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New records of notoaturine water mites from New Zealand, with the description of five new species (Acari: Hydrachnidia: Notoaturinae)

Harry Smit[a,b], Vladimir Pešić[c]

[a] Naturalis Biodiversity Center, P.O. Box 9517, 2300 RA Leiden, the Netherlands.
[b] Museums Victoria Research Institute, Museums Victoria, GPO Box 666, Melbourne, VIC 3001 Australia.
[c] Department of Biology, University of Montenegro, Cetinjski put b.b., 81000 Podgorica, Montenegro.

Original research

ABSTRACT

New records of notoaturine water mites (Aturidae: Notoaturinae) from New Zealand are presented. Five new species are described: *Evidaturus longiscutatus* **n. sp.**, *Kritaturus* (*Kritaturus*) *longipalpis* **n. sp.**, *Planaturus simpsonensis* **n. sp.**, *Tryssaturus longwood* **n. sp.** and *Zelandalbia thibaulti* **n. sp.** The males are described for the first time for *Planaturus pileatus* Smit, 2017 and *Zelandalbia* cf. *hopkinsi* Imamura, 1978 and the females are described for the first time for *Kritaturus* (*Kritaturus*) *sornus* Cook, 1983, *Paratryssaturus zodelus* Cook, 1983 and *Taintaturus accidens* Cook, 1983.

Keywords new species; taxonomy; new records; notoaturine mites; New Zealand
Zoobank http://zoobank.org/506BF0B4-DE41-41E4-ADED-4736B5FC0543

Introduction

Water mites of the subfamily Notaturinae have been found in Australia, New Zealand, South and eastern Africa and Chile (Smit 2020). In New Zealand, species of the subfamily are the most diverse and most frequently collected mites in running waters. Up to date 79 notoaturine species from 25 genera, i.e., *Abelaturus* Cook, 1983, *Acidoturus* Smit, 2019, *Asperaturus* Smit & Pešić, 2020, *Bleptaturus* Cook, 1991, *Canterburaturus* Pesic, Smit & Datry, 2010, *Colobaturus* Cook, 1991, *Evidaturus* Cook, 1983, *Hestaturus* Cook, 1991, *Kritaturus* Cook, 1983, *Minyaturus* Smit & Pešić, 2020, *Neotryssaturus* Cook, 1974, *Omegaturus* Cook, 1983, *Paratryssaturus* Imamura, 1979, *Pilosaturus* Cook, 1983, *Piotaturus* Cook, 1983, *Planaturus* Cook, 1983, *Pseudotryssaturus* Cook, 1983, *Schwoerbelaturus* Smit, 2019, *Taintaturus* Cook, 1983, *Tryssaturopsis* Cook, 1974, *Tryssaturus* Hopkins, 1967, *Uralbia* Hopkins, 1967 *Zelandalbia* Imamura, 1978, *Zelandaturus* Smit, 2015, and *Zelandopsis* Imamura, 1977 have been reported from New Zealand (Hopkins 1967, 1969; Imamura 1977, 1978, 1979; Cook 1983, 1991; Schwoerbel 1984; Pesic *et al.* 2010; Smit 2015, 2017, 2019; Smit and Pešić 2020).

In this paper five new notoaturine species are described based on a collection trip of the first author in 2022-2023 to South Island.

Material and methods

Water mites were collected by hand netting, sorted live in the field, and immediately preserved in Koenike fluid. The interstitial sampling was done by the Karaman-Chappuis method. Unless

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Corresponding author
Vladimir Pešić:
vladopesic@gmail.com

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stated otherwise, all material was collected by the senior author. Holotypes and paratypes will be lodged in the Museum of New Zealand, Wellington (NMNZ), paratypes and all non-type material in Naturalis Biodiversity Center, Leiden (RMNH).

The following abbreviations are used: asl – above sea level; Cx-IV – fourth coxae; Cxgl-4 – coxoglandularia 4; P1-5 – palp segments 1-5; IV-leg-2 – second segment of fourth leg. All measurements are in µm, measurements of palp and leg segments are of the dorsal margins. Ventral length is measured from the tip of Cx-I till posterior idiosoma margin. The photographs of selected structures were made using a camera on a Samsung Galaxy smartphone. The coordinates are taken with a GPS, but those given as degrees, minutes and seconds are taken from Google Earth and are by approximation. Numbers are given as male/female/deutonymph or adult/deutonymph. The distribution data are from Smit (2020) unless stated otherwise.

Taxonomy

Family Aturidae Thor

Subfamily Notoaturinae Besch

Genus *Abelaturus* Cook, 1983

Diagnosis — Smit 2020, p. 386.

A monotypic genus known from New Zealand only.

Abelaturus cornophorus Cook, 1983

New record — South Island. 1/0/0, Shag River, interstitial, crossing Mc Donald Road, E of Ranfurly, 45°20.700′ S, 170°36.297′ E, alt. 84 m asl., 24 Jan. 2023.

Distribution — Previously known from four localities from North and South Island.

Genus *Evidaturus* Cook, 1983

Diagnosis — Smit 2020, p. 397.

A small genus with two species known from New Zealand. In this paper one more species is described.

Evidaturus exilis Cook, 1983

New record — South Island. 0/1/0, Taipare Creek, Taipare Bay, 41°00.977′ S, 173°43.504′ E, alt. 9 m asl, 16 Jan. 2023.

Distribution — Previously known from three localities from South Island (Cook 1983; Smit 2017; Smit and Pešić 2020).

Evidaturus longiscutatus n. sp.

Zoobank: 0FEA3B7F-1484-43BC-ACE1-EDF868E32A45

Figure 1

Type material — Holotype male, Janice Creek, interstitial, crossing Haupiri Road, Moana, South Island, 42°34.443′ S, 171°42.731′ E, alt. 212 m asl., 15 Febr. 2023, dissected and slide mounted (NMNZ). Paratypes: 1/0/0, same data as the holotype (RMNH); 1/0/0, Simpson Creek, interstitial, crossing Haupiri Road, Moana, 42°32.852′ S, 171°39.594′ E, alt. 259 m asl., 15 Febr. 2023 (RMNH).

Diagnosis (Female unknown) — Unpaired posteromedial dorsal plate about twice as long as anteromedial dorsal plate (length posteromedial/anteromedial plates ratio 2.0-2.3); capitular bay sharply V-shaped; terminal segment of fourth legs distally less expanded (dorsal length/height ratio 2.3)

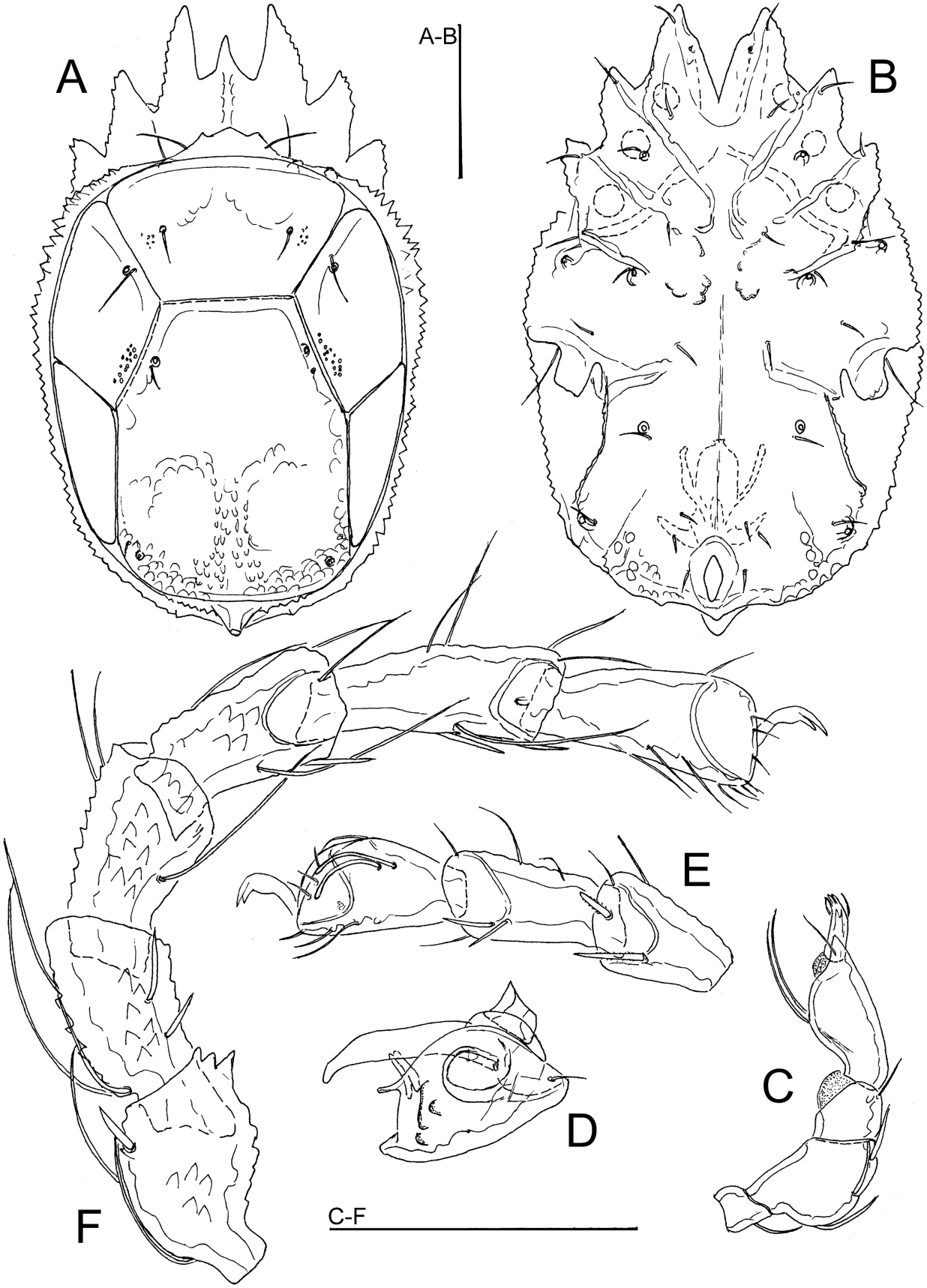

Figure 1 *Evidaturus longiscutatus* **n. sp.**, male, Janice Creek. A – idiosoma, dorsal view; B – Idiosoma, ventral view; C – palp; D – gnathosoma; E – I-leg-4-6; F – IV-leg. Scale bars = 100 µm.

Description — *Male* (holotype; in parentheses some measurements of paratype specimen from Janice Creek; in square parentheses some measurements of specimen from Simpson Creek) — Idiosoma dorsally 334 (344) [338] long and 256 (256) [258] wide, ventrally 404 (413) [409] long. Integumental pigment absent, eye pigment reduced. Dorsal shield typical for the genus *Evidaturus*, 294 (297) [303] long and 231 (231) [238] wide; unpaired anteromedial plate 95 (100) [91] long and 155 (156) [155] wide; unpaired posteromedial plate about twice as long as anterodorsal plate (Figure 1A), 200 (200) [211] long, 150 (150) [150] wide; anterolateral platelets 138 (144) [141] long, posterolateral platelets 125 (122) [121] long. Tips of first coxae relatively sharply pointed, these extending far beyond the anterior margin of ventral shield; capitular bay sharply V-shaped (Figure 1B), 64 (66) long; Cxgl-4 located near Cx-III/IV suture line; projections associated with insertions of fourth legs somewhat truncate; a pair of glandularia placed posteromedial to insertions of fourth leg; a pair of long curved ridges on each side extending posterolaterally from region of insertion of IV-leg. Genital field with a few genital acetabula on each side, gonopore small, elongated-oval and subterminal, approximately 29 (29) long and 12 (13) wide. Excretory pore located on a moderately developed terminal tubercle.

Palp: dorsal length/height (in parentheses length/height ratio): P1, 15/15 (1.0); P2, 41/27 (1.56); P3, 18/14 (1.28); P4, 47/22 (2.14); P5, 22/7 (3.1); P4 bulging ventrally, proximoventral seta located near middle, distoventral seta inserted in distal half of the segment (Figure 1C). Gnathosoma (Figure 1D) ventrally 73 long; chelicera 86 long. Dorsal length of I-leg-4-6 (Figure 1E): 48, 56, 56; IV-leg relatively unmodified (Figure 1F); dorsal length of IV-leg: 68, 77, 70, 73, 82, 75.

Female — Unknown.

Etymology — Named for the long posteromedial platelet.

Remarks — This is the third known species of the genus *Evidaturus* after *E. exilis* Cook, 1983 known from two localities on South Island and *E. scopticus* Cook, 1983, known only from one locality on the very northern part of North Island (Cook 1983). The latter species resembles the new species in the gnathosomal bay sharply V-shaped and a similar shape of P-4 with the ventral setae located in the distal half of segment. The new species from South Island can be separated from *E. scopticus* by comparatively much longer posteromedial plate (length posteromedial/anteromedial plates ratio 2.0-2.3 *vs*. 1.45 in *E. scopticus*, calculated from Figure 343 in Cook 1983; compare Figure 1A *vs*. Figure 14A) and the distal segment of the fourth leg comparatively less expanded distally (compare with figure 347 in Cook 1983).

Distribution — Known from two locations on South Island.

Genus *Kritaturus* Cook, 1983

Diagnosis — Smit 2020, p. 398.

Nine species known from New Zealand only.

Kritaturus (*Caudaturus*) *jacundus* Cook, 1983

Figure 14C

New record — South Island. 0/1/0, Shepards Creek, S of Cromwell, 45°08.246′ S, 169°08.563′ E, alt. 330 m asl, 9 Jan. 2023, dissected and slide mounted.

Remarks — This species is identified based on the presence of integumental and eye pigment and shape of dorsal shield (anteromedial plate approximately same length as posteromedial plate, dorsal sclerites without much ornamentation, posterolateral platelets with longitudinal lines; Figure 14C).

Distribution — Previously known from two localities from South Island.

Kritaturus (*Kritaturus*) *sornus* Cook, 1983

Figure 2

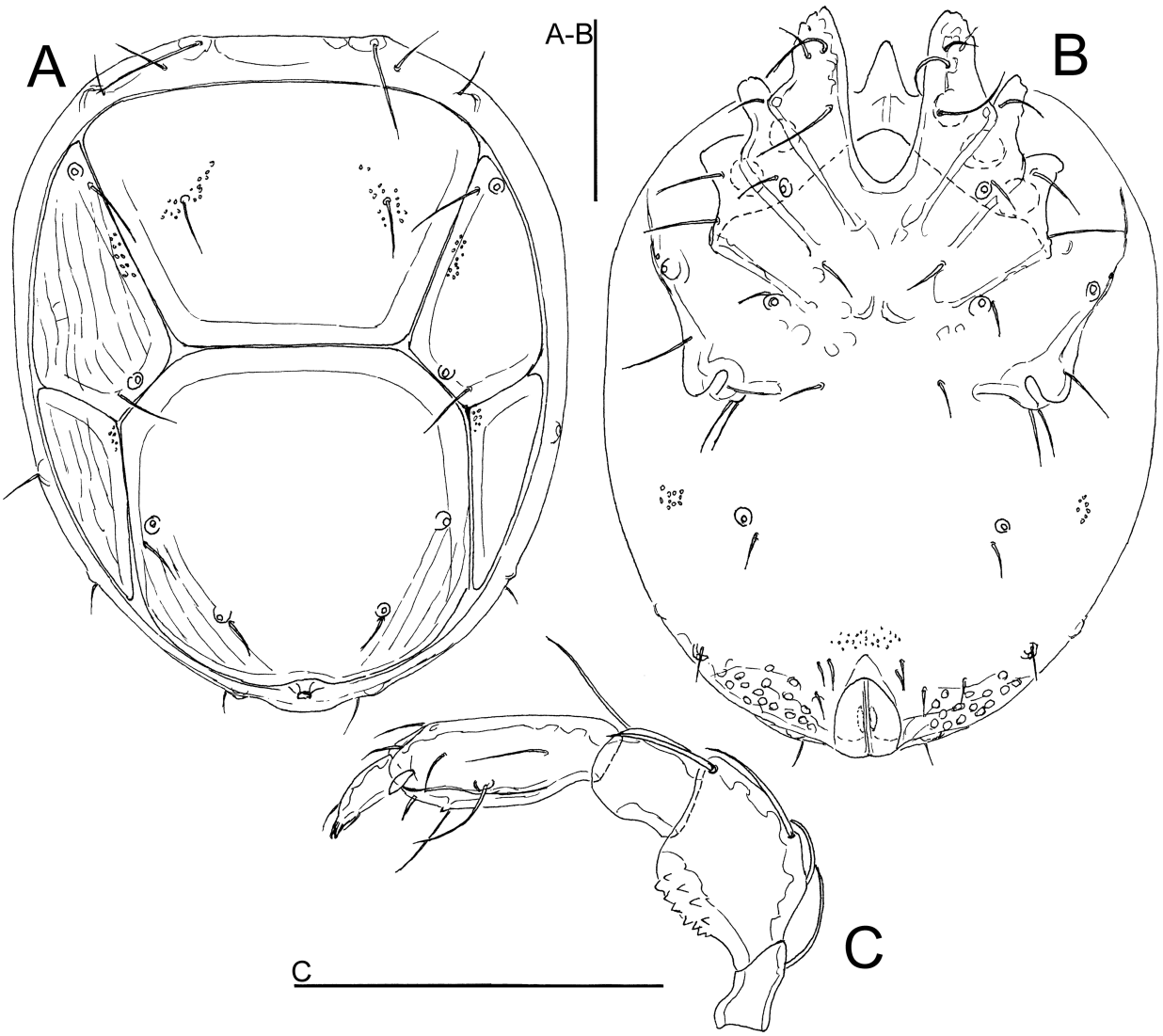

Figure 2 *Kritaturus sornus* Cook, 1983, female, Longbeach Creek. A – idiosoma, dorsal view; B – idiosoma, ventral view; C – palp. Scale bars = 100 µm.

New records — South Island. 1/2/0, Longbeach Creek at track to Koropuku Falls, Catlins Forest Park, 46°34.704′ S, 169°13.166′ E, alt. 95 m asl, 7 Febr. 2023, one female dissected and slide mounted (RMNH). 0/1/0, Matai stream downstream falls, Catlins Forest Park, 46°30.185′ S, 169°29.288′ E, alt. 134 m asl, 7 Febr. 2023.

Remarks — Thus far, the female was unknown, and therefore a description is given below.

Description. *Female* — Idiosoma dorsally 370 long and 300 wide, ventrally 409 long. Integumental and eye pigment present. Dorsal shield typical for the genus *Kritaturus*, 331 long and 281 wide; unpaired anteromedial plate 145 long and 215 wide; unpaired posteromedial plate nearly square, 188 long and 188 wide; anterolateral platelet 153 long, posterolateral platelet 125 long; laterodorsal platelets with longitudinal lines (Figure 2A); ornamentation as showed in Figure 2B. Cx-I relatively broad and projecting, with tips more or less rounded, gnathosomal bay 95 long; glandularia Cxgl-4 located near Cx-III/IV suture line, projections associated with insertions of fourth legs rounded (Figure 2B). Genital field with numerous acetabula in two or three rows along posterior margin, gonopore terminal, 44 long and 36 wide.

Palp: dorsal length/height (ratio in parentheses): P1, 25/15 (1.69); P2, 54/39 (1.38); P3, 25/25 (1.0); P4, 63/25 (2.5); P5: 27/10 (2.8); P2 with several small denticles, P4 with a median ridge (Figure 2C). Gnathosoma ventrally 56 long (without apodemes), 86 with apodemes; chelicera 107 long. Dorsal length of I-leg-4-6: 58, 67, 73; dorsal length of IV-leg: 78, 58, 64, 77, 92, 90.

Distribution — Previously known from one locality on South Island (Cook 1983).

Kritaturus (*Kritaturus*) *longipalpis* n. sp.

Zoobank: DA97DDFD-1ACB-42CD-96D8-A340C2BCF3A5

Figures 3-4, 14D

Material examined — Holotype male, upper course Waikawa River crossing Waikawa Valley Road, Catlins Forest Park, 46°29.849′ S, 169°09.764′ E, alt. 65 m asl, 6 Febr. 2023, dissected and slide mounted (NMNZ). Paratype: 1/0/0, Longbeach Creek at track to Koropuku Falls, Catlins Forest Park, 46°34.704′ S, 169°13.166′ E, alt. 95 m asl, 7 Febr. 2023 (RMNH); 0/2/0, Small stream crossing road to Bald Hill, Longwood Forest, South Island, 46°10.948′ S, 167°52.781′ E, alt. 227 m asl., 30 Jan. 2023, one female dissected and slide mounted (NMNZ), one female undissected (RMNH).

Diagnosis — Anterolateral and posterolateral platelets with longitudinal lines; setae associated with glandularia on anterolateral dorsal platelets thickened; Cx-I with a row of long setae (more thickened in male) along lateral margins of gnathosomal bay; palpal segments, especially P4, long and slender, P4 length/height ratio 5.0-5.5.

Description. *Male* — Idiosoma dorsally 394 long and 300 wide, ventrally 494 long. Eye pigment present. Dorsal shield 353 long and 266 wide; unpaired anteromedial plate 178 long and 194 wide; unpaired posteromedial plate 175 long and 169 wide; anterolateral platelets 163 long, with two pairs of glandularia, setae associated with glandularia thickened as illustrated in Figure 3A (inset); posterolateral platelet 116 long; laterodorsal platelets with longitudinal lines. Cx-I projecting far-forward and sharply pointed, with a row of thickened setae along lateral margins of gnathosomal bay (Figure 3B), gnathosomal bay 145 long; glandularia Cxgl-4 located near Cx-III/IV suture line, posterior suture line of Cx-IV poorly developed, projections associated with insertions of fourth legs rounded and directed more or less posteriorly. Genital field with numerous acetabula in two or three rows along posterior margin, gonopore terminal and small, 23 long. Ejaculatory complex (Figure 3C) 116 long.

Palp: dorsal length/height (in parentheses length/height ratio): P1, 32/28 (1.15); P2, 97/67 (1.46); P3, 41/44 (0.93); P4, 179/36 (5.0); P5, 45/15 (3.0); P4 elongated and slender (Figure 3D), without medial ridge, ventral setae close to each other in lateral to medial direction. Gnathosoma ventrally 105 long (without apodemes), 141 with apodemes. Dorsal length of I-leg-2-6 (Figure 3E): 61, 56, 81, 103, 100; maximum height of I-leg-6, 38; dorsal length of IV-leg-3-6 (Figure 4D): 91, 94, 109, 109; maximum height of IV-leg-6, 36.

Female — In most characters similar to male, except genital field (Figure 4B). Idiosoma dorsally 434 long and 319 wide, ventrally 513 long. Dorsal shield 376 long and 284 wide; unpaired anteromedial plate 177 long and 206 wide; unpaired posteromedial plate 197 long and 188 wide; anterolateral platelet 159 long, posterolateral platelet 129 long. Gnathosomal bay 143 long. Gonopore terminal and flanked by numerous genital acetabula in two or three rows along posterior margin.

Palp as in male (Figure 4C): dorsal length/height (in parentheses length/height ratio): P1, 33/25 (1.3); P2, 97/58 (1.68); P3, 41/37 (1.1); P4, 190/34 (5.52); P5, 48/14 (3.4). Gnathosoma ventrally 94 long (without apodemes), 125 with apodemes. Dorsal length of I-leg-2-6: 55, 52, 72, 95, 91; maximum height of I-leg-6, 33; dorsal length of IV-leg: 72, 63, 73, 88, 103, 103.

Etymology — Named for the long palp.

Remarks — The new species belong to subgenus *Kritaturus* s.s. characterized by idiosoma without a well-developed cauda and unmodified posteromedial plate. The new species is unique in the combination of long and slender palpal segments (especially P4, length/height

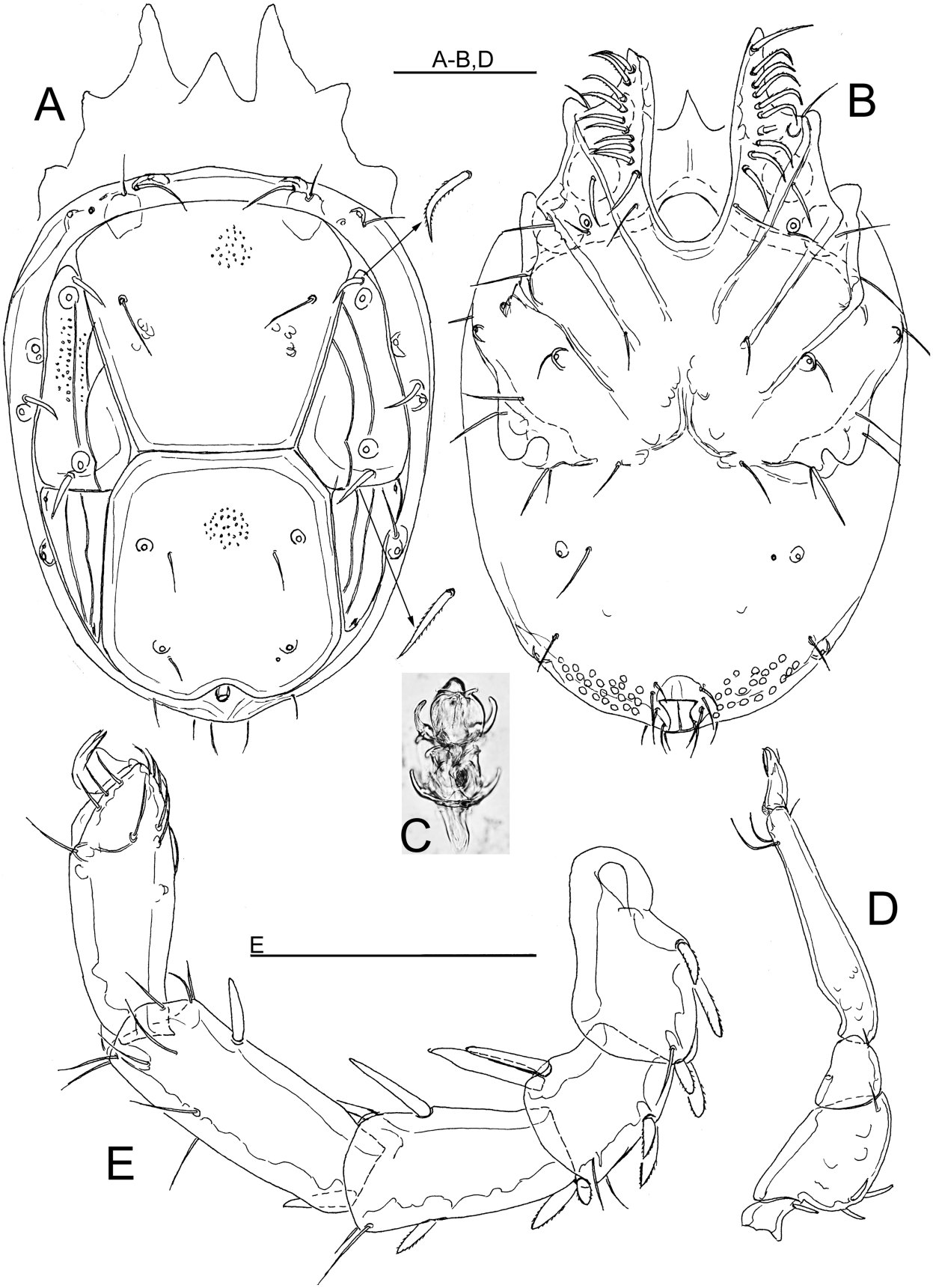

Figure 3 *Kritaturus longipalpis* **n. sp.**, male, upper course Waikawa River. A – idiosoma, dorsal view; B – idiosoma, ventral view; C – photograph of ejaculatory complex; D – palp; E – I-leg-2-6. Scale bars = 100 µm.

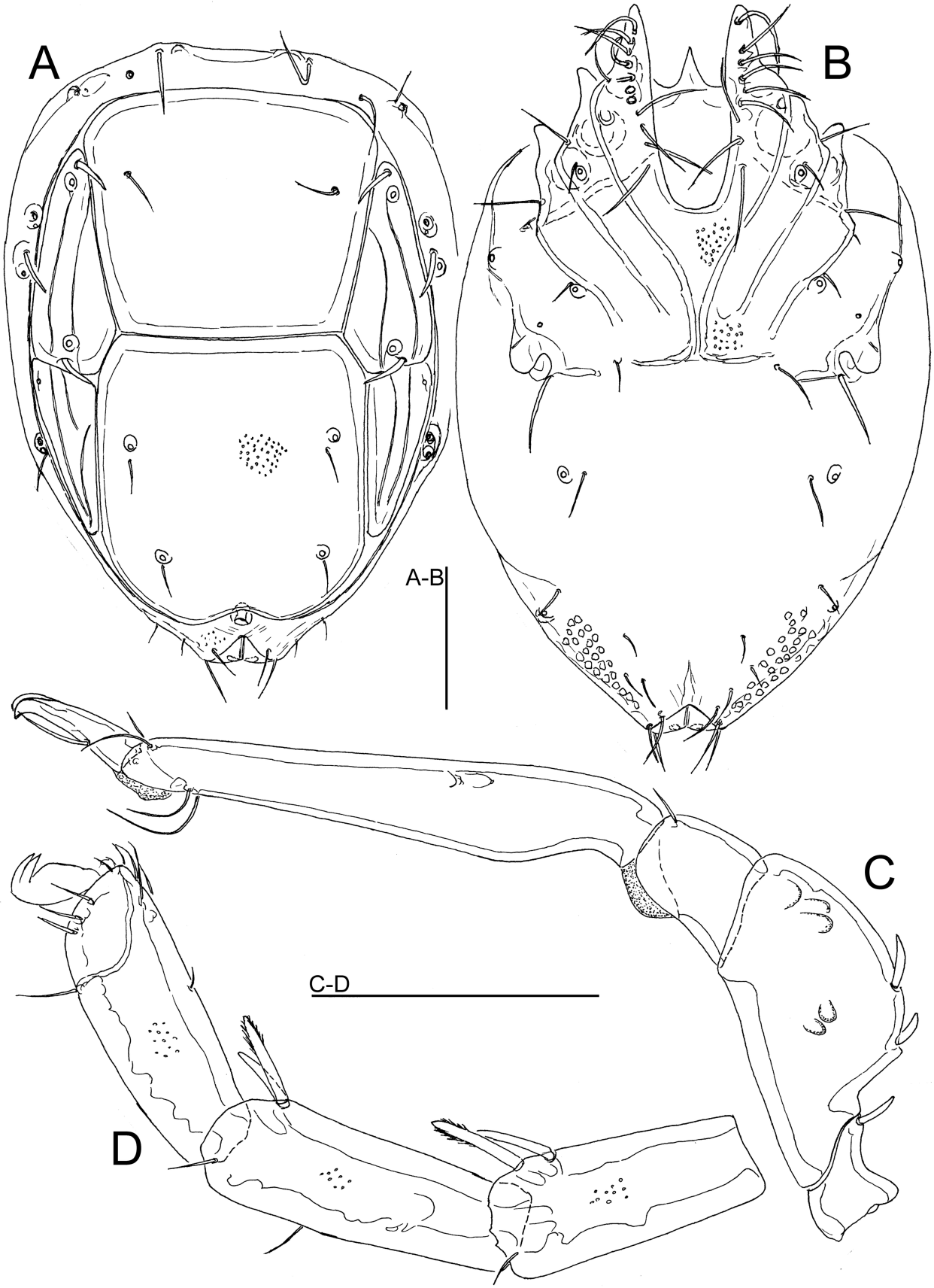

Figure 4 *Kritaturus longipalpis* **n. sp.**, (A-C, female, stream crossing road to Bald Hill; D, male, upper course Waikawa River). A – idiosoma, dorsal view; B – idiosoma, ventral view; C – palp, D – IV-leg-4-6. Scale bars = 100 µm.

ratio 5.0-5.5), a thickened setae associated with glandularia on anterolateral dorsal platelets and Cx-I with a row of long setae (more thickened in male) along lateral margins of gnathosomal bay.

Distribution — Known from two locations on South Island.

Genus *Paratryssaturus* Imamura, 1979

Diagnosis — Smit 2020, p. 404.

A genus with five species known from New Zealand (Smit and Pešić 2020).

Paratryssaturus cantermus Cook, 1983

New records — South Island. 0/1/0 Highest tributary of Warbeck crossing Maruia Saddle Rd, Murchison, 42°01.880′ S, 172°17.695′ E, alt. 535 m asl., 17 Febr. 2023. 0/3/0, Cascade Creek, Longwood Forest, 46°15.582′ S, 167°54.575′ E, alt. 91 m asl., 1 Febr. 2023.

Distribution — Previously known from North and South Island (Cook 1983; Pesic *et al.* 2010; Smit 2017).

Paratryssaturus zodelus Cook, 1983

Figures 5, 14G

New records — South Island. 2/4/0, Six Mile Creek, foothills of Rock and Pillar Range, Middlemarch, 45°26.682′ S, 170°06.828′ E, alt. 396 m asl., 24 Jan. 2023, 0/2/0 dissected and slide mounted. 2/2/0, Lug Creek at foothills of Rock and Pillar Range, 45°25.166′ S, 170°08.131′ E, alt. 438 m asl., 24 Jan. 2023.

Remarks — Cook (1983) collected two females from Staircase Creek on South Island, but was not certain about the assignment to *P. zodelus*, and did not give a description. Smit & Pešić (2020) collected one female from Graham River on South Island but in the absence of male they were not certain about the assignment to *P. zodelus* and they did not provide a description. Therefore, the female was unknown, and a description is given below.

Description. *Female* — Idiosoma dorsally 392 long and 281 wide, ventrally 445 long; caudal margin slightly indented. Integumental pigment absent; ornamentation of dorsal sclerites consisting of a reticulate pattern (as photographed in Figure 14G) but lacking papillae. Dorsal shield (Figure 5A) typical for the genus *Paratryssaturus*, 325 long and 265 wide; unpaired anteromedial plate 122 long and 167 wide; unpaired posteromedial plate distinctly longer than anteromedial plate, 197 long and 183 wide; anterolateral platelets 145 long, posterolateral platelet 109 long. Anterior coxae projecting, gnathosomal bay 106 long, glandularia Cxgl-4 located near suture line of Cx-III/IV; projections associated with insertions of fourth leg relatively large and rounded; between insertions of fourth legs and genital field a pair of glandularia (Figure 5B). Gonopore distanced from posterior idiosoma margin, 39 long. Excretory pore ventrally near posterior idiosoma margin.

Palp: dorsal length/height (in parentheses length/height ratio): P1, 23/17 (1.32); P2, 50/39 (1.28); P3, 26/28 (0.93); P4, 56/27 (2.12); P5, 31/12 (2.65); P2 anteroventrally with a few denticles, P4 with a ridge in anterior half of segment (Figure 5C). Gnathosoma 97 long (with apodemes); chelicera 120 long. Dorsal length of I-leg-2-6 (Figure 5E): 52, 41, 56, 59, 74; dorsal length of IV-leg-3-6 (Figure 5F): 50, 72, 73, 80.

Distribution — Known from North and South Island (Cook 1983; Smit 2017).

Genus *Planaturus* Cook, 1983

Diagnosis — Smit 2020, p. 407.

A genus with five species known from New Zealand. A sixth species is described below.

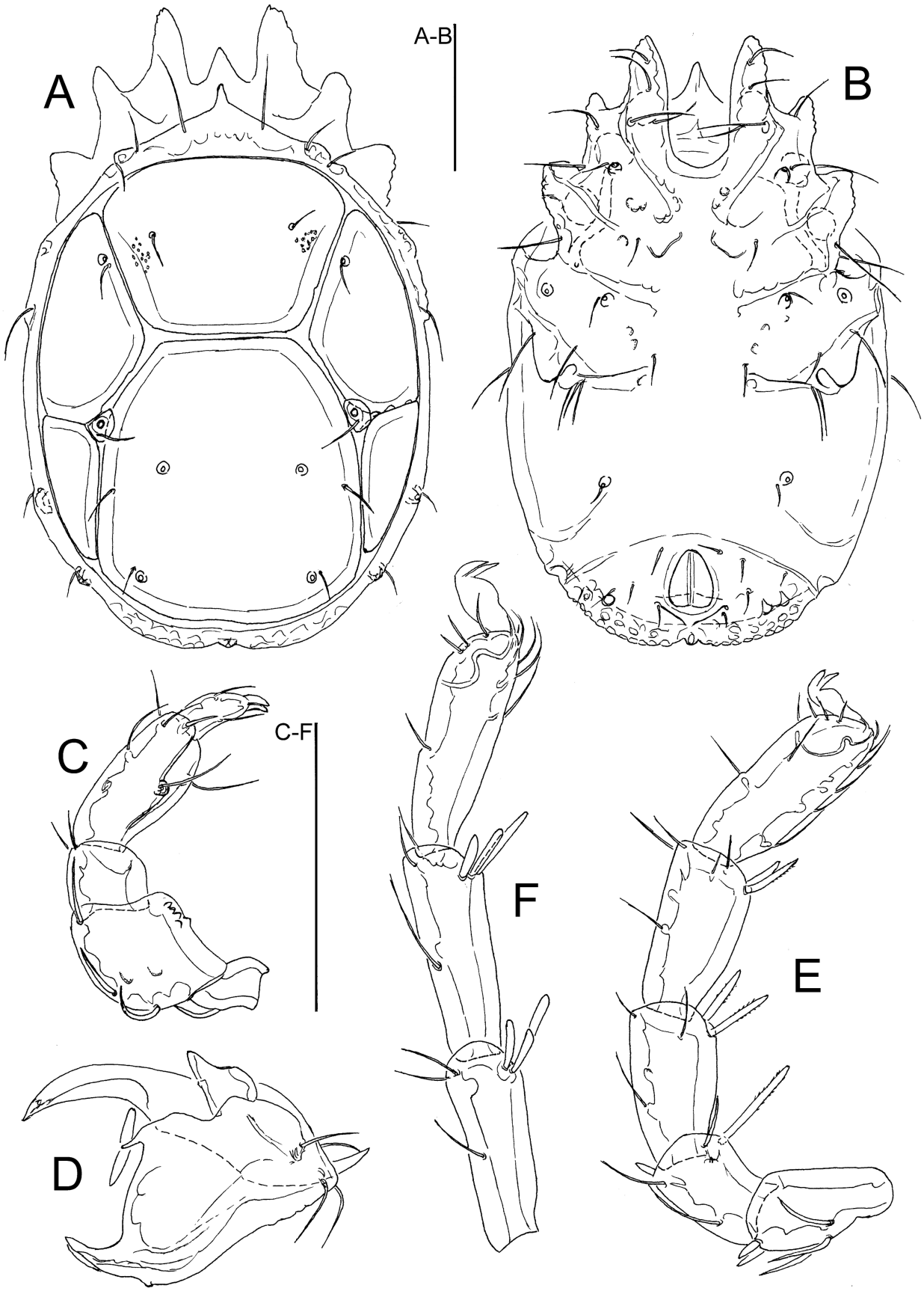

Figure 5 *Paratryssaturus zodelus* Cook, 1983, female, Six Mile Creek. A – idiosoma, dorsal view; B – Idiosoma, ventral view; C – palp; D – gnathosoma and chelicera; E – I-leg-2-6; F – IV-leg-4-6. Scale bars = 100 µm.

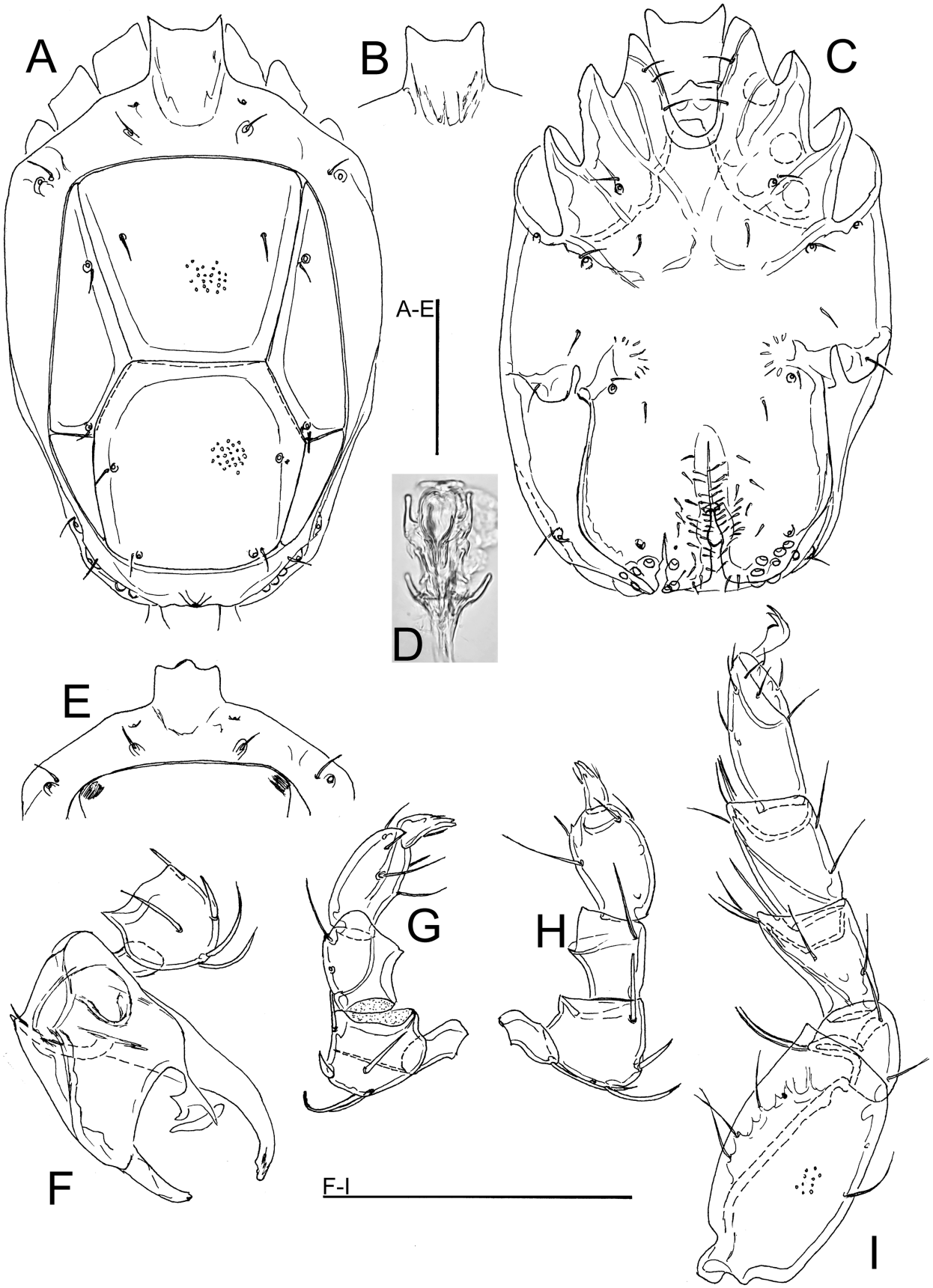

Figure 6 *Planaturus pileatus* Smit, 2017, Shag River (A-D, F-I, male; E, female). A – idiosoma, dorsal view; B – hood-like structure on anterodorsal part of ventral shield; C idiosoma, ventral view; D – photograph of ejaculatory complex; E – anterodorsal part of ventral shield; F – gnathosoma and palpal segments P1 and P2; G-H – palp; I – IV-leg-2-6. Scale bars = 100 µm.

Planaturus pileatus Smit, 2017

Figures 6, 14E

New records — South Island. 0/1/0, Highest tributary of Warbeck crossing Maruia Saddle Rd, Murchison, interstitial, 42°01.880′ S, 172°17.695′ E, alt. 535 m asl., 17 Febr. 2023. 0/1/0, tributary of Warbeck crossing Maruia Saddle Rd, Murchison, 42°00.261′ S, 172°19.373′ E, alt. 360 m asl., 17 Febr. 2023. 0/1/0, Camp Creek, Lake Kaniere Scenic Reserve, 42°50.313′ S, 171°09.910′ E, alt. 156 m asl., 13 Febr. 2023. 0/1/0, Rough and Tumble Creek, interstitial, Moana, 42°36.174′ S, 171°34.890′ E, alt. 111 m asl., 21 Dec. 2022. 2/2/0, Shag River, interstitial, crossing Mc Donald Road, E of Ranfurly, 45°20.700′ S, 170°36.297′ E, alt. 84 m asl., 24 Jan. 2023, 1/0/0 dissected and slide mounted (RMNH).

Remarks — Thus far, the male was unknown, and therefore a description is given below.

Description. *Male* — Idiosoma dorsally (till tip of hood) 388 long and 242 wide, ventrally 369 long. Eye pigment visible. Dorsal shield typical for the genus *Planaturus,* smooth and with small pores (Figure 14E), 270 long and 192 wide; unpaired anteromedial plate 134 long and 144 wide; unpaired posteromedial plate 136 long and 137 wide; anterolateral platelet 169 long, posterolateral platelet 84 long. Anterodorsal part of ventral shield forming a projecting hood-like structure with a concave anterior margin as illustrated in Figure 6A-B, Cx/II and -III pointed and somewhat projecting; gnathosomal bay 84 long; glandularia Cxgl-4 located near Cx-III/IV suture line; projections associated with insertions of fourth legs relatively broad, a pair of glandularia located medial to these projections. Genital field with several acetabula present on each side, gonopore terminal, 47 long; a medially located group of small setae extending anteriorly from gonopore (Figure 6C). Ejaculatory complex (Figure 6D) 94 long.

Palp: dorsal length/height (ratio in parentheses): P1, 16/11 (1.43); P2, 33/33 (1.0); P3, 26/22 (1.16); P4, 39/19 (2.08); P5, 19/9 (2.0); P2 with ventrodistal extension, none of the setae on P-2 greatly lengthened or expanded, P4 with a median ridge (Figure 6G-H). Gnathosoma (Figure 6F) ventrally 60 long (without apodemes), 81 with apodemes, anterodorsal part of gnathosoma blunt and only slightly projecting; chelicera 97 long. Dorsal length of I-leg-2-6: 41, 34, 41, 38, 39; dorsal length of IV-leg-2-6 (Figure 6I): 80, 33, 38, 39, 53; greatest height of IV-leg-2, 45.

Distribution — Known from South Island only (Smit 2017, Smit and Pešić 2020).

Planaturus simpsonensis n. sp.

Zoobank: 174B8C78-258B-45C7-95C7-DFC9BE3E7C70

Figures 7, 14F

Material examined — Holotype male, South Island, Simpson Creek, interstitial, crossing Haupiri Road, Moana, 42°32.852′ S, 171°39.594′ E, alt. 259 m asl., 15 Febr. 2023, dissected and slide mounted (NMNZ).

Diagnosis — Hood rectangular with a straight anterior margin; gnathosoma with a distinct dorsodistal protuberance.

Description. *Male* — Idiosoma dorsally (till tip of hood) 380 long and 253 wide, ventrally 372 long. Eye pigment visible. Dorsal shield typical for the genus *Planaturus*, smooth and with small pores (Figure 14F), 270 long and 191 wide; unpaired anteromedial plate 125 long and 147 wide; unpaired posteromedial plate 145 long and 134 wide; anterolateral platelet 159 long, posterolateral platelet 88 long. Anterodorsal part of ventral shield forming a sub-rectangular hood-like structure with a straight anterior margin (Figure 7A), Cx/II and -III pointed and somewhat projecting; gnathosomal bay 75 long; glandularia Cxgl-4 located near Cx-III/IV suture line; projections associated with insertions of fourth legs relatively broad, a pair of glandularia located medial to these projections. Genital field with several acetabula present on each side, gonopore terminal, 47 long; a medially located group of small setae extending anteriorly from gonopore (Figure 7B). Ejaculatory complex (Figure 7C) 91 long.

Palp: dorsal length/height (ratio in parentheses): P1, 16/12 (1.34); P2, 36/35 (1.02); P3, 27/22 (1.22); P4, 41/22 (1.85); P5, 17/8 (2.2); P2 with ventrodistal extension, none of the setae

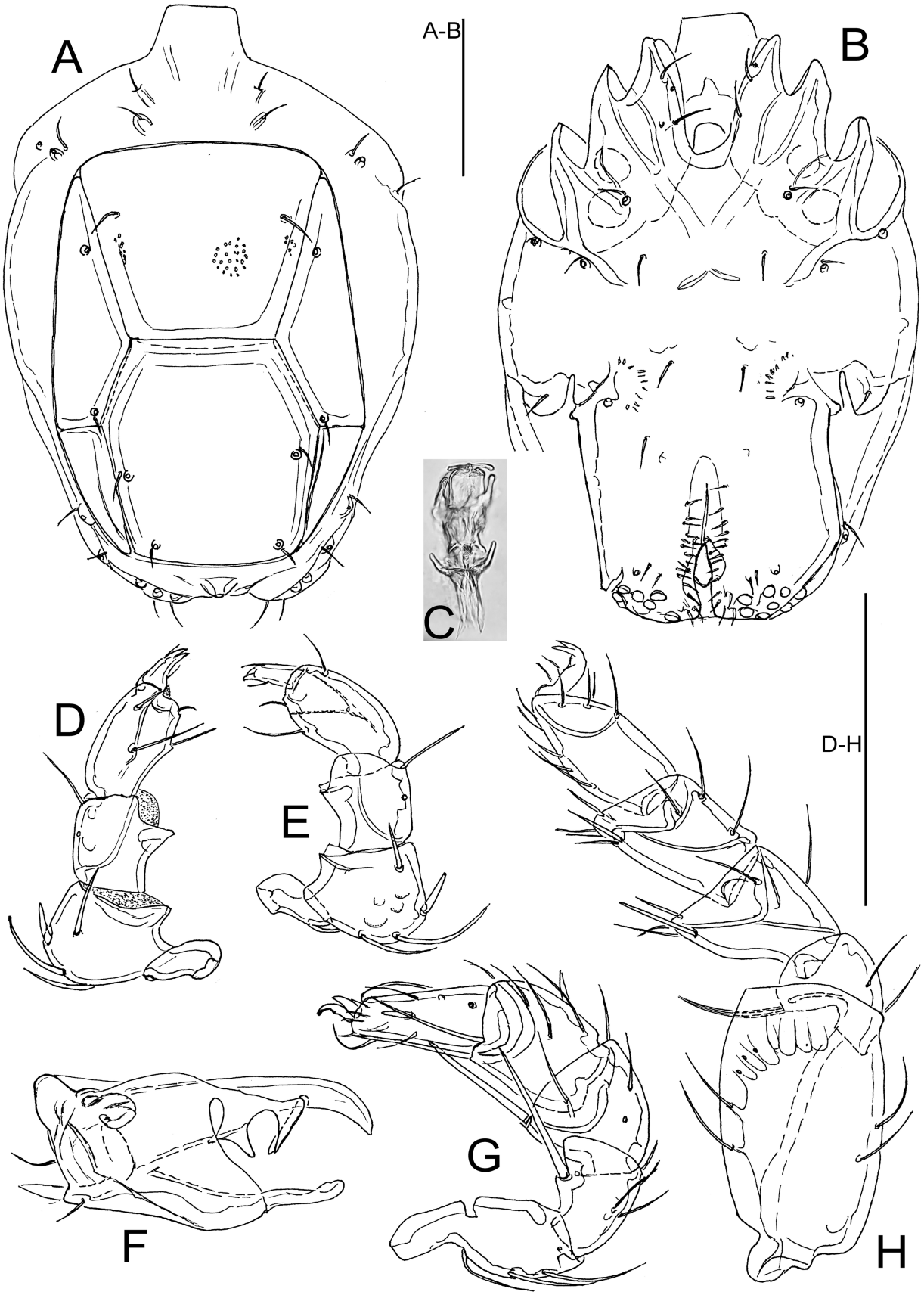

Figure 7 *Planaturus simpsonensis* **n. sp.**, male, Simpson Creek. A – idiosoma, dorsal view; B idiosoma, ventral view; C – photograph of ejaculatory complex; D-E – palp; F – gnathosoma; G – I-leg-2-6; H – IV-leg-2-6. Scale bars = 100 µm.

on P-2 greatly lengthened or thickened, P4 with a median ridge (Figure 7D-E). Gnathosoma ventrally 63 long (without apodemes), 86 with apodemes, dorsodistal part of gnathosoma with a pronounced protuberance (Figure 7F); chelicera 109 long. Dorsal length of I-leg-2-6 (Figure 7G): 42, 34, 42, 42, 46; dorsal length of IV-leg-2-6 (Figure 7H): 84, 39, 39, 36, 51; greatest height of IV-leg-2, 50.

Female — Unknown.

Etymology — Named after the type locality.

Remarks — This is the sixth known species of the genus after *P. setipalpis* Cook, 1983, *P. lundbladi* Cook, 1983, *P. rugosus* Cook, 1991, *P. pileatus* Smit, 2017 and *P. serratus* Smit, 2017. Due to the gnathosoma with a distinct dorsodistal protuberance, the new species resembles *P. lundbladi*, a species known from North Island only (Cook 1983). In comparison with the new species, *P. lundbladi* is larger, ventrally 775-851µm long and with a broader hood with a slightly concave anterior margin (see Cook 1983 fig. 249).

Distribution — Known only from the *locus typicus* on South Island.

Genus *Taintaturus* Cook, 1983

Diagnosis — Smit 2020, p. 411.

A genus with 14 species known from New Zealand only (Smit 2017).

Taintaturus abditus Cook, 1983

New records — South Island. 0/1/0, The Brook, Nelson, 41°18.973′ S, 173°17.485′ E, alt. 186 m asl., 13 Dec. 2022. 2/0/0, Cole Creek N of Haast, interstitial, 43°44.690′ S, 169°10.552′ E, alt. 0 m asl., 27 Dec. 2022. 1/0/0, Cole Creek N of Haast, 43°44.690′ S, 169°10.552′ E, alt. 0 m asl., 27 Dec. 2022. 1/0/0, Deep Creek, Moana, 42°33.073′ S, 171°36.007′ E, alt. 235 m asl., 21 Dec. 2022. 1/0/0, Deep Creek, interstitial, Moana, 42°33.073′ S, 171°36.007′ E, alt. 235 m asl., 21 Dec. 2022. 1/0/0, Dead Horse Creek, interstitial, Mt Richmond Forest Park, 41°22.269′ S, 173°36.614′ E, alt. 178 m asl., 11 Dec. 2022. 0/1/0, Ten Mile Creek, Paparoa NP, N of Greymouth, 42°20.370′ S, 171°16.350′ E, alt. 16 m asl., 22 Dec. 2022.

Distribution — Known from South Island only (Cook 1983, Smit & Pešić 2020).

Taintaturus accidens Cook, 1983

Figures 8

New records — South Island. 1/0/0, Janice Creek crossing Haupiri Road, Moana, South Island, 42°34.443′ S, 171°42.731′ E, alt. 212 m asl., 15 Febr. 2023. 6/1/0, Janice Creek crossing Haupiri Road, interstitial, Moana, South Island, 42°34.443′ S, 171°42.731′ E, alt. 212 m asl., 15 Febr. 2023, one female dissected and slide mounted (RMNH).

Remarks — Thus far, the female was unknown, and therefore a description is given below.

Description. *Female* — Idiosoma dorsally 434 long and 272 wide, ventrally 440 long. Integumental and eye pigment present; ornamentation of dorsal sclerites consisting of reticulations. Dorsal shield typical for the genus *Taintaturus*, 313 long and 231 wide; unpaired anteromedial plate 147 long and 165 wide; unpaired posteromedial plate longer than anteromedial plate, 166 long and 136 wide; anterolateral platelet 181 long, posterolateral platelet 113 long. Anterodorsal part of ventral shield forming a hood-like structure as illustrated in Figure 8A, and -E; Cx-I bluntly projecting, Cx-II and -III pointed; gnathosomal bay 83 long; Cxgl-4 located near Cx-III/IV suture line; projections associated with insertions of fourth legs somewhat truncated, a pair of glandularia lying somewhat medial to these projections. Genital field with few acetabula on each side, gonopore terminal, 69 long and 36 wide.

Palp: dorsal length/height (ratio in parentheses): P1, 18/11 (1.63); P2, 38/33 (1.15); P3, 28/22 (1.28); P4, 47/20 (2.41); P5: 20/8 (2.54); P3 ventral projection relatively long and pointed, P4 with a median ridge (Figure 8F). Gnathosoma ventrally 51 long (without apodemes), 71 with apodemes; chelicera 108 long. Dorsal length of I-leg-3-6: 29, 48, 50, 46; dorsal length of IV-leg-2-6 (Figure 8G): 98, 34, 41, 42, 56; height of IV-leg-2, 41.

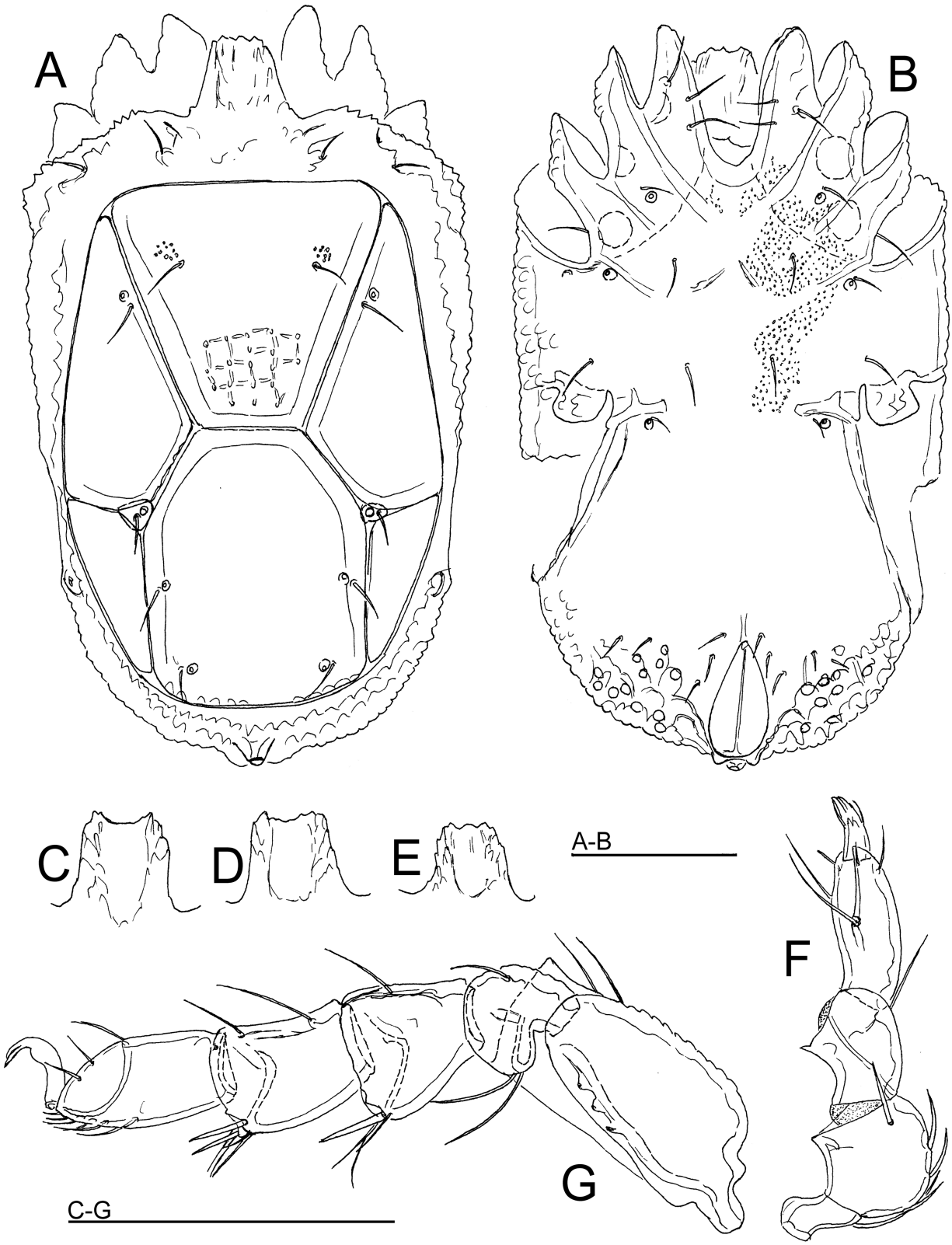

Figure 8 *Taintaturus accidens* Cook, 1983, Janice Creek (A-B, E-G, female; C-D, male). A – idiosoma, dorsal view; B – idiosoma, ventral view; C-E – hood-like structure on anterodorsal part of ventral shield; F – palp; G – IV-leg-2-6. Scale bars = 100 µm.

Distribution — Previously known from one locality on South Island (Cook 1983).

Taintaturus hopkinsi Cook, 1983

New record — South Island. 1/0/0, The Brook near Middle Dam, interstitial, Nelson, 41°18.954′ S, 173°17.508′ E, alt. 131 m asl., 13 Dec. 2022, dissected and slide mounted (RMNH).

Distribution — Previously known from North and South Island (Cook 1983, Smit & Pešić 2020).

Taintaturus longipileatus Smit, 2017

New records — South Island. 0/3/0, Halpins Creek, Arthur's Pass NP, 42°58.428′ S, 171°34.789′ E, alt. 698 m asl., 24 Dec. 2022. 1/0/0, Kellys Creek N of Arthur's Pass NP, 42°48.045′ S, 172°34.219′ E, alt. 359 m asl., 25 Dec. 2022. 2/4/0, Bealey River at end of walking track, Arthur's Pass NP, 42°54.626′ S, 171°33.034′ E, alt. 930 m asl., 25 Dec. 2022. 1/0/0, small tributary of Bealey River, Arthur's Pass NP, 42°54.897′ S, 171°33.216′ E, alt. 880 m asl., 25 Dec. 2022. 0/4/0, Twin Creek, Arthur's Pass NP, 42°54.715′ S, 171°33.541′ E, alt. 875 m asl., 23 Dec. 2022. 0/1/0, Peg Leg Creek, interstitial, Arthur's Pass NP, 42°53.704′ S, 171°33.575′ E, alt. 826 m asl., 24 Dec. 2022. 0/1/0, Peg Leg Creek, Arthur's Pass NP, 42°53.704′ S, 171°33.575′ E, alt. 826 m asl., 23 Dec. 2022. 2/1/0, Canyon Creek, Ahuri Valley, 44°14.097′ S, 169°35.787′ E, alt. 739 m asl., 10 Febr. 2023. 0/1/0, Unnamed stream crossing Hakatere Potts Road, W of Mt Somers, 43°32.195′ S, 170°53.769′ E, alt. 585 m asl., 22 Jan. 2023. 1/0/0, Ten Mile Creek, Paparoa NP, N of Greymouth, 42°20.370′ S, 171°16.350′ E, alt. 16 m asl., 22 Dec. 2022. 1/6/0, Rough Creek crossing Lewis Pass Road, 42°22.747′ S, 172°16.708′ E, alt. 529 m asl., 20 Jan. 2023. 1/0/0, Lewis River at Deer Valley Campsite, interstitial, 42°24.278′ S, 172°23.814′ E, alt. 806 m asl., 20 Jan. 2023.

Distribution — Known from South and North Island (Smit 2017; Smit and Pešić 2020).

Taintaturus projectus Cook, 1983

New record — South Island. 0/1/0, Pakawau Creek along Pakawau Bush Road, interstitial, 40°34.774′ S, 172°39.201′ E, alt. 29 m asl., 19 Febr. 2023.

Distribution — Known from South Island only (Cook 1983; Smit 2017).

Genus *Tryssaturus* Hopkins, 1967

Diagnosis — Smit 2020, p. 413.

A genus with one species known from New Zealand. A second species is described below.

Remarks — Diagnosing genus *Tryssaturus,* Cook (1983) and later Smit (2020) stated that dorsal sclerites have a reticulate pattern, a character that is missing in the new species described in this paper. Moreover, the abovementioned authors stated that the female IV-leg-3 is with a distal extension with a short peg-like seta. In the female specimen collected in Caution Creek, neither the distal extension nor the peg-like seta on IV-leg-2 are present, while the distal extension on IV-leg-2 is weakly developed. These differences induced us to give a revised diagnosis of this genus.

Revised diagnosis (after Smit 2020; modified) — Dorsum with an unpaired anteromedial and a posteromedial plate with two pairs of glandularia. Two pairs of laterodorsal platelets, the anterolateral with one pair of glandularia, the posterolateral without glandularia. A pair of free glandularia present between the laterodorsal platelets and the posteromedial plate. Male without a distinct cauda. Coxae confined to anterior half of idiosoma. Posterior margins of Cx-IV placed at right angles to midline; glandularia of Cxgl-4 well distanced from suture line Cx-III/IV. P2 with a few ventral denticles, P4 with mediodistal thickened seta. Legs not laterally compressed, without swimming setae. Male IV-leg modified: IV-leg-1 relatively long with numerous setae, IV-leg-2 with a distal extension, IV-leg with a large distal extension with a peg-like seta.

Tryssaturus longwood n. sp.

Zoobank: 9732C558-D149-44E1-94CC-409D89ECFE1B

Figures 9, 10, 14I

Material examined — Holotype male, small mossy stream crossing road to Bald Hill, Longwood Forest, South Island, 46°10.873′ S, 167°49.523′ E, alt. 671 m asl., 31 Jan. 2023, dissected and slide mounted (NMNZ). Paratype: 1/0/0, same data as the holotype; 2/0/0, unnamed stream crossing road to Bald Hill, South Island, 46°11.355′ S, 167°49.630′ E, alt. 561 m asl., 31 Jan. 2023 (RMNH); 0/1/0, Caution Creek, Fox Glacier Track, South Island, 43°29.584′ S, 170°01.690′ E, alt. 277 m asl., 12 Febr. 2023, dissected and slide mounted (RMNH).

Diagnosis — Unpaired anteromedial dorsal plate distinctly wider than long; male dorsal shield without reticulate ornamentation; IV-leg-2 with a distal projection and 3-4 thickened setae on medial surface.

Description— Male — Idiosoma dorsally 534 long and 377 wide, ventrally 553 long. Eye pigment present. Dorsal shield (Figure 9A) typical for the genus *Tryssaturus*, 441 long and 359 wide, without reticulate ornamentation; unpaired anteromedial plate wider than long, 191 long, and 256 wide; unpaired posteromedial plate longer than anterodorsal plate, 250 long and 275 wide; anterolateral platelet 178 long, posterolateral platelet 148 long. Coxae confined to anterior half of idiosoma; Cx-I projecting, with tips more or less rounded, gnathosomal bay 120 long; glandularia Cxgl-4 well distanced from suture line Cx-III/IV, projections associated with insertions of fourth legs bluntly pointed and with a few long setae on lateral margins; posterior margins of Cx-IV placed at right angles to midline. Genital field with numerous acetabula in two or three rows along posterior margin, gonopore oval and subterminal, 44 long and 38 wide.

Palp as illustrated in Figure 9C; dorsal length/height (in parentheses length/height ratio) of palpal segments: P1, 31/14 (2.2); P2, 62/37 (1.7); P3, 34/28 (1.2); P4, 77/27 (2.8); P5, 38/13 (3.0); P4 without medial ridge, ventral setae close to each other in lateral to medial direction. Gnathosoma ventrally 79 long (without apodemes), 103 with apodemes; chelicera 123 long. Dorsal length of I-leg: 52, 56, 64, 100, 94, 89; maximum height of I-leg-6, 30; dorsal length of IV-leg: 172, 100, 134, 94, 100, 97; IV-leg-2 with a distal projection and 3-4 thickened setae on medial surface, IV-leg-3 with a large distal projection with a peg-like seta (Figure 9D-E) .

Female — Not know with certainty. A single female from Caution Creek resembles the male in unpaired anterodorsal plate distinctly longer than wide, but differs in surface ornamentation of dorsal sclerites (Figure 14K). Until the male and female are taken from the same site, our assignment is tentative. Here we provide a description of the female specimen from Caution Creek. Idiosoma dorsally 467 long and 350 wide, ventrally 533 long. Dorsal shield as photographed in Figure 14I, 381 long and 341 wide; unpaired anteromedial plate 156 long and 234 wide; unpaired posteromedial plate 222 long and 244 wide; anterolateral platelet 165 long, posterolateral platelet 150 long. Gnathosomal bay 119 long. Gonopore subterminal, elliptical in shape, 78 long and 38 wide.

Palp as illustrated in Figure 10C; dorsal length/height (in parentheses length/height ratio) of palpal segments: P1, 33/12 (2.8); P2, 58/37 (1.58); P3, 31/27 (1.14); P4, 75/27 (2.75); P5, 34/13 (2.75). Dorsal length of I-leg: 36, 48, 54, 77, 81, 84; dorsal length of IV-leg: 118, 73, 75, 83, 92, 95; IV-leg-2 distally slightly projecting, IV-leg-3 without a distal extension and a peg-like seta (Figure 10D).

Etymology — Named after its occurrence in the Longwood Forest. The name is a noun in apposition.

Remarks — This is the second known species of the genus after *Tryssaturus spinipes* Hopkins, 1967. The latter species was orginally described from a stream in Tararua Mountains of southern North Island (Hopkins 1967) and later on reported from several localities in North and South Island. From the new species, *T. spinipes* can be easily distinguished in the morphology of the dorsal shield with the anteromedial plate distinctly longer than wide, and with a characteristic reticulate ornamentation (as shown in Figure 14H). Further, the male of *T.*

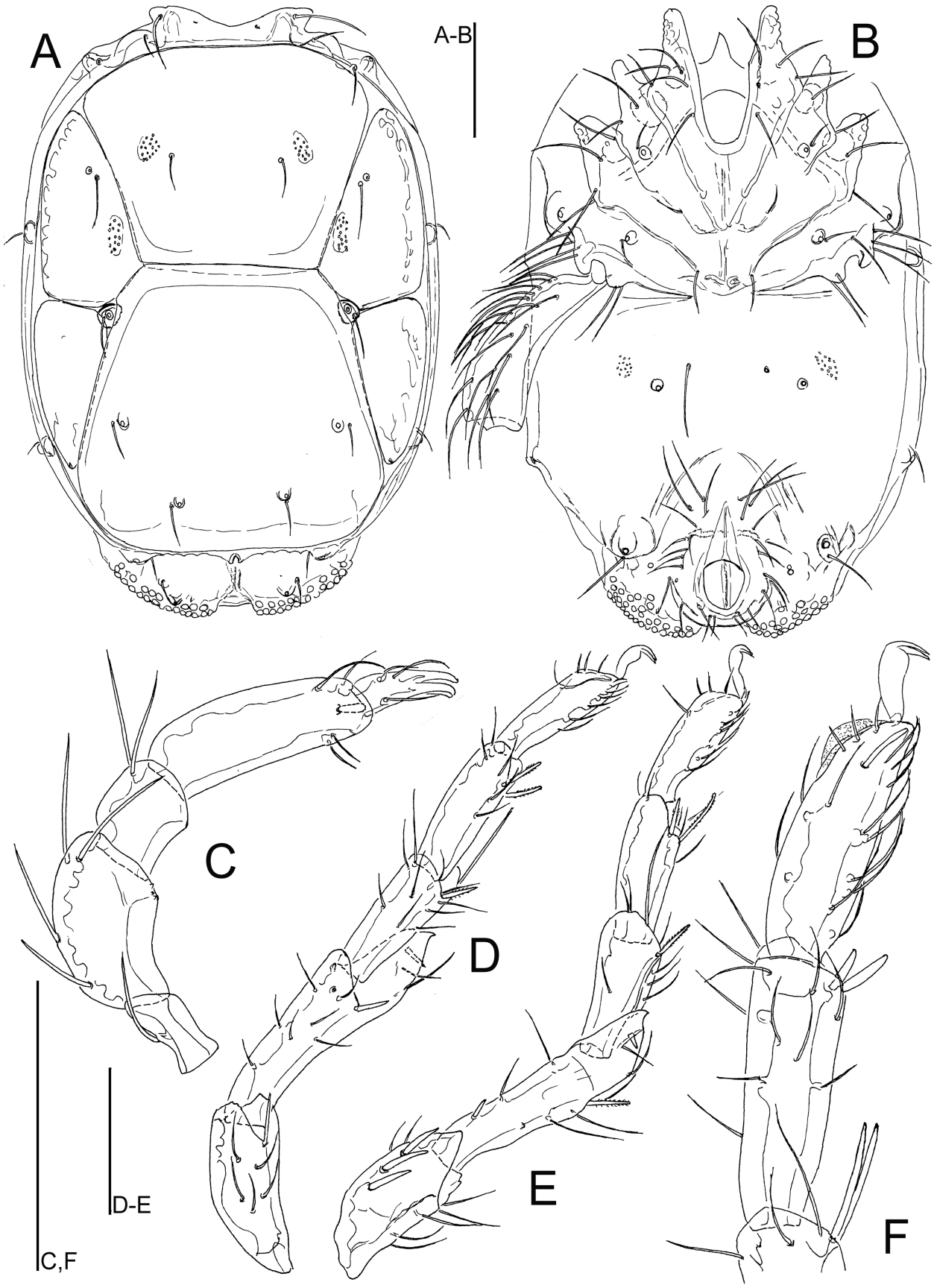

Figure 9 *Tryssaturus longwood* **n. sp.**, male, stream crossing road to Bald Hill. A – idiosoma, dorsal view; B – idiosoma, ventral view; C – palp; D-E – IV-leg-2-6; F – I-leg-5 and -6. Scale bars = 100 µm.

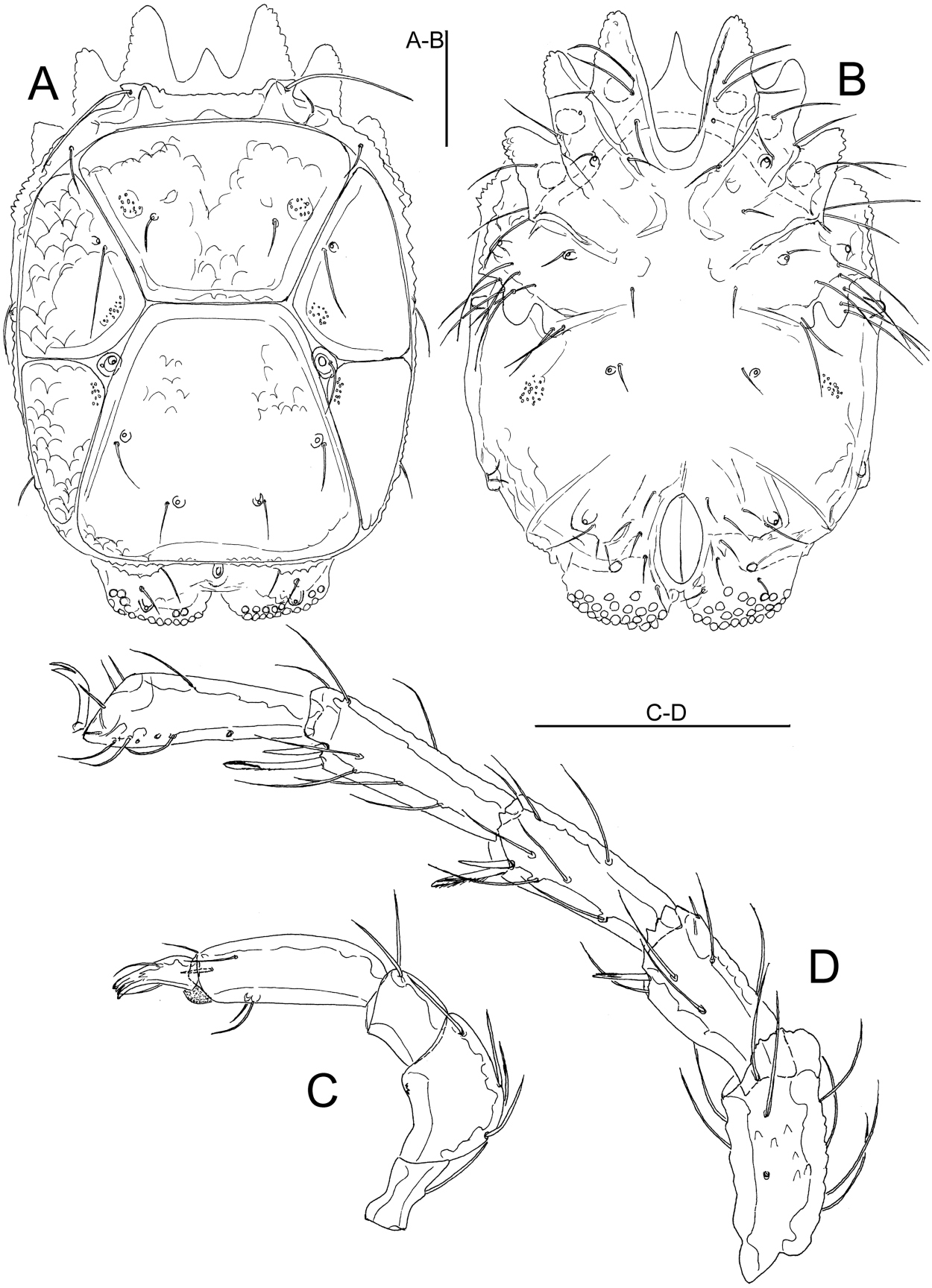

Figure 10 *Tryssaturus longwood* **n. sp.**, female, Caution Creek. A – idiosoma, dorsal view; B – idiosoma, ventral view; C – palp; D – IV-leg-2-6. Scale bars = 100 µm.

spinipes, has a group of thickened setae (around 12 setae as illustrated on Figure 317 in Cook 1983) on medial surface of IV-leg-2 which does not exist in the new species, which has 3-4 strong setae on medial side of the latter segment

Distribution — Known from two localities from South Island.

Genus *Zelandalbia* Imamura, 1978

Diagnosis — Smit 2020, p. 416.

A small genus with four species known from New Zealand. A fifth species is described below.

Zelandalbia cf. *hopkinsi* Imamura, 1978

Figure 11

New record — South Island. 1/1/0, Simpson Creek, interstitial, crossing Haupiri Road, Moana, 42°32.852′ S, 171°39.594′ E, alt. 259 m asl., 15 Febr. 2023, dissected and slide mounted (RMNH). 1/0/0, unnamed stream crossing Haupiri Road, Moana, 42°34.273′ S, 171°45.735′ E, alt. 187 m asl., 14 Febr. 2023.

Remarks — *Zelandalbia hopkinsi* was originally described from a single female collected from cave water of Upper Selenite Cave in North Island (Imamura 1978). In regard to the comparatively long and slender palpal segments and the genital field distinctly set off from the reminder of the ventral shield, the examined female from Simpson Creek matches the description of *Z. hopkinsi*. In the original description, Imamura (1978) did not illustrate the pair of rounded and posterolaterally directed projections associated with the insertion of the fourth leg as well as the pair of long curved ridges that extend posterolaterally on each side from the region of IV-leg insertion. It's possible that this part of the ventral shield was hidden by legs and therefore not illustrated. Therefore, our assignment of the specimens from South Island is tentative, and should be verified by checking the holotype and/or collecting new specimens from the *locus typicus*. No further records of *Z. hopkinsi* were published since the original description. Thus far, the male was unknown, and therefore a description is given below.

Description. *Male* — Idiosoma dorsally 297 long and 231 wide, ventrally 428 long; integumental and eye pigment reduced. Dorsal shield typical for the genus *Zelandalbia*, 297 long and 231 wide; unpaired anteromedial plate 131 long and 169 wide; unpaired posteromedial plate longer than anteromedial plate, 163 long and 156 wide; anterolateral platelets 159 long, posterolateral platelets 75 long; excretory pore posterior to posterodorsal plate. Anterodistal rim of ventral shield relatively broad with a slightly convex anterior margin (Figure 11A); tips of first coxae long and sharply pointed, these extending far beyond the anterior margin of ventral shield; gnathosomal bay 138 long; glandularia Cxgl-4 slightly distanced from Cx-III/IV suture line; projections associated with insertions of fourth leg rounded and directed posterolaterally; a pair of long curved ridges on each side extending posterolaterally from the region of insertion of IV-leg; two pairs of glandularia on their respective sides located about halfway and at posterior end of these ridges, respectively. Genital field with several genital acetabula on each side; gonopore terminal, 69 long.

Palp: length/height (in parentheses length/height ratio) of palpal segments: P1, 45/10 (4.44); P2, 68/27 (2.55); P3, 115/26 (4.45); P4, 112/22 (5.17); P5, 30/11 (2.6); palpal segments comparatively long and slender (Figure 11F), P2 distoventrally slightly concave; ventral setae of P-4 located anteroventrally; gnathosoma (Figure 11C) ventrally 89 long (without apodemes), 128 with apodemes; chelicera 114 long; all leg segments high and laterally compressed (Figures 11G-H); dorsal lengths of IV-leg: 42, 44, 45, 44, 48, 59.

Distribution — Previously known from one locality on North Island, and reported here for the first time from South Island.

Zelandalbia thibaulti n. sp.

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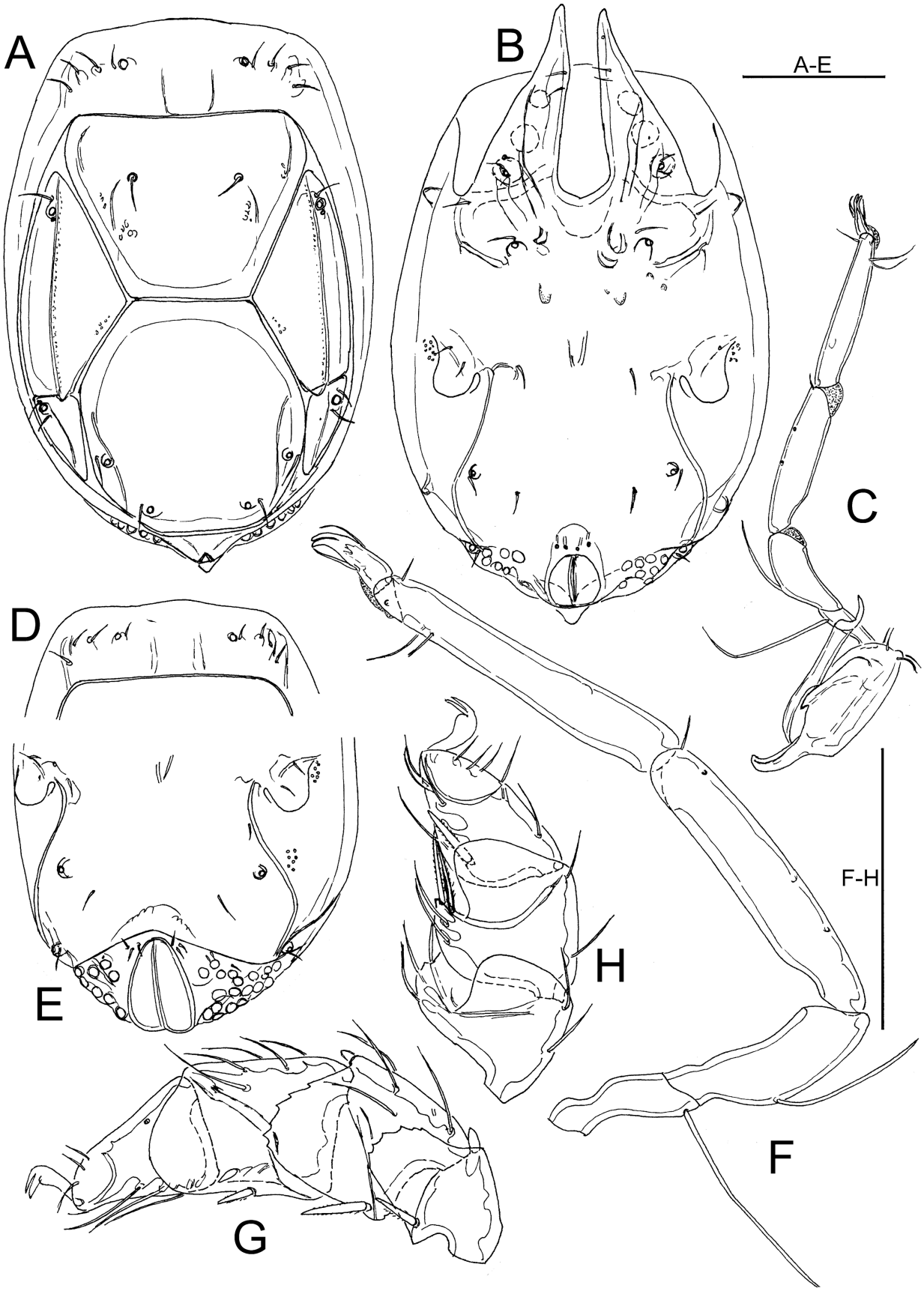

Figure 11 *Zelandalbia* cf. *hopkinsi* (A-C male, D-H female), Simpson Creek. A – idiosoma, dorsal view; B – idiosoma, ventral view; C – gnathosoma and palp; D – anterodorsal part of ventral shield; E – posterior part of ventral shield; F – palp; G – I-leg-3-6; H – IV-leg-4-6. Scale bars = 100 µm.

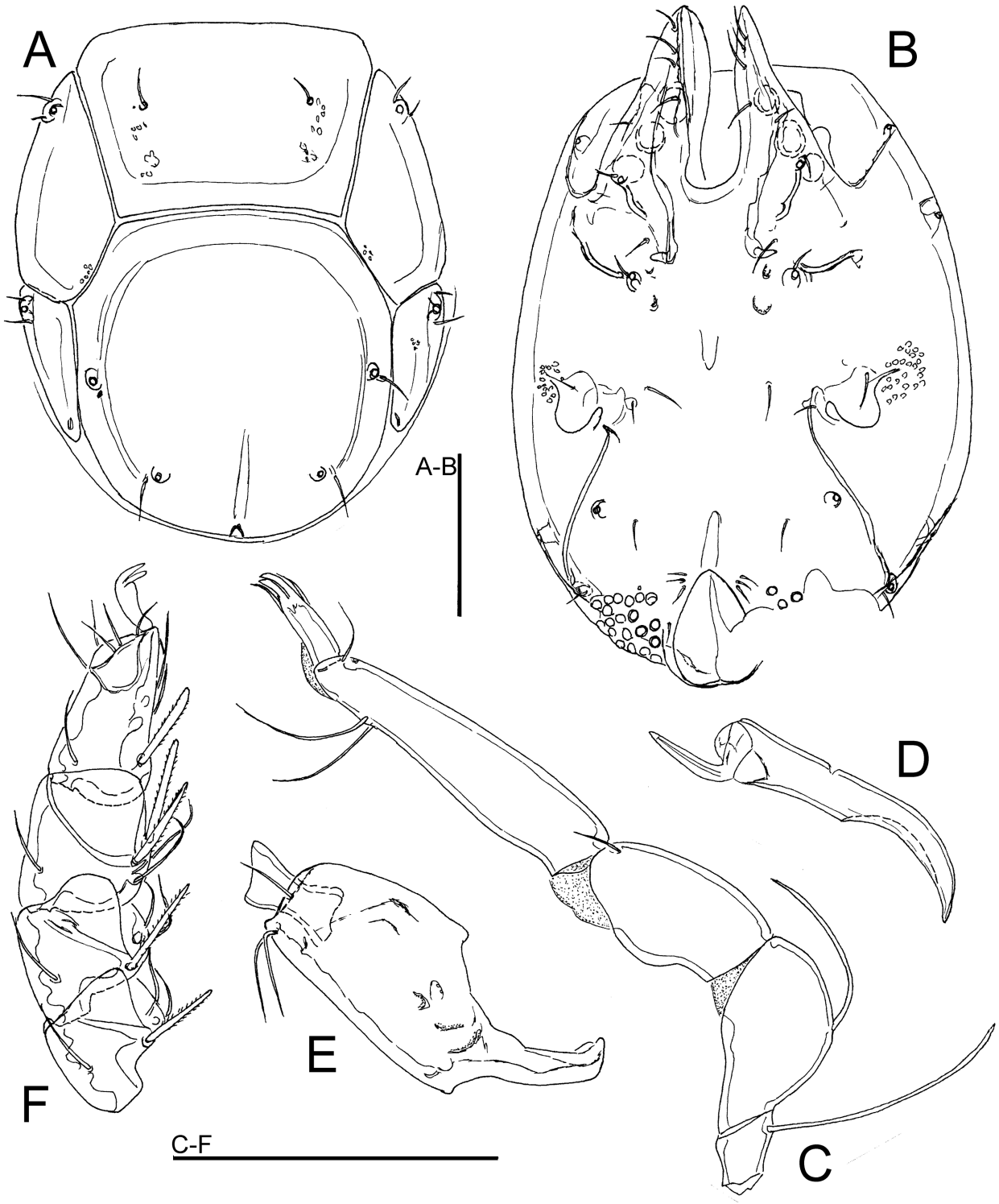

Figure 12 *Zelandalbia thibaulti* **n. sp.**, female, Simpson Creek. A – dorsal shield; B – idiosoma, ventral view (partly damaged); C – palp; D – chelicera; E – gnathosoma; F – IV-leg-3-6. Scale bars = 100 µm.

Figures 12-13

Material examined — Holotype female, Simpson Creek, interstitial, crossing Haupiri Road, Moana, 42°32.852′ S, 171°39.594′ E, alt. 259 m asl., 15 Febr. 2023, dissected and slide

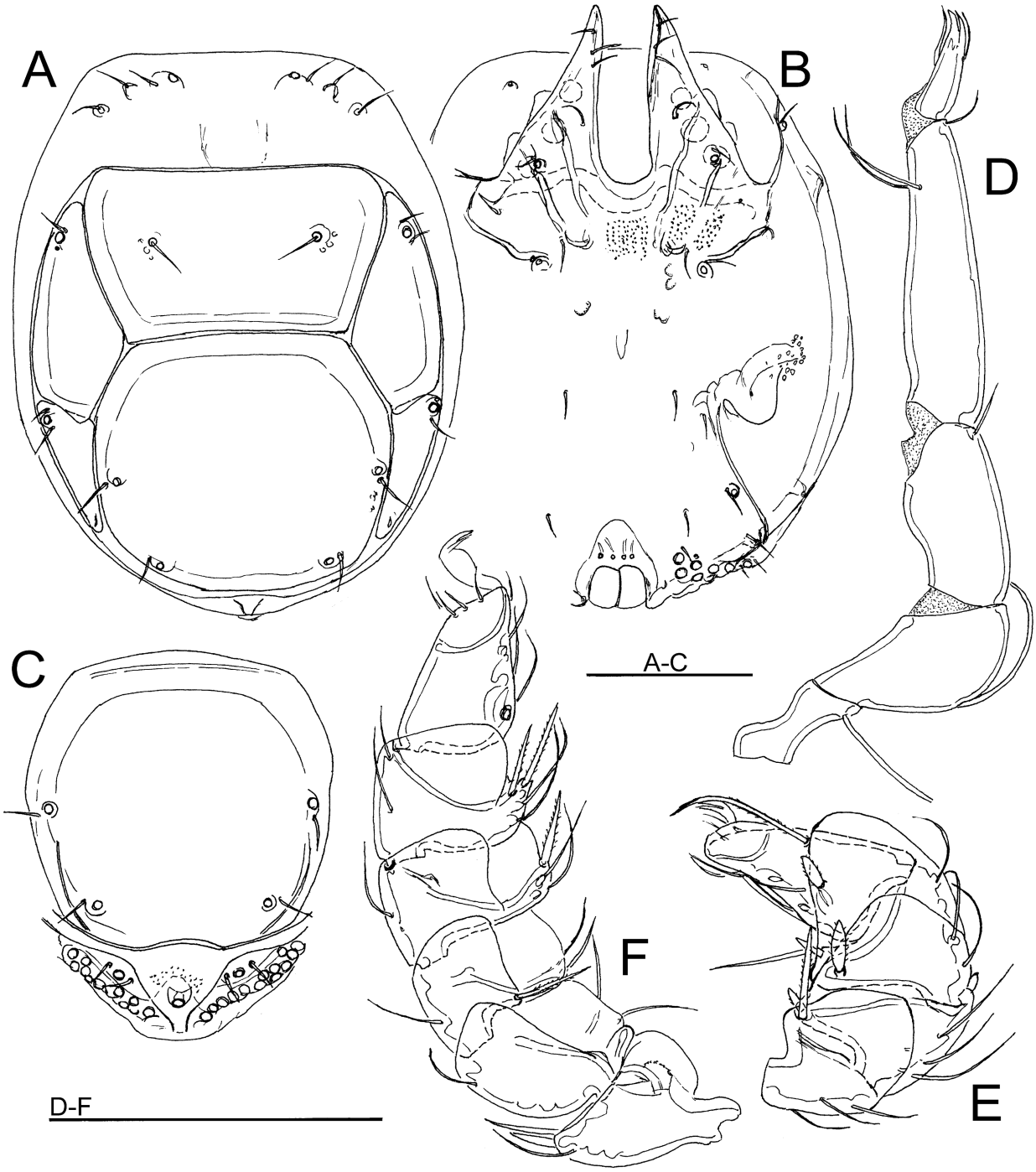

Figure 13 *Zelandalbia thibaulti* **n. sp.**, male, Simpson Creek. A – idiosoma, dorsal view; B – idiosoma, ventral view (partial view); C – posteromedial plate and excretory pore; D – palp; E – I-leg-3-6; F – IV-leg. Scale bars = 100 µm.

mounted (NMNZ). Paratype: one male, same data as the holotype, dissected and slide mounted (RMNH).

Diagnosis — Anterodorsal rim of ventral shield relatively wide and nearly straight at anterior margin; anteromedial plate longer than the posteromedial plate; palp segments moderately long and less slender (length/height ratio: P3, 1.7-1.9; P4, 4.0-4.1), P2 distoventrally convexly protruding.

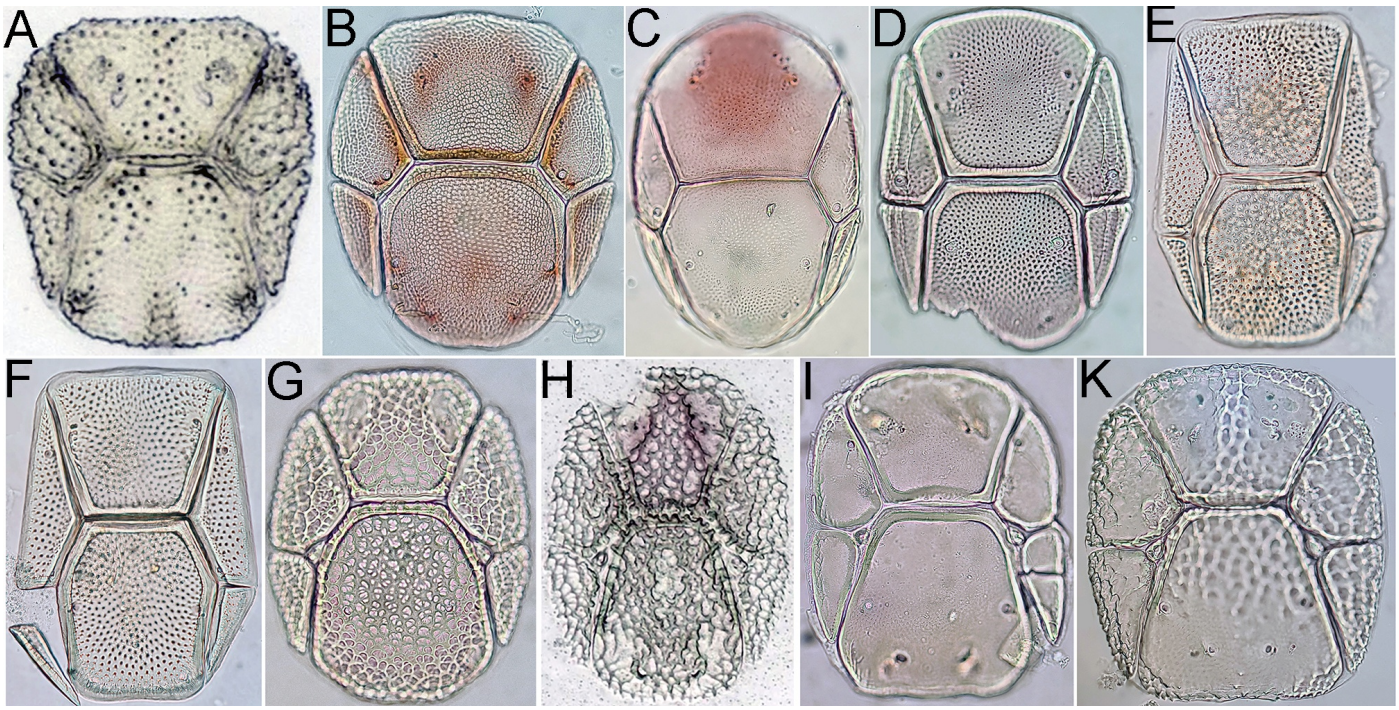

Figure 14 Photographs of dorsal shield. A – *Evidaturus scopticus* Cook, 1983, male holotype, stream on Wainui Rd (from: <https://collections.tepapa.govt.nz/object/125039>); B –*Kritaturus sornus* Cook, 1983, female, Longbeach Creek; C – *K. jacundus* Cook, 1983, female, Shepards Creek; D – *K. longipalpis* **n. sp.**, male holotype, Upper course Waikawa River; E – *Planaturus pileatus* Smit, 2017, male, Shag River; F – *Planaturus simpsonensis* **n. sp.**, male holotype, Simpson Creek, G – *Paratryssaturus zodelus* Cook, 1983, female, Six Mile Creek; H – *Tryssaturus spinipes* Hopkins, 1967, male holotype, Akatarawa River (from: <https://collections.tepapa.govt.nz/object/125063>); I – *Tryssaturus longwood* **n. sp.**, male, holotype stream crossing road to Bald Hill; K – *Tryssaturus longwood* **n. sp.**, female, Caution Creek.

Description — *Female* — Idiosoma dorsally 375 long, ventrally 413 long and 283 wide; eye pigment reduced. Dorsal shield typical for the genus *Zelandalbia*, 314 long and 263 wide; surface of sclerites smooth; unpaired anteromedial plate 117 long and 181 wide; unpaired posteromedial plate longer than anteromedial plate, 200 long and 194 wide, with two pairs of glandularia, arranged as illustrated in Figure 12A, and excretory pore fused at the posterior margin of the plate; anterolateral platelets 143 long, posterolateral platelets 50 long. Anterodorsal rim of ventral shield relatively broad with a nearly straight margin (as illustrated in male, Figure 13A); tips of first coxae long and sharply pointed, these extending far beyond the anterior margin of ventral shield; gnathosomal bay 111 long; Cxgl-4 located near Cx-III/IV suture lines; projections associated with insertions of fourth leg rounded and directed posterolaterally; a pair of long curved ridges on each side extending posterolaterally from region of insertion of IV-leg; two pairs of glandularia close together on their respective sides located about halfway and at posterior end of these ridges, respectively. Genital field with several genital acetabula on each side; gonopore terminal, 70 long and approximately 53 wide at posterior end.

Palp: length/height (in parentheses length/height ratio): P1, 32/11 (2.94); P2, 53/34 (1.54); P3, 58/34 (1.68); P4, 100/25 (4.05); P5, 35/9 (3.7); P2 distoventrally convexly protruding; ventral setae of P4 located anteroventrally (Figure 12C); gnathosoma (Figure 12E) ventrally 77 long (without apodemes), 112 with apodemes; chelicera (Figure 12D) 108 long; all leg segments high and laterally compressed (Figure 4F); dorsal lengths of IV-leg-3-6: 34, 37, 42, 56.

Male — In most characters similar to female, except genital field (Figure 13B) and excretory pore not fused with posterior margin of posteromedial plate (Figure 13E); idiosoma dorsally 350 long and 270 wide, ventrally 373 long; dorsal shield 263 long and 247 wide; anteromedial

plate 102 long and 180 wide; posteromedial plate 170 long and 178 wide; capitular bay 113 long; gonopore terminal, 28 long and approximately 38 in width at posterior end; ejaculatory complex 114 long.

Palp as in female (Figure 13D): length/height (in parentheses length/height ratio): P1, 28/9 (2.99); P2, 53/34 (1.58); P3, 55/29 (1.86); P4, 95/24 (3.99); P5, 34/11 (3.16); gnathosoma ventrally 70 long (without apodemes), 105 with apodemes; chelicera 106 long; dorsal lengths of IV-leg: 50, 45, 33, 35, 39, 58.

Etymology — The new species is named after Dr. Thibault Datry (IRSTEA, Lyon) in recognition of his work on the ecology of interstitial fauna of New Zealand, particularly of the Selwyn River from where he collected a number of the water mite species described by the authors of this paper.

Remarks — This is the fourth known species of the genus *Zelandalbia* after *Z. imamurai* Cook, 1983, *Z. hopkinsi* (Imamura, 1978), *Z. acuta* Cook 1991 and *Z. longipalpis* Pešić & Smit, 2010. The new species most closely resembles *Z. imamurai* Cook, 1983, a species known from a single female collected from Cole Creek in South Island (Cook 1983). From the new species, the latter species differs in much narrower anterior rim of ventral shield (see Cook 1983, fig. 500), tips of Cx-I tips not extending beyond the anterior margin of ventral shield, a comparatively smaller gonopore and ventral margin of P2 slightly concave (see Cook 1983, fig. 509).

Distribution — Known only from the *locus typicus* on South Island.

Acknowledgements

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ORCID

Harry Smit https://orcid.org/0000-0002-0376-6808
Vladimir Pešić https://orcid.org/0000-0002-9724-345X

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