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The second species of Tokunocepheidae (Acari: Oribatida) from Chiran-cho, South Japan

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Abstract A new oribatid species of the family Tokunocepheidae was collected from Chiran-cho in Kagoshima Prefecture, South Japan. The new species has surface of prodorsum, notogaster and ventral plate colliculate and sparsely lineolate, large pedotectum I longer than width of body width, long prodorsal, ventral setae, and all femora and trochantera III, IV bearing leg-fin.

Key words: Chiran-cho, new species, Oribatida, South Japan, Tokunocepheidae

Introduction

Since Aoki established it in 1966, the family Tokunocepheidae had only a single representative, *Tokunocepheus mizusawai* Aoki, 1966. To date, the species are recorded from South Japan (Fujikawa *et al.*, 1993). It has remarkable characters such as elongate body (length 670–745 μm, width 330–360 μm), conspicuously developed pedotecta I, humeral condyles, sensilli with swollen head, ten pairs of notogastral setae, genital plates of similar colour with ventral plate bearing four pairs of setae, presence of longitudinal ridges at sides of genital aperture, adanal setae ad_3 inserted in preanal position, and monodactylous. Specimens from Chiran-cho in Kagoshima Prefecture had different features from the type species and then were described as the second representative of the family in the present work.

Methods

Sample (about 1,000 ml) of litter, humus and soil was collected by hand. After extracted with a modified Tullgren apparatus, specimens were kept in lactic acid for cleaning during more than thirty days and mounted on slide glasses. Measurements (μm) in the description are, for the most part, according to holotype. The type series, NSMT-Ac 13797 and 13798 will be deposited in the National Museum of Nature and Science, Tokyo.

Taxonomic Account

Tokunocepheidae Aoki, 1966

***Tokunocepheus chiranensis* sp. nov.**

[Japanese name: Chiran - ikadanimodoki]

(Figs. 1–3)

Diagnosis

Body length 629–750 μm; width 371–414 μm. Surface of prodorsum, notogaster and ventral plate colliculate and sparsely lineolate, of genital plates foveolate and sparsely, longitudinally sulcate, of legs granulate, and of others foveolate. Pedotecta I remarkable large, longer than width of body width. Vertical ridges extending forwards from bothridium to insertions of rostral setae at lateral sides inside prodorsum. Sensillitecta developed. Sensilli composed of a thin stem and an expanded head bearing minutely barbs through the length. Straight anterior margin of notogaster bearing one pair of humeral condyles. Notogaster with marginal ridge, ten pairs of notogastral setae, five pairs of lyrifissures. Genito-anal setal formula: 4-1-2-3. Epimeral setal formula: 3-1-3-3. All femora, trochantera III and IV with leg fin. All tarsi monodactylous.

Material examined

Holotype: Female (NSMT-Ac 13797) from litter, humus, and soil from the side of a road, 31°23'N, 130°27'E, 130 m a.s.l., Chiran-cho, Kagoshima Prefecture, 25 September 2011, Tokuko Fujikawa coll. Paratype: Female (NSMT-Ac 13798), same data as holotype.

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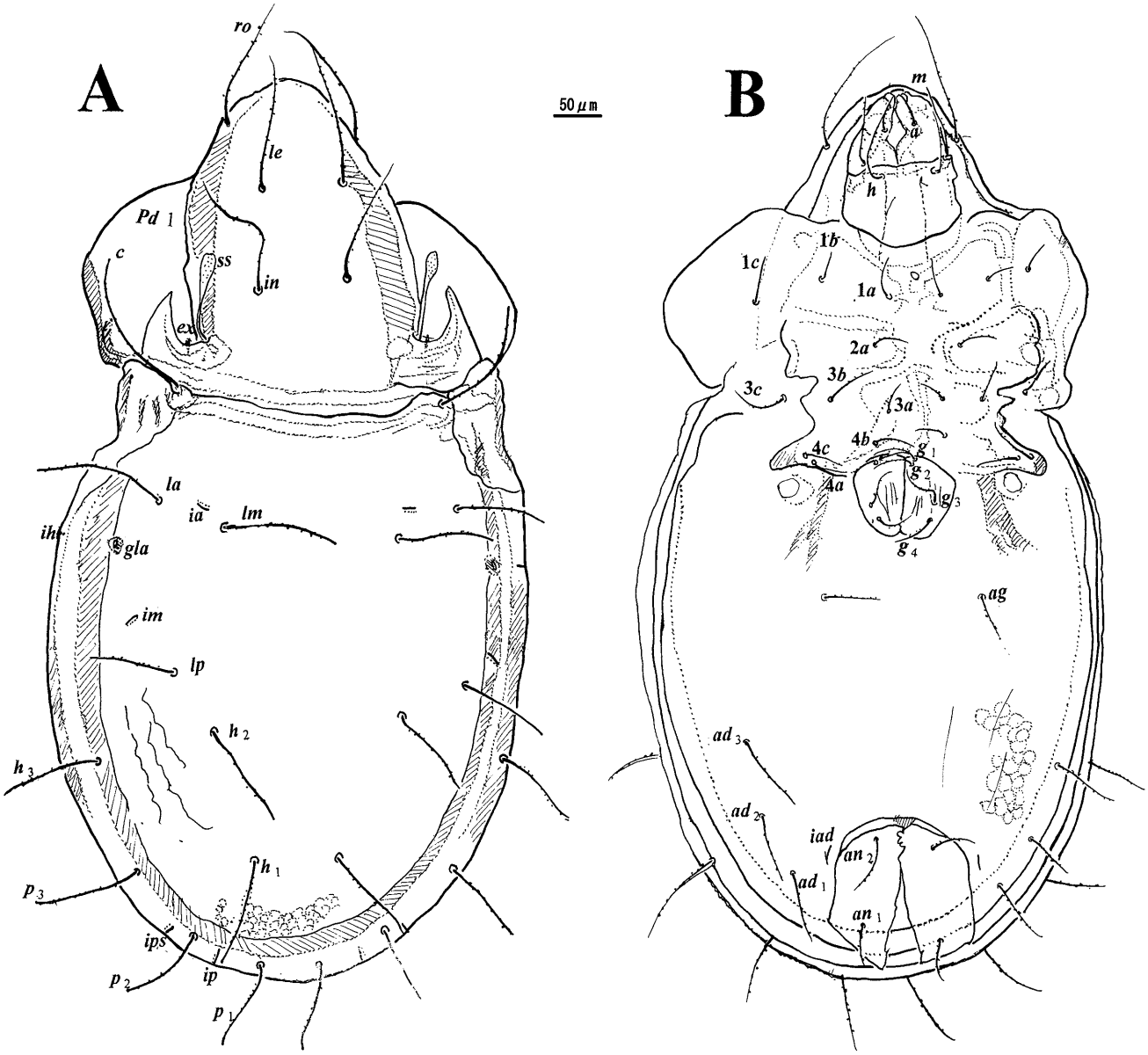

Fig. 1. *Tokunocepheus chiranensis* sp. nov., holotype. A, Dorsal view; B, Ventral view. *ro, le, in, ex*: Rostral, lamellar, interlamellar and exobothridial setae; *ss*: Sensillus; *la, lm, lp,* $h_{1\text{-}3}$, $p_{1\text{-}3}$: Dorsal setae; *ia, ih, im, ip, ips, iad*: Lyrifissures; *gla*: Opisthonotal gland opening; *a, m, h*: Anterior, medial and posterior subcapitular setae; *1a–c, 2a, 3a–c, 4a–c*: Epimeral setae; $g_{1\text{-}4}$, *ag,* $an_{1\text{-}2}$, $ad_{1\text{-}3}$: Genital, aggenital, anal and adanal setae; *Pd 1*: Pedotectum I.

Description

Measurements and body appearance: Body length 750 (paratype: 629) μm; width 414 (paratype: 371) μm. Body colour light yellowish brown. Surface of prodorsum, notogaster and ventral plate colliculate and sparsely lineolate (Fig. 2C), of genital plates foveolate and sparsely, longitudinally sulcate (Fig. 3F), of legs granulate, and of others foveolate.

Prodorsum: Rostral tip round (Fig. 1A), bearing rostral setae *ro* [Right side–left side of body] [132–118 μm] inserted at lateral side; setae *ro* thick setiform, minutely barbed throughout the length, strongly curved inward. Pedotecta I remarkable large, longer than width of body width (Fig. 2A). Vertical ridges extending forwards from bothridium to insertions of rostral setae at lateral sides inside prodorsum. Lamellar setae (*le*) [125–121 μm] and interlamellar setae (*in*) [121–129 μm] thick setiform, minutely barbed throughout the length, extending in front of rostral anterior margin and insertions of lamellar setae, respectively. Sensillitecta developed. Sensilli [79–79 μm] composed of a thin stem and an expanded head bearing minutely barbs throughout the length. Bothridia opening anteriorly-dorsally. Exobothridial setae *ex* [7–7 μm] smooth, minute setiform.

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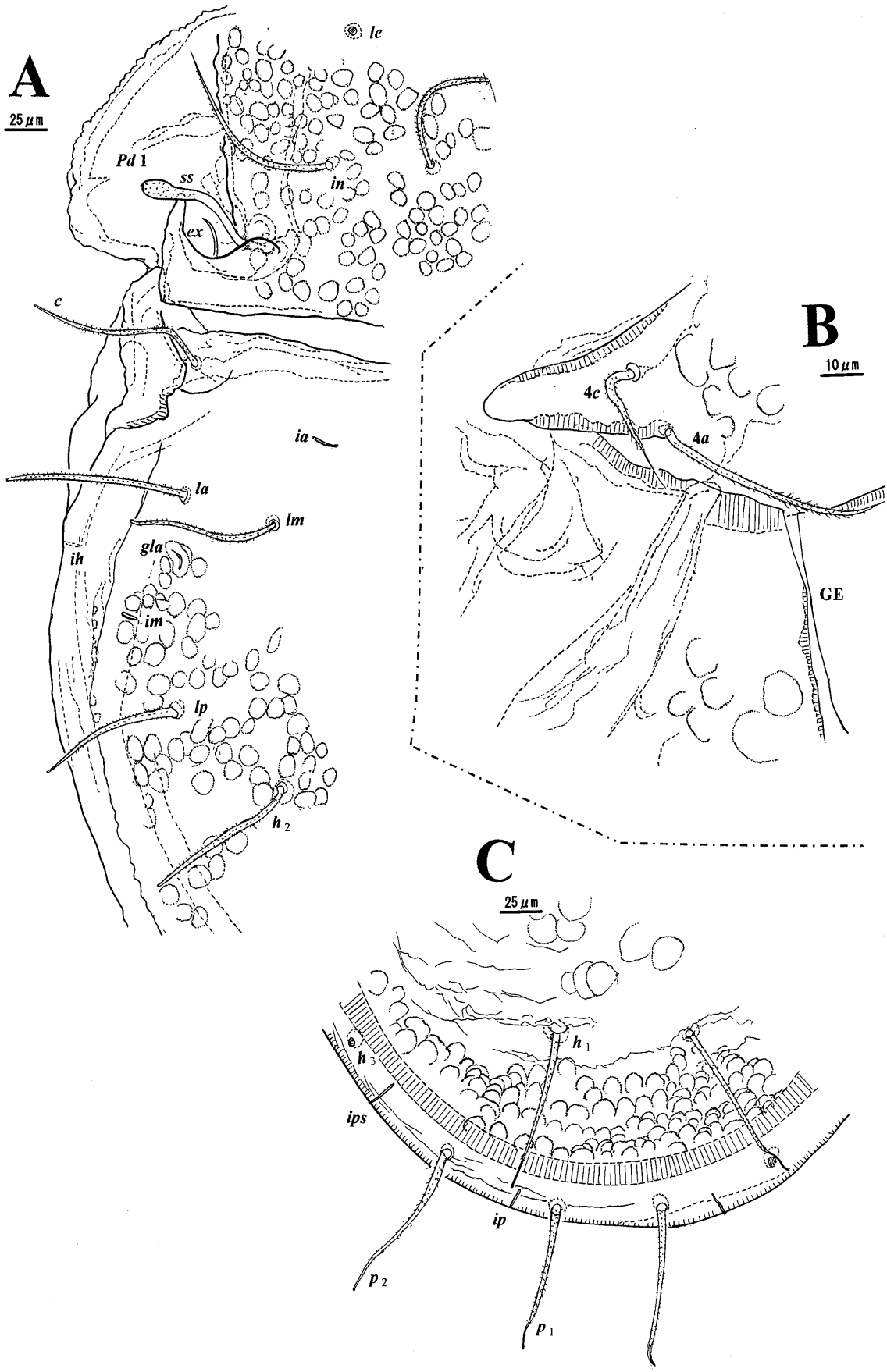

Fig. 2. *Tokunocepheus chiranensis* sp. nov. A, Left dorsal region (paratype); B, Right *4c* region (holotype); C, Left notogastral posterior region (holotype).

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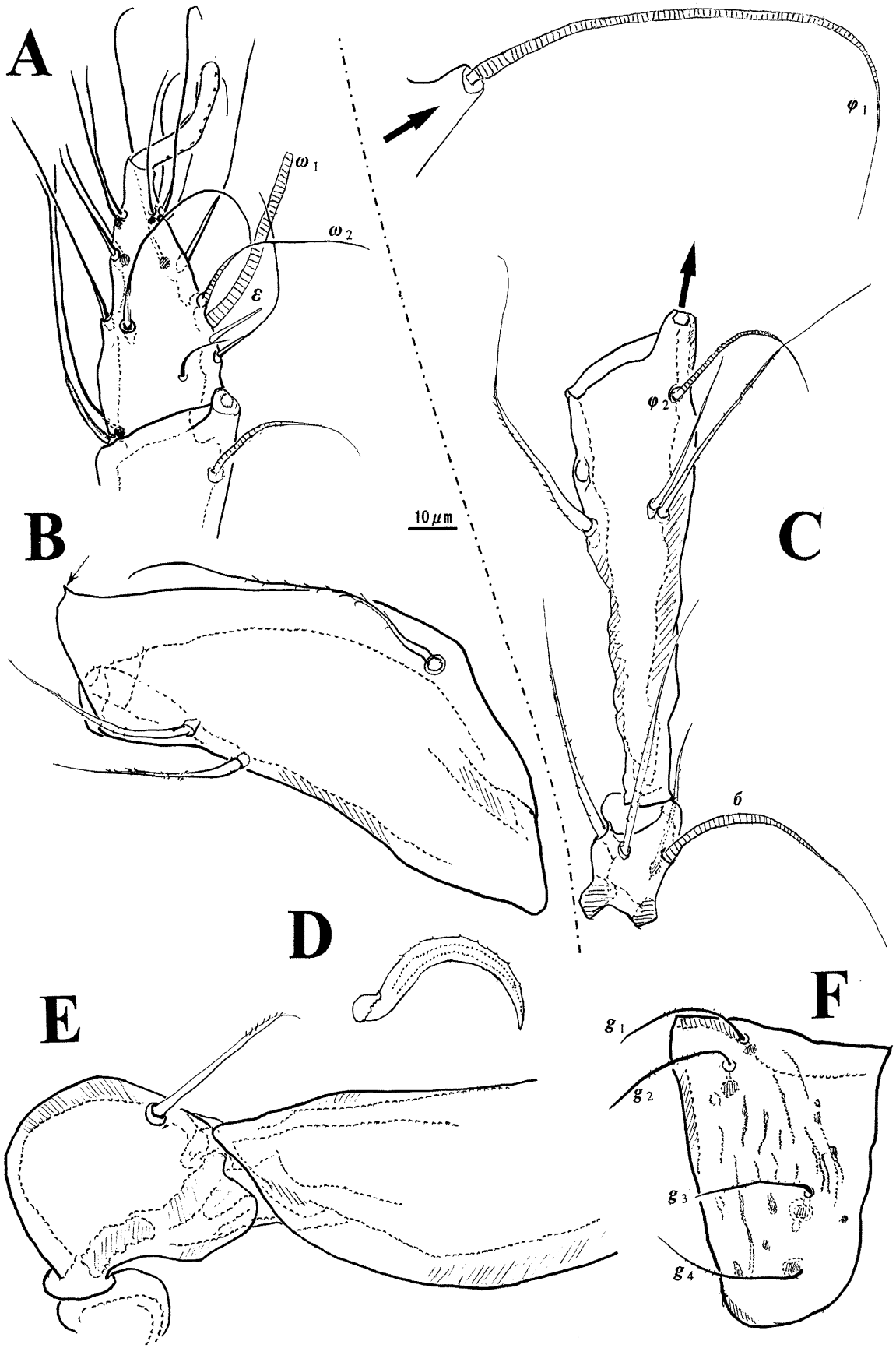

Fig. 3. *Tokunocepheus chiranensis* sp. nov. A, Right tarsus I (holotype); B, Left femur III (arrow projection); C, Right tibia I; D, Right claw of leg IV; E, Left femur and trochanter of leg III; F, Left genital plate. B–F after paratype. ε : Famulus on tarsus of leg I; $\omega_{1\text{-}2}$, $\phi_{1\text{-}2}$, $б$: Solenidia on tarsi, tibiae and genua of legs, respectively.

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Notogaster: Straight anterior margin of notogaster bearing one pair of humeral condyles (Fig.1A). Notogaster with marginal ridge, ten pairs of notogastral setae, five pairs of lyrifissures. Notogastral setae sparsely minutely barbed throughout length without fine tip; variable in length of 79 to 143 μm; setae p_1 the shortest; c_1 the longest. Relative distances between notogastral setae in central part of notogaster: (*la–la*) (275 μm) > (*lp–lp*) (271 μm) > (*c–c*) (246 μm) > (h_2–h_2) (179 μm) > (*lm–lm*) (121 μm) > (*lm–lm*) (161 μm) > (*lm–lp*) (143 μm) > (*c–la*) (89 μm) > (h_1–h_1) (79 μm) > (*la–lm*) (64 μm) > (p_1–p_1) (54 μm). Lyrifissures *ia* aligned transversely or obliquely, latero-anteriorly to *lm*; *im* obliquely latero-anteiorly to *lp*; *ih, ip* and *ips* perpendicular to notogastral outline, lateral to opisthonotal gland opening, between p_1 and p_2, between p_2 and p_3, respectively. Opisthonotal gland opening (*gla*) located latero-posterior to *la* (Fig. 2A).

Ventral region: Genital aperture (64 μm in length) and anal aperture (93 μm in length) almost pentagonal in form; distance (236 μm) between them about 2.5 times longer than length of anal aperture (Fig. 1B). Longitudinal ridges spreading posteriorly at sides of genital aperture (Fig. 2B). Genito-anal setal formula 4-1-2-3; genital ($g_{1\text{-}4}$), 26 to 36 μm, and aggenital (*ag*) (53 μm) roughened thin setiform; anal (an_1) [58–49 μm], (an_2) [52–52 μm] and adanal setae (ad_1) [86–59 μm], (ad_2) [62–? μm], (ad_3) [49–39 μm] roughened thick setiform. Setae ad_1 aligned in adanal position at the level of mid-distance between an_1 and an_2; ad_2 at the level of anterior anal margin; ad_3 in preanal. Lyrifissures *iad* parallel to lateral margin of anal aperture, located antero-laterally to anterior margin of anal aperture. Epimeral borders 1–4 and *Sj* distinct. Epimeral setal formula: 3-1-3-3 (*1a–c*, *2a*, *3a–c*, *4a–c*); setae roughened setiform; *3b* and *4a* the longest (47 μm); *1b* the shortest (24 μm). Subcapitulum diarthric, subcapitular setae: 1-1-1; *a* [31–29 μm], *m* [63–50 μm] and *h* [32–39 μm] (anterior, medial and posterior subcapitular setae, respectively); setae roughened setiform. Relative distances between setae and lyrifissure in genito-anal region: (ad_3–ad_3) (293 μm) > (ad_1–ad_1) (193 μm) > (*ag–ag*) (146 μm) > (ad_2–ad_3) (71 μm) > (ad_1–ad_2) (50 μm).

Legs: Monodactylous; claws (39 to 43 μm: valuable in length) sparsely, minutely dentate on dorsal margin (Fig. 3). Setal formula of legs including famulus but excluding solenidia: I (1-4-3-4-19), II (1-4-3-3-16), III (2-3-1-2-16), IV (1-2-2-2-12); measurements (μm) of segments: All femora, trochantera III and IV with leg fin (Fig. 3E). Leg fin on femur III with a small projection, wider than those of other femora (Fig. 3B). Measurements (μm) of segments (trochanter to tarsus) [Right-Left]: I ([20-23]-[107-109]-[14-27]-[88-96]-[54-55]), II ([21-25]-[125-116]-[29-30]-[82-84]-[55-52]), III ([?-?]-[111-89]-[23-18]-[?-95]-[?-52]), IV ([54-54]-[143-125]-[23-?]-[?-127]-[?-55]). Solenidiotaxy: I (1-2-2), II (1-1-2), III (1-1-0), IV (0-1-0). Famulus (ε) (11 μm) on tarsus of leg I spiniform, situated latero-posteriorly to solenidion ω_1. Solenidia ω_1 and ω_2 almost same length (36 μm); ω_1 thick bacilliform; ω_2 thin setiform (Fig. 3A). Solenidia on tibiae ϕ_1 (115 μm) and ϕ_2 (36 μm) setiform; ϕ_1 originating from apophysis at tip of segment (Fig. 3C). Genual solenidion σ (53 μm) setiform. Legs without expanded seta.

Remarks

The new species differs from *Tokunocepheus mizusawai* Aoki, 1966 by having surface of prodorsum, notogaster and ventral plate colliculate and sparsely lineolate, large pedotectum I longer than width of body width, long prodorsal and ventral setae, vertical ridges extending forwards from bothridium to insertions of rostral setae at lateral sides inside prodorsum, all femora and trochantera III, IV bearing leg-fin, different setal formula of legs and body size.

Etymology

After name of sampling area, Chiran-cho.

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摘　要

藤川徳子（〒 868-0423　熊本県球磨郡あさぎり町上南 1346-3）：南日本知覧町からのイカダニモドキ科の二番目の種.

鹿児島県知覧町の車道脇の落ち葉よりチランイカダニモドキ *Tokunocepheus chiranensis* sp. nov. を採集し記載した．イカダニモドキ科の二番目の種である．既知種イカダニモドキとの違いは，左右の第一脚庇の幅が体幅を越えること，桁状の肥厚部がみられること，体表にひび割れ状の模様がみられること，前体部や腹部の毛が長いこと，脚毛式の違いなどに見られる．

キーワード：知覧町，イカダニモドキ科，ササラダニ類，新種.

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