

## A new water mite species of the genus *Acucapito* (Acariformes: Acucapitidae) from Vietnam

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An illustrated description of the water mite *Acucapito vietnamensis* sp. nov. (male and female) from running waters of Vietnam is given.

**Key words:** Vietnam, water mites, Acariformes, Acucapitidae, *Acucapito*, new species

### INTRODUCTION

The family Acucapitidae has been only known by a single genus *Acucapito* and a single water mite species *A. naso* Willes, 1996 described from Brunei (Willes, 1996). The aim of the present paper is to describe the second species, a new water mite *Acucapito vietnamensis* (Acucapitidae) based on male and female.

### MATERIALS AND METHODS

The material was collected by E.S. Gusev in 2008 in Vietnam.

Terminology and abbreviations for idiosomal setae and lyriform organs follow Tuzovskij (1987): *Fch* – frontales chelicerae, *Fp* – frontales pedipalporum, *Vi* – verticales internae, *Ve* – verticales externae, *Oi* – occipitales internae, *Oe* – occipitales externae, *Hi* – humerales internae, *He* – humerales externae, *Hv* – humerales ventralia, *Sci* – scapulares internae, *Sce* – scapulares externae, *Li* – lumbales internae, *Le* – lumbales externae, *Si* – sacrales internae, *Se* – sacrales externae, *Ci* – caudales internae, *Pi* – praeanales internae, *Pe* – praeanales externae, *Ai* – anales internae, *Ae* – anales externae;  $i_1$ – $i_5$  – lyriform organs.

Besides, the following abbreviations are used: P1–5, pedipalp segments (trochanter, femur, genu, tibia and tarsus); I L 1–6, first leg, segments 1–6 (trochanter, basife-

mur, telofemur, genu, tibia and tarsus), i.e. III L 4 = genu of third leg; (ac. 1–3) – genital acetabula 1–3; st – stigma; n = number of specimens measured. All measurements are given in  $\mu\text{m}$ ; the length of appendage segments is the dorsal length.

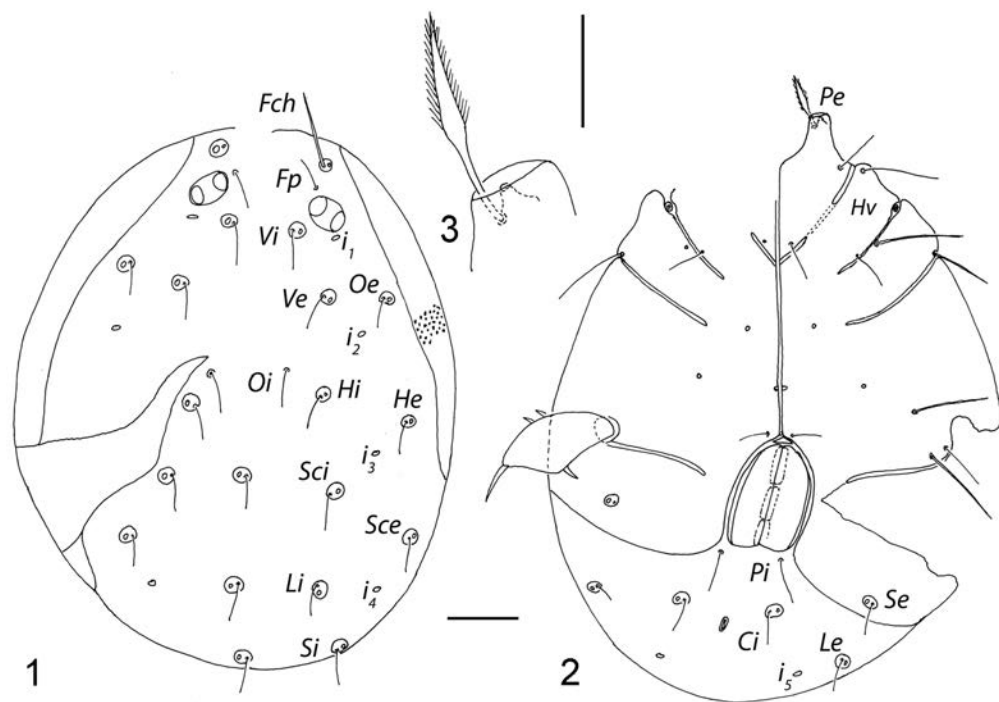
***Acucapito vietnamensis*, sp. nov.**  
(Figs 1–16)

*Holotype.* Male; **Vietnam:** *Khanh Hoa Province*, Cai River, 2 June 2008, slide 9515; deposited in the collection of Institute for Biology of Inland Waters. The river bottom was pebble and sand, depth 1.0 m, speed of current 0.8 m/s, pH 7.8.

*Paratype:* Female; same data as holotype.

*Description.* **Both sexes.** Dorsum with soft integument, lateral eyes in weakly developed capsules (Fig. 1). Idiosoma with 36 setae (chaetom formula: 2–2–4–4–6–4–4–4–2–4–0). Setae *Fp*, *Oi* and *Pi* without glandularia, other idiosomal setae associated with glandularia. Setae *Fch*, *Fp*, *Vi*, *Ve*, *Oi*, *Oe*, *Hi*, *He*, *Sci*, *Sce*, *Li* and *Si* situated dorsally. Setae *Fch* rather long and thick, other idiosomal setae short and thin. Setae *Oi* located near middle of dorsum. First pair of lyriform organs ( $i_1$ ) located near eye capsules,  $i_2$  behind setae *Oe* and *Ve*,  $i_3$  behind humeral setae,  $i_4$  at level setae *Li*.

Coxal plates well developed and fused in ventral shield, which extending posteriorly to posterior margin of genital flaps (Fig. 2). Lateral portions of ventral shield extend-



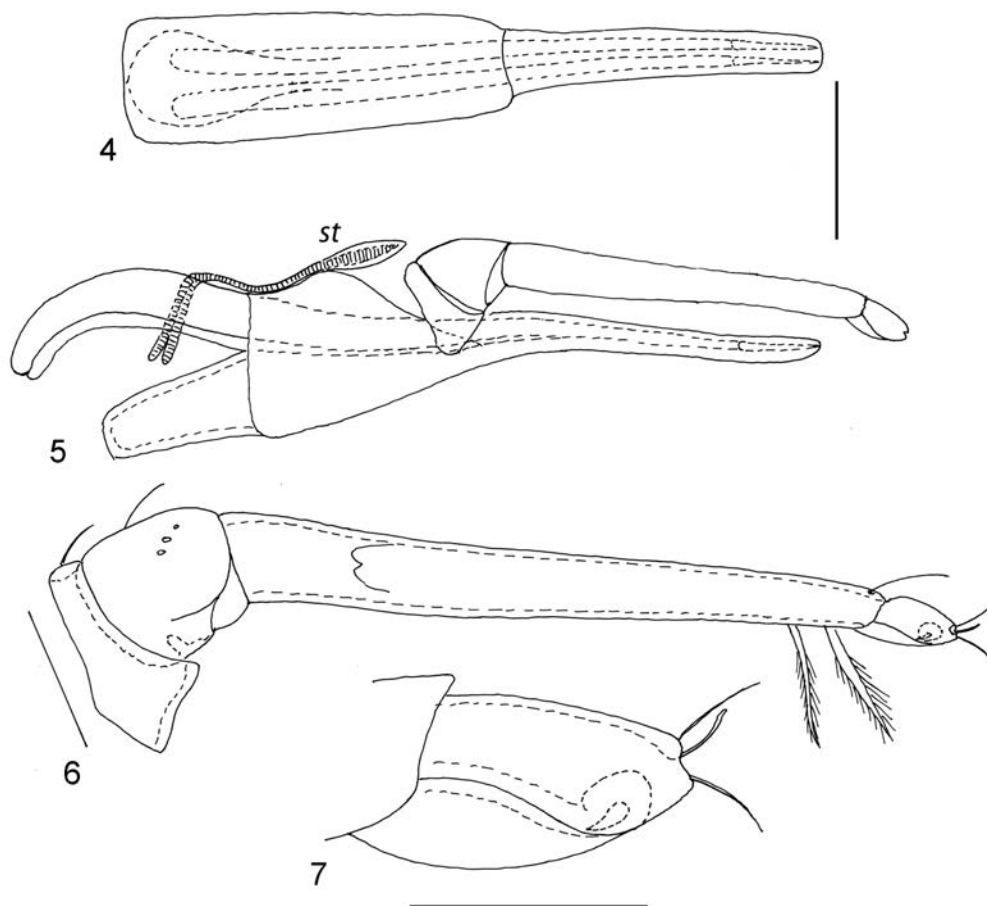
**Figs 1–3.** *Acucapito vietnamensis* sp. nov., male: dorsal view (1), ventral view (2), anterior end of coxae I with setae and glandularia *Pe* (3). Scales bars: 100  $\mu$ m (1, 2), 50  $\mu$ m (3).

ing onto dorsum. Coxal plates I–III narrow, and located anteriorly, coxal plates IV large. Coxal plates I extended anteriorly around capitular bay, coxal plates IV wide and partially enclosing the genital field. Anterior ends of coxal plates I (Fig. 3) with blunt tips and bearing plumose setae and glandularia *Pe*. Setae *Pe* and capitular bay approximately subequal in length. Glandularia *Hv* located between coxal plates II/III laterally. Setae *Se* located near posterior margins of coxal plates IV. Sockets of leg IV located at level anterior margin of genital flaps and far posterior to the III–leg sockets. Median suture line present from capitular bay to genital field. Suture lines between coxal plates I/II reaching median suture, but medial parts of these suture lines is not distinctly developed. Suture lines between coxal plates II/III and III/IV incomplete and not reaching median suture line. All coxal plates with several setae. Genital field with three pairs of acetabula covered by a pair of genital flaps;

first pair of acetabula slightly longer than second and third pairs of ones. Setae *Pi*, *Ci* and *Li* located on soft ventral integument. Anal opening without sclerotization, located slightly behind setae *Ci*. Fifth pair of lyriform organs ( $i_5$ ) located caudally.

Capitulum with exceptionally long, narrow rostrum (Figs 4–5). Basal segment of chelicera long, chela short. Stigma well developed. The trochanter of pedipalp (Fig. 6) with short dorsal margin and relatively long ventral one, with single dorsal seta. Pedipalpal femur with long dorsal margin, and short ventral one. Pedipalpal genu very long, slender with two rather large ventrodistal plumose setae and single dorsodistal, smooth one. Pedipalpal tibia short with three distal setae, tarsus much reduced with single spine (Fig. 7).

Legs (Figs 8–11) robust with swimming setae. Leg IV thicker than other ones. Dorsal margin of tarsus I longer than ventral one, dorsal and ventral margins of tarsi II–IV ap-



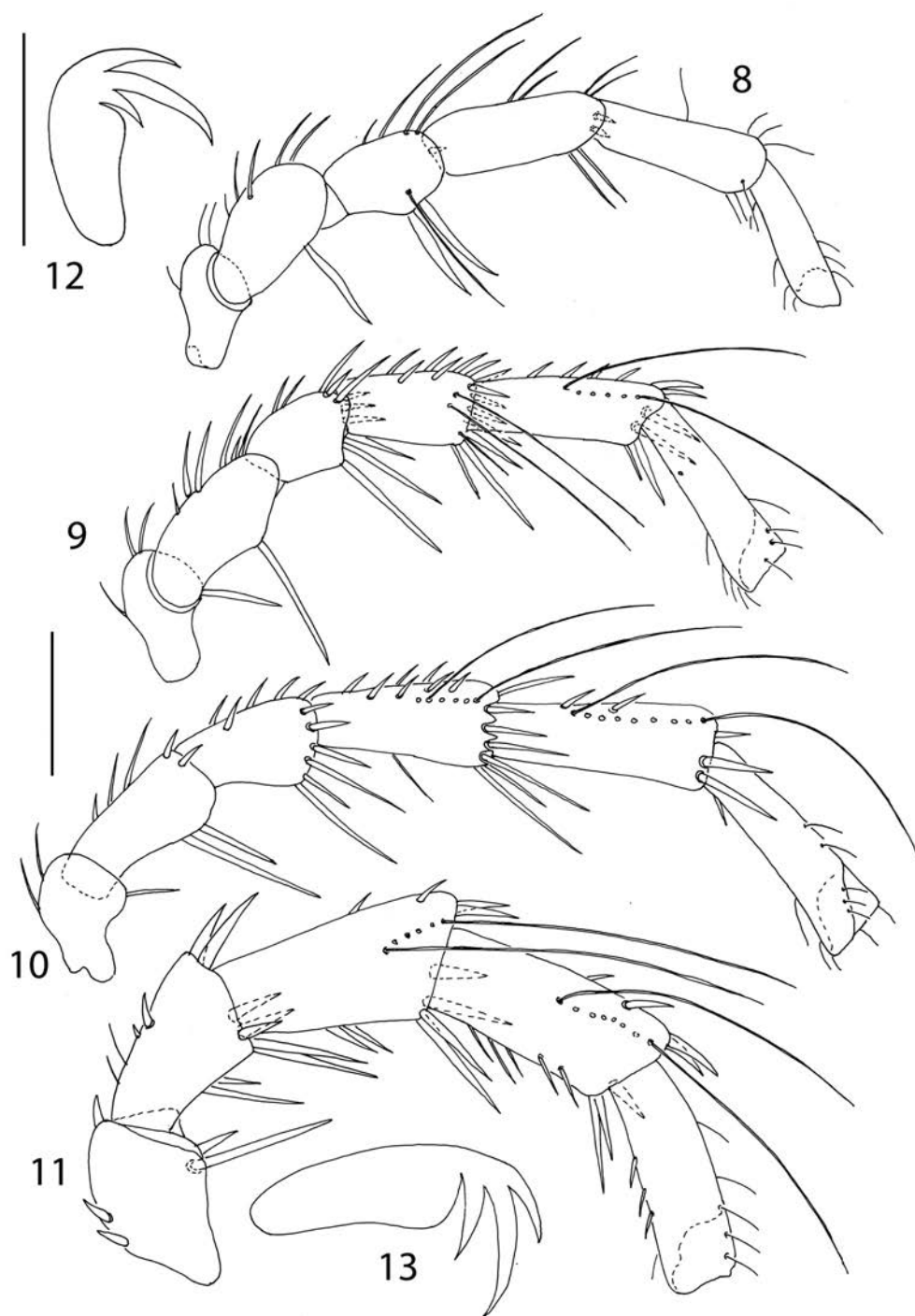
**Figs 4–7.** *Acucapito vietnamensis* sp. nov., adult male: capitulum, ventral view (4); adult female: capitulum, lateral view (5), pedipalp, lateral view (6), pedipalpal tibia and tarsus, lateral view (7). Scale bars: 100  $\mu$ m (4, 5), 50  $\mu$ m (6), 25  $\mu$ m (7).

proximately subequal in length. Tarsi of all legs with two claws each with large central clawlet and two relatively small clawlets (external and internal). Claws of leg I with short lamella (Fig. 12), claws of legs II–IV with relatively long ones (Fig. 13). The number of swimming setae on legs II–IV is as follows: Leg II: 2–3 on genu and 5–6 on tibia, Leg III: 5–7 on genu and 7–9 on tibia, Leg IV: 6–7 on genu and 7–10 on tibia.

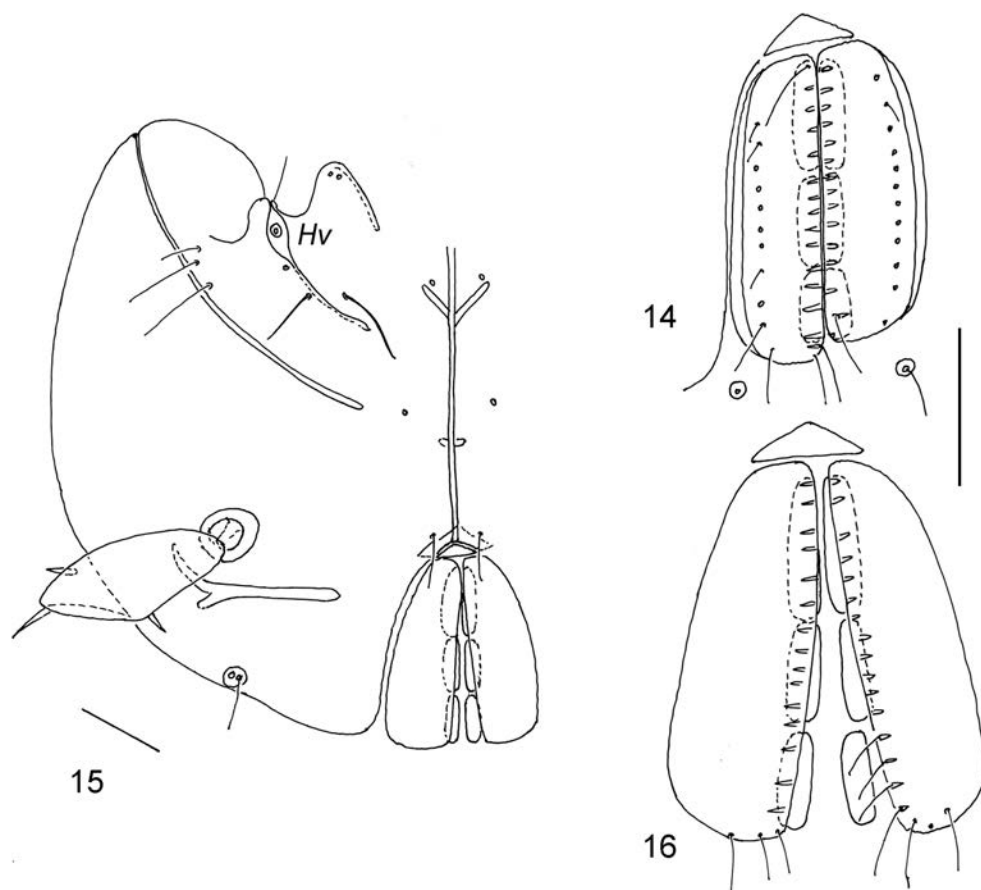
**Male.** Genital flaps (Fig. 14) with 14–15 median setae and 11–12 lateral ones. Measurements of the male holotype: body 775  $\mu$ m long, 575  $\mu$ m wide; length of seta Pe 65  $\mu$ m; length of median suture of coxal

plates I 120  $\mu$ m, length of median suture of coxal plates II–IV 210  $\mu$ m; length of capitular bay 60  $\mu$ m; genital flaps 150  $\mu$ m long, 50  $\mu$ m wide; length of genital acetabula (ac. 1–3): 50, 39, and 36  $\mu$ m; length of capitulum 318  $\mu$ m, length of rostrum 145  $\mu$ m; length of basal segment of chelicera 250  $\mu$ m, length of chela 42  $\mu$ m; length of leg segments: I L 1–6 – 65, 84, 72, 102, 108 and 95  $\mu$ m; II L 1–6 – 72, 96, 72, 90, 110 and 115  $\mu$ m; III L 1–6 – 65, 105, 78, 110, 138 and 135  $\mu$ m; IV L 1–6 – 150, 120, 120, 174, 168 and 138  $\mu$ m.

**Female.** Similar to the male but of a larger size. Glandularia and setae *Se* lo-



**Figs 8–13.** *Acucapito vietnamensis* sp. nov., male: Leg I (8), Leg II (9), Leg III (10), Leg IV (without trochanter) (11), claw I (12), claw IV (13). Scale bars: 100  $\mu$ m (8–11), 25  $\mu$ m (12–13).



**Figs 14–16.** *Acucapito vietnamensis* sp. nov., adults: 14, 16, genital flaps in adult male (14), fragment of ventral shield in adult female (15), genital flaps in adult female (16). Scale bars: 50  $\mu$ m (14, 16), 100  $\mu$ m (15).

cated near posterior margins of coxal plates IV (Fig. 15). Genital flaps (Fig. 16) with 16–17 median and 2 posterior setae, without lateral setae.

Measurements of the female paratype: body 900  $\mu$ m long, 685  $\mu$ m wide; length of median suture of coxal plates II–IV 198  $\mu$ m; genital flaps 175  $\mu$ m long, 66  $\mu$ m wide; length of genital acetabula (ac. 1–3): 63, 50 and 50  $\mu$ m; length of capitulum 325  $\mu$ m, length of rostrum 150  $\mu$ m; length of basal segment of chelicera 365  $\mu$ m, length of chela 42  $\mu$ m; length of pedipalpal segments (P 1–5): 36, 48, 180, 24 and 6  $\mu$ m; length of leg segments: I L 1–6 – 65, 72, 72, 110, 114 and 95  $\mu$ m; II L 1–6 – 69, 95, 66, 90, 114 and

120  $\mu$ m; III L 1–6 – 66, 78, 78, 120, 145 and 138  $\mu$ m; IV L 1–6 – 165, 87, 115, 168, 168 and 156  $\mu$ m.

**Comparisons.** The new species is morphologically close to *Acucapito naso* Willes, 1996 but differs in having the following characters (character states for *A. naso* are in parentheses, from Willes, 1996): idiosoma with 15 pairs of glandularia (vs. 16 pairs), ventral shield extending into dorsum (vs. not extending), coxal plates IV with several setae (vs. numerous), anterior ends of coxal plates I (Fig. 3) with relatively short plumose setae *Pe* (vs. long membranous extensions).

**Etymology.** The species is named after the country where it was collected (Vietnam).

*Habitat.* Running waters.

*Distribution.* Vietnam; until now only known from the Cai River in the Khanh Hoa Province.

#### ACKNOWLEDGEMENTS

The author expresses his sincere gratitude to E.S. Gusev for material supplied.

#### REFERENCES

- Tuzovskij, P.V.** 1987. *Morfologiya i postembrionalnoe razvitie vodyanykh kleshchey* [Morphology and postembryonic development in water mites]. Nauka, Moscow. 172 p. (In Russian).
- Willes, P.R.** 1996. A new family, genus and species of watermite (Acari: Hydrachnidia, Lebertioidea). *Quekeet Journal of Microscopy*, **37**: 692–695.

*Received 12 April 2009 / Accepted 20 November 2009.*