected to occur there. Previous records from other countries are Japan, south-eastern China, Taiwan, Laos (?), Thailand, and Myanmar (HUNGERFORD & EVANS 1934, POLHEMUS & POLHEMUS 1995, ZETTEL & YANG 2003, ZETTEL 2006).

Hydrometra gilloglyi POLHEMUS & POLHEMUS, 1995

Hydrometra gilloglyi POLHEMUS & POLHEMUS, 1995: 20-22, figs. 21-25, 93 (type locality: Quang Tri prov., Vietnam).

Material examined from Vietnam: **Dien Bien Prov.:** 1 male 3 females (micropterous), Nam Rom river, 10 km to Dien Bien Phu City, 25.VII.2004, leg. Tran A.D., DY0413 (ZRC). **Hoa Binh Prov.:** 1 male 3 females (macropterous, incomplete specimens, head broken), Tonkin, Rég. De Hoa-Binh, leg. A. de Cooman 1928 (MNHN); 3 males 1 female (brachypterous), 1 male (macropterous), Hoa Binh, 500 m, 21.X.1986, leg. Vászárhelyi T., No. 83 (HNHM). **Ha Tinh Prov.:** 6 males 7 females (brachypterous), Vu Quang NP, Song Con river, 23.IV.2003, leg. Tran A.D., TAD0302 (ZRC). **Quang Binh Prov.:** 1 female (brachypterous), Phong Nha, stream W of Forest Ranger Station No.4, 11.VIII.2002, leg. Hoang Q.K. et al., VNQB0206 (ZRC); 19 males 5 females (brachypterous), 1 male (macropterous), Phong Nha, Vuc Tro stream, 14.VII.2004, leg. Tran A.D., DY0404 (ZMHU, ZRC); 2 females (brachypterous), Phong Nha, a stream 1 km behind Forest Ranger Station 4, 16.VII.2004, leg. Tran A.D., DY0409 (ZRC). **Dak Lak Prov.:** 2 males (micropterous), Yok Don National Park, Dak Min lake, 22.II.2005, leg. Tran A.D. & Tan H.H., THH05-09 (ZRC); 1 male (brachypterous), Srepok River, next to HQ of Yok Don National Park, 22. and 24.II.2005, leg. Tran A.D. & Tan H.H., THH05-11 (ZRC); 1 male 1 female (brachypterous), Yok Don National Park, Suoi Bo, near Guard post 6, 24.II.2005, leg. Tran A.D. & Tan H.H., THH05-14 (ZMHU). **Dong Nai Prov.:** 3 males 2 females (brachypterous), Vinh Cuu, Ma Da, Ma Da stream (1.3 km NE Rang Rang), 7.V.2003, leg. Tran A.D., TAD0311 (ZRC); 1 female (brachypterous), Vinh Cuu, Vinh An, Sa Mat stream, 10.V.2003, leg. Tran A.D., TAD0316 (ZRC); 2 males 4 females (brachypterous), 1 female (macropterous), Vinh Cuu, Vinh An, Da Kin stream, 11.V.2003, leg. Tran A.D., TAD0317 (ZRC); 1 male (brachypterous), Vinh Cuu, Ma Da, Suoi Sai (Sai stream), 11.IV.2009, leg. Tran A.D., TAD0907 (ZMHU).

Material examined from Hainan Island (China): 1 female (brachypterous), Baoting, small hill stream next to village, along main road between Xinzhen and Sandao, 9.IX.2005, leg. Chen I-S. et al., THH05-65 (ZRC); 5 males 3 females (brachypterous), Baoting, Lingshui river basin; stream along road before/towards Bacun, 10.IX.2005, leg. Chen I-S. et al., THH05-71 (ZRC).

Remarks: POLHEMUS & POLHEMUS (1995) reported *H. gilloglyi* from Vietnam, Peninsular Malaysia and Borneo (Sabah & Sarawak). A more recent study by ZETTEL & YANG (2004) recognised that the records from Borneo and Johor (southern part of Peninsular Malaysia) refer to a separate species comprised of two subspecies, *H. heoki heoki*

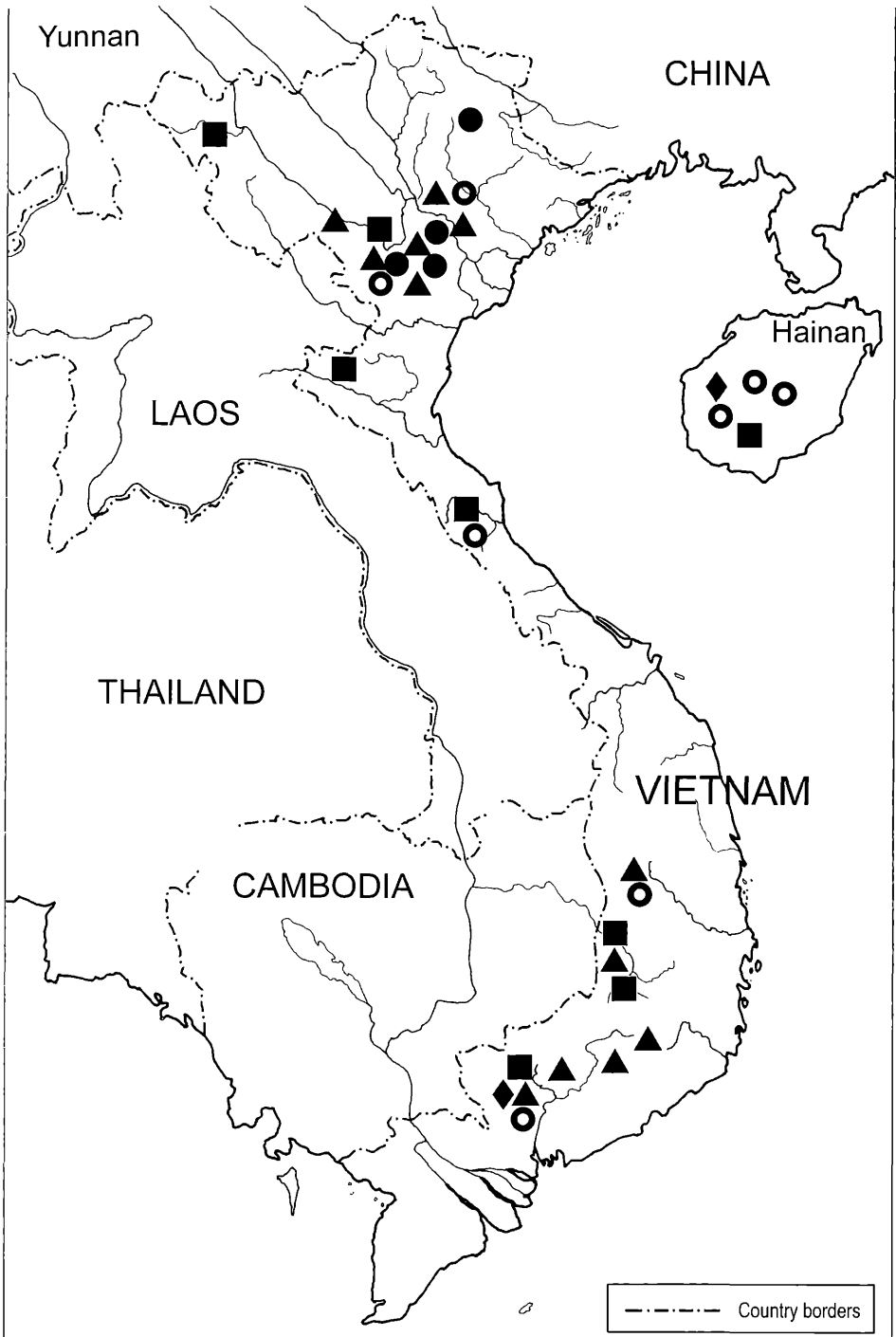


Fig. 1: Distribution map of *Hydrometra albolineata* (●), *H. annamana* (▲), *H. gilloglyi* (■), *H. greeni* (○), and *H. jaczewskii* (◆) in Vietnam and Hainan Island.

ZETTEL & YANG, 2004 from Borneo and *H. heoki paya* ZETTEL & YANG, 2004 from Johor. Hence, the current distribution of *H. gilloglyi* is Vietnam, Thailand and the extreme north of Peninsular Malaysia (ZETTEL & YANG 2004, YANG & ZETTEL 2005). In Vietnam, *H. gilloglyi* was previously known only from its type locality, but we have now found that this species is widely distributed throughout Vietnam. This species is also recorded from China (Hainan Island) for the first time.

Hydrometra greeni KIRKALDY, 1898

Hydrometra greeni KIRKALDY, 1898: 2 (type locality: Pundaloya, Sri Lanka).

Material examined from Vietnam: **Vinh Phuc Prov.:** 5 males 2 females (macropterous), Tam Dao, 200 m, 12.X.1986, leg. Vásárhelyi T., No. 34 (HNHM); 4 males 16 females (macropterous), 2 females (brachypterous), Tam Dao NP, Thac Bac stream (near Botanic Garden), 17.VI.2003, leg. Tran A.D., TAD0352 (ZRC). **Hoa Binh Prov.:** 1 male (macropterous), Hoa Binh, 500 m, 21.X.1986, leg. Vásárhelyi T., No. 83 (HNHM). **Quang Binh Prov.:** 1 female (brachypterous), Phong Nha, a stream near Forest Ranger Station 37, 15.VII.2004, leg. Tran A.D., DY0405 (ZRC). **Gia Lai Prov.:** 1 male (macropterous), Gia Lai-Kontum, 40 km NW An Khe, Buon Luoi, 14°10'N, 108°30'E, 620 - 750 m, 28.III.-12.IV.1995, leg. P. Pacholátko & L. Dembicky (NHMW). **Dak Lak Prov.:** 1 male (macropterous), 1 male 1 female (brachypterous), Yok Don National Park, a stream ca. 2 km west of Dak Min lake, 22.II.2005, leg. Tran A.D. & Tan H.H., THH05-10 (ZRC); 1 male 1 female (brachypterous), Srepok River, next to headquarter of Yok Don National Park, 22. and 24.II.2005, leg. Tran A.D. & Tan H.H., THH05-11 (ZRC); 2 males 1 female (macropterous), 1 female (brachypterous), Yok Don National Park, Suoi Bo, near Guard post 6, 24.II.2005, leg. Tran A.D. & Tan H.H., THH05-14 (ZMHU); 2 males 1 female (macropterous), 4 males 2 females (brachypterous), Yok Don National Park, Srepok River, Ban Don waterfall, 25.II.2005, leg. Tran A.D. & Tan H.H., THH05-16 (ZRC). **Dak Nong Prov.:** 2 males 4 females (macropterous), 2 females (brachypterous), Krong No District, Dray Sap waterfalls, 23.II.2005, leg. Tran A.D. & Tan H.H., THH05-12 (ZRC). **Dong Nai Prov.:** 2 males 1 female (macropterous), Vinh Cuu, Ma Da, 2.XI.2009, leg. Tran A.D., TAD0923 (ZMHU).

Material examined from Hainan Island (China): 1 male (macropterous), 1 male (brachypterous), Tongza City Region, 2 km S Mao'an, 250 m, 20.I.1996, leg. M. Jäch, No. 199 (NHMW). 1 female (macropterous), Ledong County, Jianfang Mountain, 4 km E Jianfeng, 150 m, 22.-24.I.1996, leg. M. Jäch, No. 204 (NHMW); 1 male (brachypterous), Qiongzong, stream at Wushi, along main road from Qiongzong to Wanlin, 11.IX.2005, leg. Chen I-S. et al., THH05-75 (ZRC); 1 female (brachypterous), Baisha, river at Baisha, Zhaya (Nantu river basin), 12.IX.2005, leg. Chen I-S. et al., THH05-80 (ZRC).

Remarks: *Hydrometra greeni* is closely related to *H. kelantan* POLHEMUS & POLHEMUS, 1995. It can be separated by its colouration (dark brown to black in *H. kelantan*; brown to light brown in *H. greeni*) and length ratio of middle tarsal segments 2 and 3. In *H. greeni*, their ratios are 1.8 in males and 2.0 in females, while in *H. kelantan*, they are 2.3 in males and 2.4 in females (POLHEMUS & POLHEMUS 1995, YANG & ZETTEL 2005). We found the ratios to be variable in Vietnamese *H. greeni*, ranging between 1.8 and 2.3 in males, and between 2.0 and 2.4 in females. The colouration of Vietnamese samples are generally brown to light brown, thus we consider all these populations as *H. greeni*.

Hydrometra greeni was previously known only from the central highland of Vietnam (POLHEMUS & POLHEMUS 1995). We now have more records from northern and north-central Vietnam. We have also documented the first record of this species from Hainan Island (China). Previous records from other countries include Nepal, India, Sri Lanka, Bangladesh, Andaman Islands, China (southwest and southeast), Myanmar, Thailand, Peninsular Malaysia, Singapore, and Indonesia (Sumatra, Nias Island) (POLHEMUS & POLHEMUS 1995, YANG & ZETTEL 2005, ZETTEL 2006).

***Hydrometra jaczewskii* LUNDBLAD, 1933**

Hydrometra jaczewskii LUNDBLAD, 1933: 433-435, fig. 139 (type locality: Ranau, Sumatra).

Material examined from Vietnam: Dong Nai Prov.: 1 female (macropterous), Vinh Cuu, Ma Da, Suoi Sai (Sai stream), 11.IV.2009, leg. Tran A.D., TAD0907 (ZMHU).

Material examined from Hainan Island (China): 1 male (brachypterous), Ledong County, Jianfeng Mountains, 5 km E Tian Chi, 800 m, 23.I.1996, leg. M. Jäch, No. 208 (NHMW).

Remarks: *Hydrometra jaczewskii* is recorded here from Vietnam and Hainan Island for the first time. The male from Hainan differs slightly from other populations by its weakly concave outline of sternite 7 (lateral aspect), but evaluation of this variability is hampered by the species' rareness. YANG & ZETTEL (2005) published a record from south-eastern China without details on locality; this record was based on the male from Hainan. Other previous records are from southwestern China (Yunnan), Peninsular Malaysia, Myanmar, Sumatra, Java, and Borneo (Sabah, Kalimantan) (POLHEMUS & POLHEMUS 1995, YANG & ZETTEL 2005).

***Hydrometra julieni* HUNGERFORD & EVANS, 1934**

Hydrometra julieni HUNGERFORD & EVANS, 1934: 55 (type locality: Cochinchine = southern Vietnam).

Material examined from Vietnam: Dong Nai Prov.: 1 female (brachypterous), Nam Cat Tien, Bau Sau, 6.-7.V.2001, leg. Tan H.H. et al., THH0118 (ZRC).

Remarks: The type locality of *H. julieni* is "Cochinchine", which was the former name for southern Vietnam, only used during French colonial times. To date, *H. julieni* has been found only in the southern part of Vietnam; other records are from Thailand, Peninsular Malaysia, Sumatra, Borneo (Kalimantan, Sabah, Sarawak) and the Philippines (POLHEMUS & POLHEMUS 1995, YANG & ZETTEL 2005, GAPUD & al. 2003).

***Hydrometra longicapitis* TORRE-BUENO, 1927**

Hydrometra longicapitis TORRE-BUENO, 1927: 31 (type locality: "Fort de Kock" [= Bukit-tinggi], Sumatra).

Hydrometra aberrans HUNGERFORD & MATSUDA, 1961: 61 (type locality: Selangor, West Malaysia). Synonymised by ANDERSEN (1992: 4).

Material examined from Vietnam: Quang Binh Prov.: 1 male (brachypterous), Quang Binh Prov., Phong Nha, a stream 1 km behind Forest Ranger station 4, 16.VII.2004, leg. Tran A.D., DY0409 (ZRC).

Gia Lai Prov.: 1 male 1 female (brachypterous), 1 female (macropterous), Gia Lai-Kontum: 40 km NW An Khe, Buon Luoi, 14°10'N, 108°30'E, 620 - 750 m, 28.III.-12.IV.1995, leg. P. Pacholátko & L. Dembicky (NHMW). **Dong Nai Prov.:** 1 female (macropterous), Vinh Cuu, Vinh An, Suoi Rang, 10.V.2003, leg. Tran A.D., TAD0315a (ZRC); 2 males (macropterous), Vinh Cuu, Vinh An, Suoi Rang waterfall, 10.V.2003, leg. Tran A.D., TAD0315b (ZRC); 1 male (brachypterous), Nam Cat Tien, Lan stream B, 10.V.2001, leg. Tan H.H. et al., THH0128 (ZRC); 2 males 1 female (brachypterous), 1 female (macropterous), Nam Cat Tien, feeder stream of Bau Chim, 10.V.2001, leg. Tan H.H. et al., THH0134 (ZRC).

Material examined from Hainan Island (China): 1 male (brachypterous), Qiongzong County, 30 km E Maoyang, Wuzhi Shan Resort; 600 m, 17.-18.I.1996, leg. M. Jäch, No. 193 (NHMW); 1 female (brachypterous), Qiongzong County, 30 km E Maoyang, Wuzhi Shan Resort; 700 - 800 m, 18.I.1996, leg. M. Jäch, No. 194 (NHMW).

Remarks: *Hydrometra longicapitis* is the most common and widely distributed species

in lowland swamp forest in Peninsular Malaysia and Borneo. In Vietnam, *H. longicapitis* has been found in the central and southern areas. The species is here recorded from Hainan Island for the first time. Previous records from other countries include China (Yunnan), Laos, Thailand, Myanmar, Peninsular Malaysia, Singapore, Sumatra, Java, and Borneo (Sabah, Sarawak, Kalimantan) (YANG & ZETTEL 2005, ZETTEL 2006).

Hydrometra orientalis LUNDBLAD, 1933

Hydrometra orientalis LUNDBLAD, 1933: 430 (type locality: Sumatra).

Hydrometra insularis HUNGERFORD & EVANS, 1934: 76 (type locality: Sumatra). Synonymised by POLHEMUS & REISEN (1976: 284).

Hydrometra sumatrana RUHOFF, 1964: 32. Synonymised by POLHEMUS & REISEN (1976: 284).

Material examined from Vietnam: **Lao Cai Prov.:** 1 female (macropterous), Sa Pa, Hoang Lien NP, Nui Xe, small waterfall, 2.VI.2003, leg. Tran A.D., TAD0338 (ZRC); 1 female (macropterous), Sa Pa, Nui Xe, a small branch of Suoi Vang stream, 3.VI.2003, leg. Tran A.D., TAD0345b (ZRC); 2 males 2 females (macropterous), Sa Pa, Nui Xe, waterpools near Suoi Vang, 3.VI.2003, leg. Tran A.D., TAD0346 (ZMHU). **Hoa Binh Prov.:** 1 female (macropterous), Sai Gon, 10-03, coll. E. Fleutiaux 1919 (MNHN); 1 male (macropterous), Tonkin, Région de Hoa-Binh, A. De Cooman 1931 (MNHN). **Ha Nam Prov.:** 2 males 4 females (macropterous), Tuong Linh, 24.-28.V.1966, leg. Topál Gy., No. 565, collected by lamp (HNHM). **Quang Binh Prov.:** 2 males (macropterous), Phong Nha National Park, Suoi Cha Ang, 9.VIII.2002, leg. Hoang Q.K. & Dinh V.K., VNQB0204 (ZRC); 2 females (macropterous), Phong Nha National Park, Suoi Thuong Doong, 7.VIII.2002, leg. Hoang Q.K. & Dinh V.K., VNQB0202 (ZRC). **Da Nang Prov.:** 1 female (macropterous), Ba Na-Nui Chua foothills, Suoi Mo, 27.II.2005, leg. Tran A.D. & Tan H.H., THH05-17 (ZRC). **Dak Lak Prov.:** 1 female (brachypterous), Yok Don National Park, Srepok River, Ban Don waterfall, 25.II.2005, leg. Tran A.D. & Tan H.H., THH05-16 (ZRC). **Dong Nai Prov.:** 1 male (macropterous), Song Be, Nam Cat Tien National Park, 1.-15.V.1994, leg. P. Pacholátko & L. Dembicky (NHMW). 1 male 1 female (macropterous), Vinh Cuu, Ma Da, Ma Da stream (1.3 km NE Rang Rang), 7.V.2003, leg. Tran A.D., TAD0311 (ZRC); 2 females (macropterous), Vinh Cuu, Ma Da, Suoi Sai, 31.X.2009, leg. Tran A.D., TAD0918 (ZMHU); 2 males 4 females (macropterous), Vinh Cuu, Ma Da, small pond (Ho Bom) near Suoi Sai, 7.V.2003, leg. Tran A.D., TAD0312 (ZRC); 1 male (macropterous), Vinh Cuu, Vinh An, Suoi Rang, 10.V.2003, leg. Tran A.D., TAD0315a (ZRC); 1 male (macropterous), Cat Tien National Park, Dong Nai river, Thac Troi, 15.V.2003, leg. Tran A.D., TAD0319 (ZRC).

Remarks: *Hydrometra orientalis* is a common and widely distributed species in South-east Asia. In Vietnam, this species was previously only reported from the central areas (POLHEMUS & POLHEMUS 1995). This study presents additional records from northern and southern Vietnam. Previous records from other countries include China (Yunnan), Japan, Myanmar, Laos, Cambodia, Thailand, Peninsular Malaysia, Singapore, Sumatra, Java, Borneo (Sabah and Sarawak), the Philippines, Sulawesi, Sumba Island, New Guinea, and Australia (POLHEMUS & POLHEMUS 1995, YANG & ZETTEL 2005, POLHEMUS & LANSBURY 1997).

Hydrometra ripicola ANDERSEN, 1992

Hydrometra ripicola ANDERSEN, 1992: 2-4, figs. 1-3, 5, 7, 9, 10, 13 (type locality: Doi Suthep, Chiang Mai, northern Thailand).

Material examined from Vietnam: **Ninh Binh Prov.:** 1 male (apterous), Cuc Phuong, 400 m, 17.X.1986, leg. Vászárhelyi T., No. 68 (HNHM). **Ha Tinh Prov.:** 2 females (micropterous), Vu Quang National Park, a small branch of Khe Lim, 24.IV.2003, leg. Tran A.D., TAD0305 (ZRC); 2 females (micropterous), Vu Quang National Park, Song Con, old Sao La Station, 25.IV.2003, leg. Tran A.D., TAD0307d (ZRC); 1 male 4 females (micropterous), Vu Quang National Park, Song Con, old Sao La Station, 25.IV.2003, leg. Tran

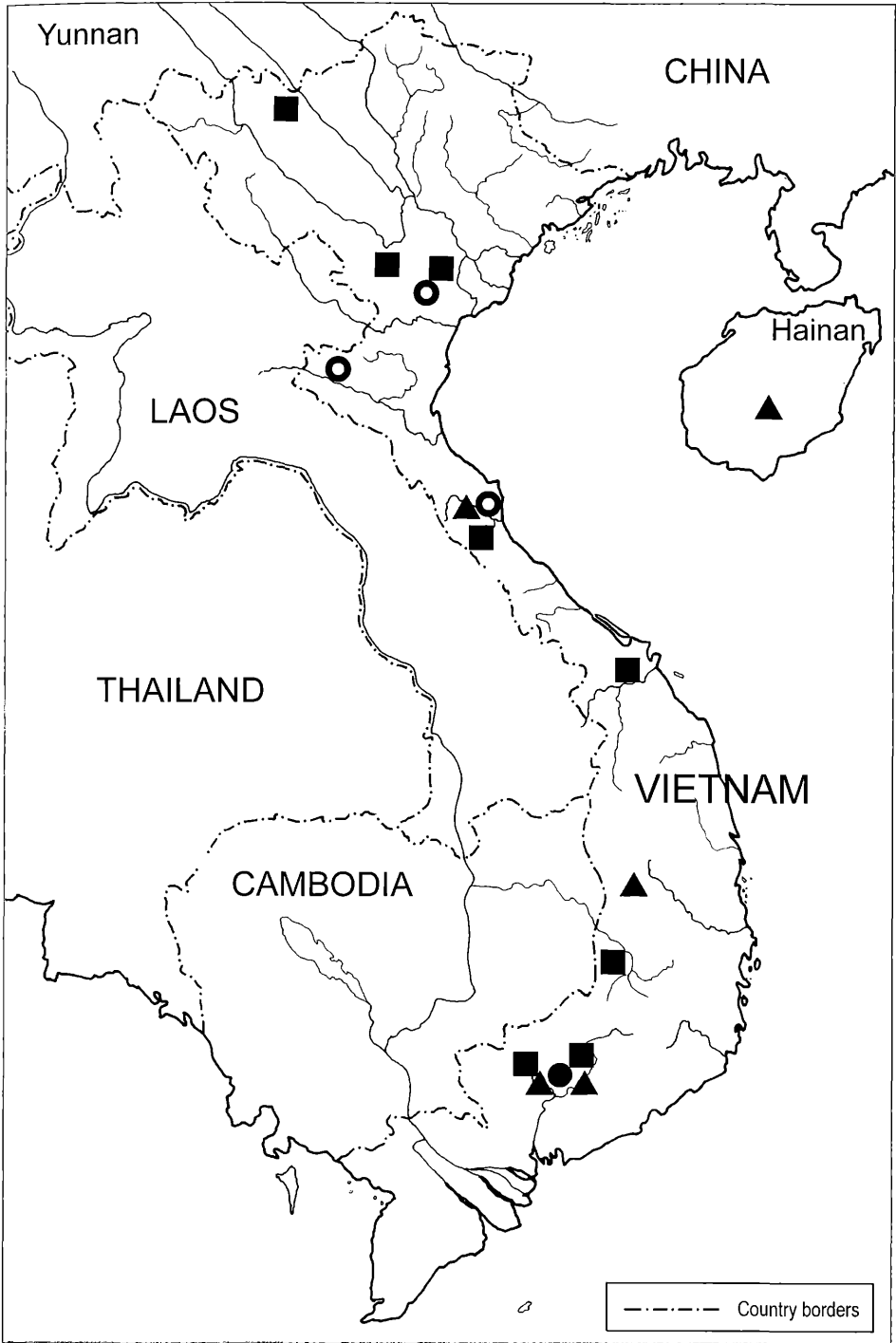


Fig. 2: Distribution map of *Hydrometra julienni* (●), *H. longicapitis* (▲), *H. orientalis* (■), and *H. ripicola* (◉) in Vietnam and Hainan Island.

A.D., TAD0307e (ZRC). **Quang Binh Prov.:** 1 male 3 females (micropterous), Phong Nha, Cha Noi, Khe Con Khai stream, 13.VII.2004, leg. Tran A.D., DY0402 (ZMHU).

Remarks: This is the first record of *H. ripicola* from Vietnam. Previously, it was known only from North and Northeastern Thailand and Myanmar (VITHEPRADIT & al. 2003, YANG & ZETTEL 2005, ZETTEL 2006).

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