

***Glaciella*, a new genus of freshwater Canthocamptidae (Copepoda, Harpacticoida) from a glacier in Nepal, Himalayas ***

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Abstract

A new genus and new species of Canthocamptidae: *Glaciella yalensis* (Copepoda: Harpacticoida) from the surface of Yale Glacier, Nepal is described. This new species was collected from cryconite-pit on the surface of the glacier and is closely related to genus *Maraenobiotus*, but easily distinguishable from its species in the following: 1) segments and setae on endopodites of legs 2-4 in the male differing shape, 2) exopodites of male legs 3-4 with modified setae, 3) caudal seta in female absent. Body color of this copepod is red in live specimens.

Introduction

On glaciers, the accumulation of organisms (e.g. blue-green algae) and wind-blown detritus can decrease the albedo of ice surfaces on a small scale (centimeters) and frequently induce surface melt pits. A series of samples collected from these cryconite pits north of Katmandu (Nepal) in August 1985 by Dr S. Kohshima, Tokyo Institute of Technology, was examined. The copepods collected from these small temporary pools on the surface of the Yala glacier near the Lantang valley at an altitude of 5100- 5700 meters are described and illustrated below.

Material and methods

Harpacticoid copepods were collected from a small cryconite pit about 3 cm in diameter using a pipet. The pit was mainly dominated by blue-green algae such as *Phloemidium*. Harpacticoids were fixed and preserved in 70% alcohol and/or 4% formalin solution. Specimens were examined using Olympus phase-contrast microscope and a JSM - T20 scanning electron microscope. Specimens for SEM were fixed in double steps of glutaraldehyde-osmium tetroxide (Kikuchi, 1984). Type specimens were deposited in the National Museum

of Natural History Smithsonian Institution, Washington, D. C.

Harpacticoida Sars, 1903
Canthocamptidae Brady, 1880
Glaciella, gen. n.

Diagnosis

Canthocamptidae. Body small, slender and red. Posterior margins of abdominal somites with minute spinules. Anal operculum rounded, without armature. Caudal ramus sexually dimorphic, long ovate in female and long triangular in male, lacking caudal seta in female. Antennule 7-segmented in female. Exopodite of antenna 1-segmented with 4 setae. Mandibular palp 1-segmented with 4 setae. Endopodite in leg 1 2-segmented, both without inner spine, but with one and two outer spines respectively. Exopodite of legs 2-4, 3-segmented in both sexes. Endopodite of legs 1-4, 2-segmented, except that of male leg 3 which is 3-segmented. Endopodites of legs 2 & 3 sexually dimorphic; endopodite of male leg 3 with a sigmoid barbed apophysis on second segment.

Type species. Glaciella yalensis sp. n.

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Etymology. The proposed scientific name, *Glaciella*, is derived from the Latin *glacies*, meaning ice.

Glaciella yalensis sp. n.

Figs 1–5

(Japanese name: Hyouga-sokomijinko)

Material examined. Type series from small cryoconite pit on surface of Yala glacier, Nepal, altitude 5100–5300 m, August 24, 1985 (leg. S. Kohshima). Holotype female dissected on slides (USNM 259572). Allotype, male, dissected on slides (USNM 259573). Paratypes, 49 females and males, in alcohol and on slides (USNM 259574). Remaining specimens retained in personal collection of the author.

Description

Female. Body (Figs 1 A, 1 B) elongate, slender, red. Length 0.83 mm (holotype) excluding antennule and caudal ramus (0.75–0.83 mm, N=4).

Rostrum absent. Eye not obscured. Nuchal organ absent. Cephalothorax with sensillae dorsally. Abdominal somites with several rows of minute spinules ventro-laterally. Anal operculum slightly rounded without ornamentation. Caudal ramus (Fig. 1 C) lacking caudal setae and armed with spinules on inner margin, 2 lateral setae and some spinules distal margins.

Antennule (Fig. 1 D). Seven-segmented; fourth segment with aesthetasc accompanied by juxtaposed seta. *Antenna* (Fig. 1 E): coxa bare; allobasis, one and half times as long as wide, with simple seta on sub-terminal end; exopodite 1-segmented and armed with 2 inner and 2 apical setae; endopodite furnished with 4 spines and 4 apical and lateral setae of which outermost is small and slim. *Mandible* (Fig. 1 F, 1 G): gnathobasis with 2 cuspidate teeth, 3 bifid spines and 1 bare seta; endopodite 1-segmented, with 4 setae. *Maxillule* (Fig. 1 G): arthrite of precoxa with 1 spine and 5 setae of which proximal one is spinulose. *Maxilla* (Fig. 1 H): syncoxa with 2 endites (proximal with 4 setae, distal with 3 setae); basis with stout spinulose claw accompanied by 2 setae at base; endopodite with 3 simple setae. *Maxilliped* (Fig. 1 I). Syncoxa with 1 plumose seta; basis with spinules on outer margin; endopodite with stout claw bearing plumose seta on proximal part.

Leg 1 (Fig. 2 A). Coxa with three rows of spinules on anterior surface; posterior face with row of small spinules on outer margin; basis armed with long spinules

on inner margin; exopodite 2-segmented, terminal segment with 2 apical setae and 3 outer spines; endopodite 2-segmented, terminal segment with 3 armature elements of which innermost seta is slim and plumose. Setal arrangement and ornamentation as in Fig. 2A. Legs 2–4 (Figs 2B, 2C, 2D): exopodites 3-segmented and endopodites 2-segmented; all terminal segments armed with slim, plumose seta on inner distal part; second segment of legs 2 and 3 without inner seta, setal formula as the following:

	Female	Exopodite	Endopodite
Leg 1		0.023	1.120
Leg 2		0.0.122	1.220
Leg 3		0.0.122	1.221
Leg 4		0.1.122	1.221
Male			
Leg 1		0.023	1.120
Leg 2		0.0.122	1.120
Leg 3		0.0.122	1.010
Leg 4		0.1.122	0.030

Leg 5 (Fig. 2E). Exopodite furnished with 4 setae; basoendopodite with either 2, 3, 4, or 5 setae (Figs 2F, 2G) as below:

Basoendopodite setation		
right	left	N = 11
3	2	1
3	3	4
3	4	5
3	5	1

Male. Body (Figs 3A, 3B, 3C, 4E) as in female. Length 0.68 mm (allotype) excluding antennule and caudal ramus (0.68–0.79 mm, N=6). Nauplius eye not obscured. Caudal ramus (Fig. 4F) elongate, tapering posteriorly, furnished with 3 setae. *Antennule* (Fig. 3D): seven-segmented, geniculate. Setation and ornamentation as in Fig. 3D. Mouth parts as in female (Fig. 4A).

Leg 1 (Fig. 4A) as in female. Legs 2–4 of peculiar shape (Figs 4B, 4C, 4D, 5B, 5C, 5D). *Leg 2* (Fig. 4B): terminal segment of endopodite tapering to spinous apophysis, with 3 setae. *Leg 3* (Figs 4C,

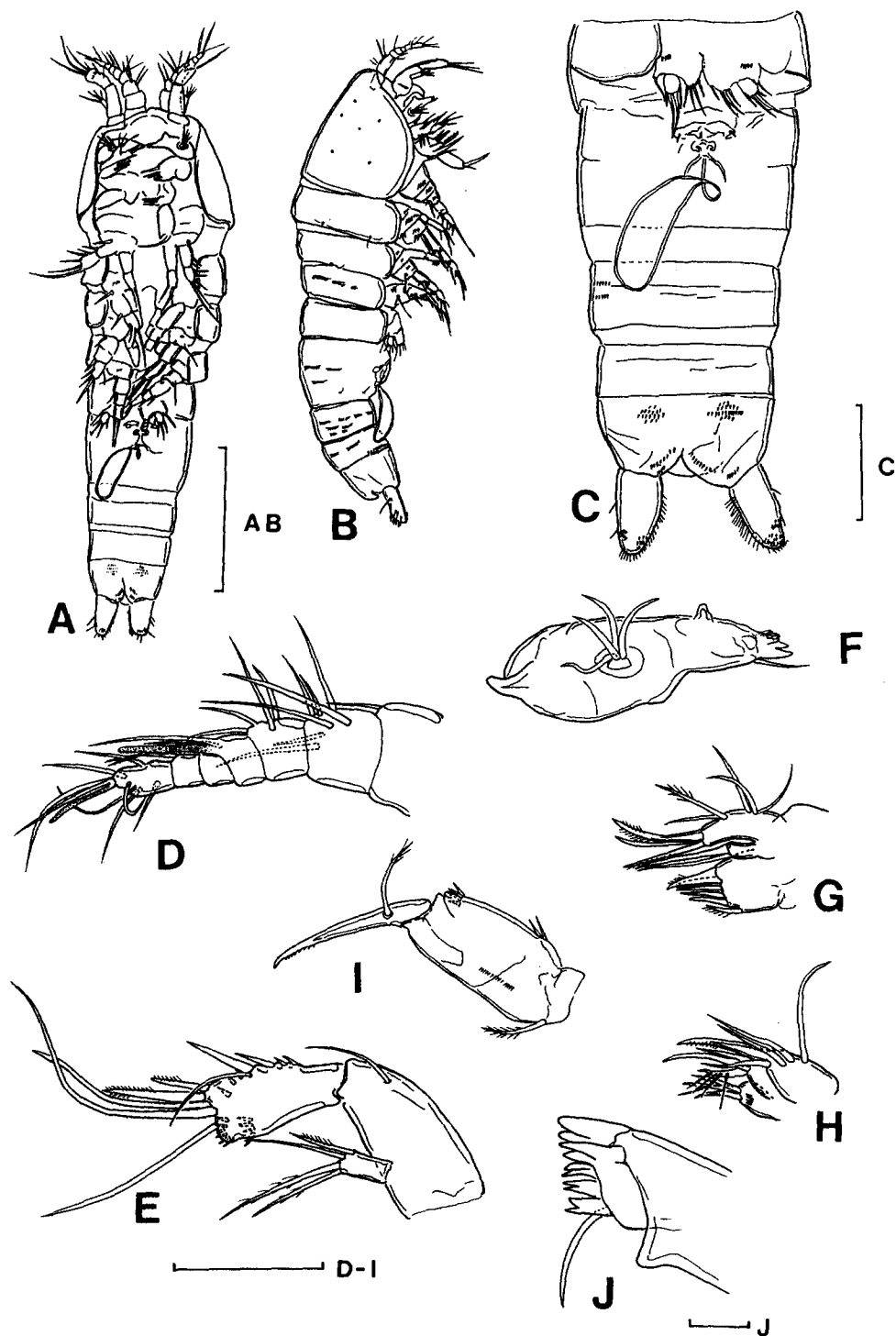


Fig. 1. *Glaciella yalensis* gen. n., sp. n., female. A, habitus, ventral. B, habitus, lateral. C, abdomen, ventral. D, antennule. E, antenna. F, mandible. G, maxillule. H, maxilla. I, maxilliped. J, mandible gnatholobe. Scale bar: AB = 250 μ m, C-I = 50 μ m, J = 10 μ m.

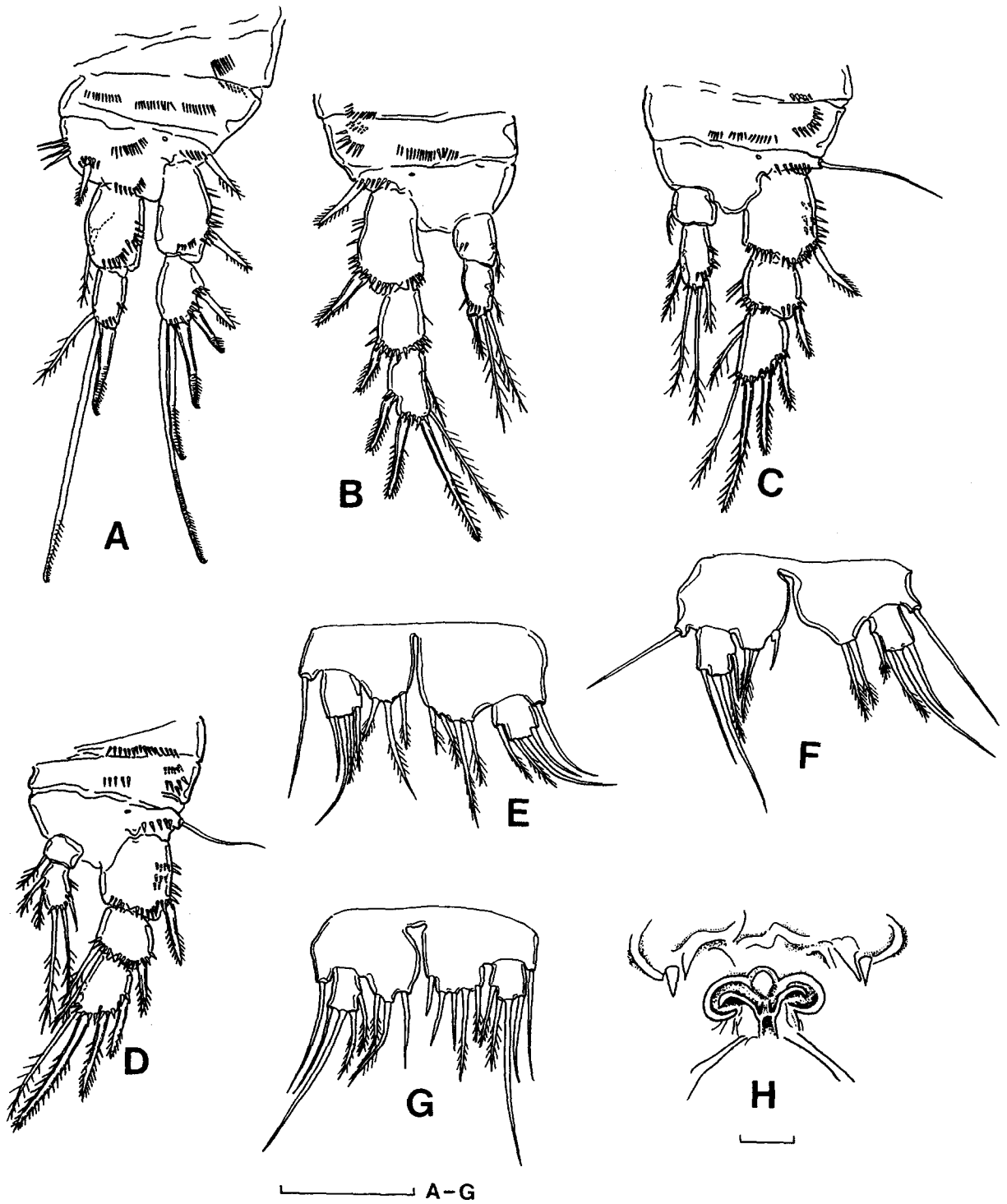


Fig. 2. *Glaciella yalensis* gen. n., sp. n., female, A-D, legs 1-4. E, leg 5 (holotype). F-G, leg 5 (paratypes). H, seminal receptacle. Scale bar: A-G=250 μ m, H=50 μ m.

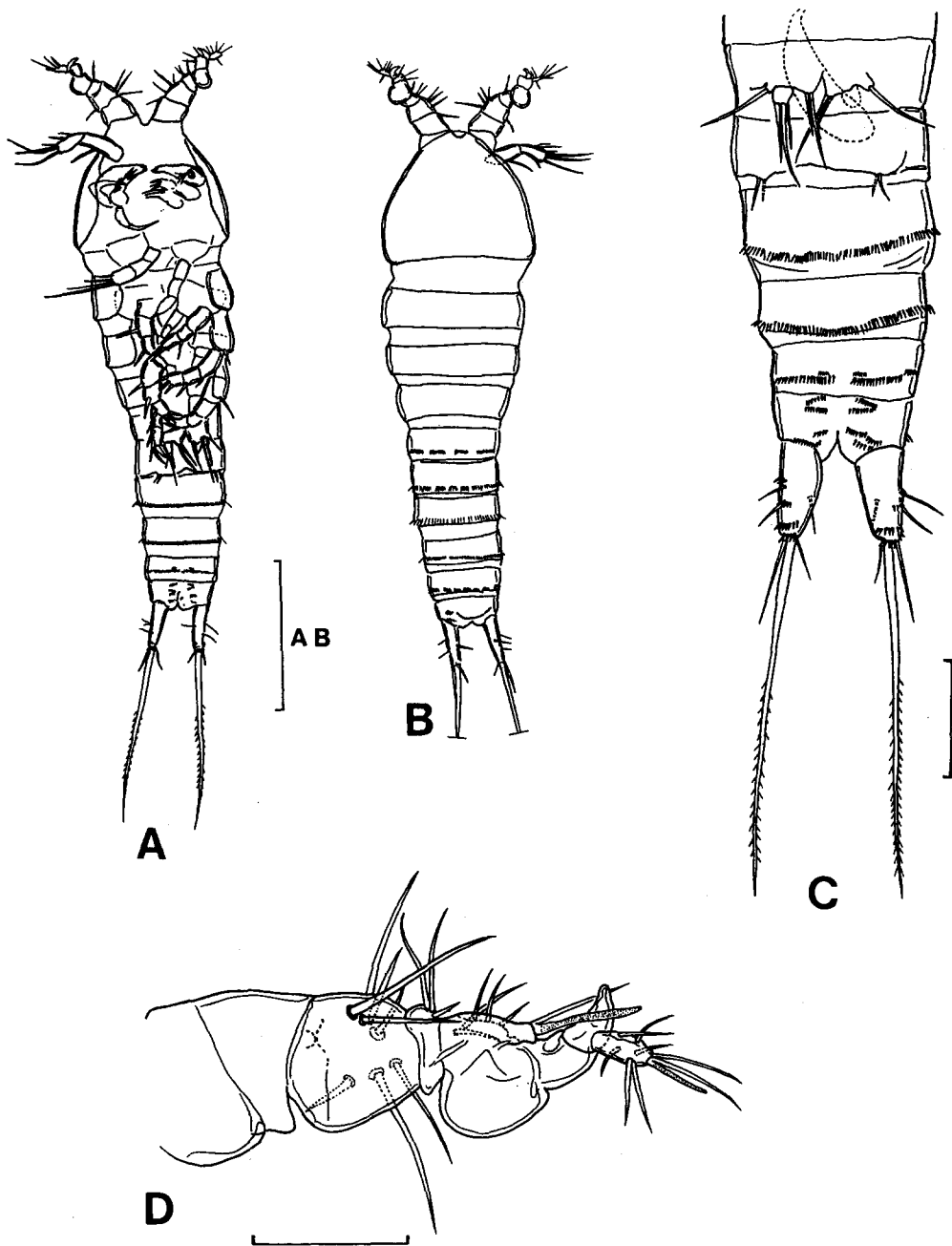


Fig. 3. *Glaciella yalensis* gen. n., sp. n., male, A, habitus, ventral. B, habitus, dorsal. C, abdomen, ventral. D, antennule. Scale bar: AB=250 μ m, CD=50 μ m.

5C, 5D): endopodite, outer spine arrow-shaped and inner one plumose and simple; exopodite shown as in Fig. 4C. Leg 4 (Fig. 4D): endopodite 2-segmented, terminal segment with 3 apical appendages; exopodite 3-segmented, terminal segment furnished with apical spoon-shaped spine. Exopodal terminal inner seta in

legs 2-4 small and slim. Legs 5 and 6 shown in Fig. 4E.

Remarks. The new genus and new species, *Glaciella yalensis*, resembles *Maraenobiotus vej dovskyi* Mrázek, 1893 and *Neomaraenobiotus laurentiacus* Flößner, 1992. However, this species is distinctly characterized by segment number and shape, and setation,

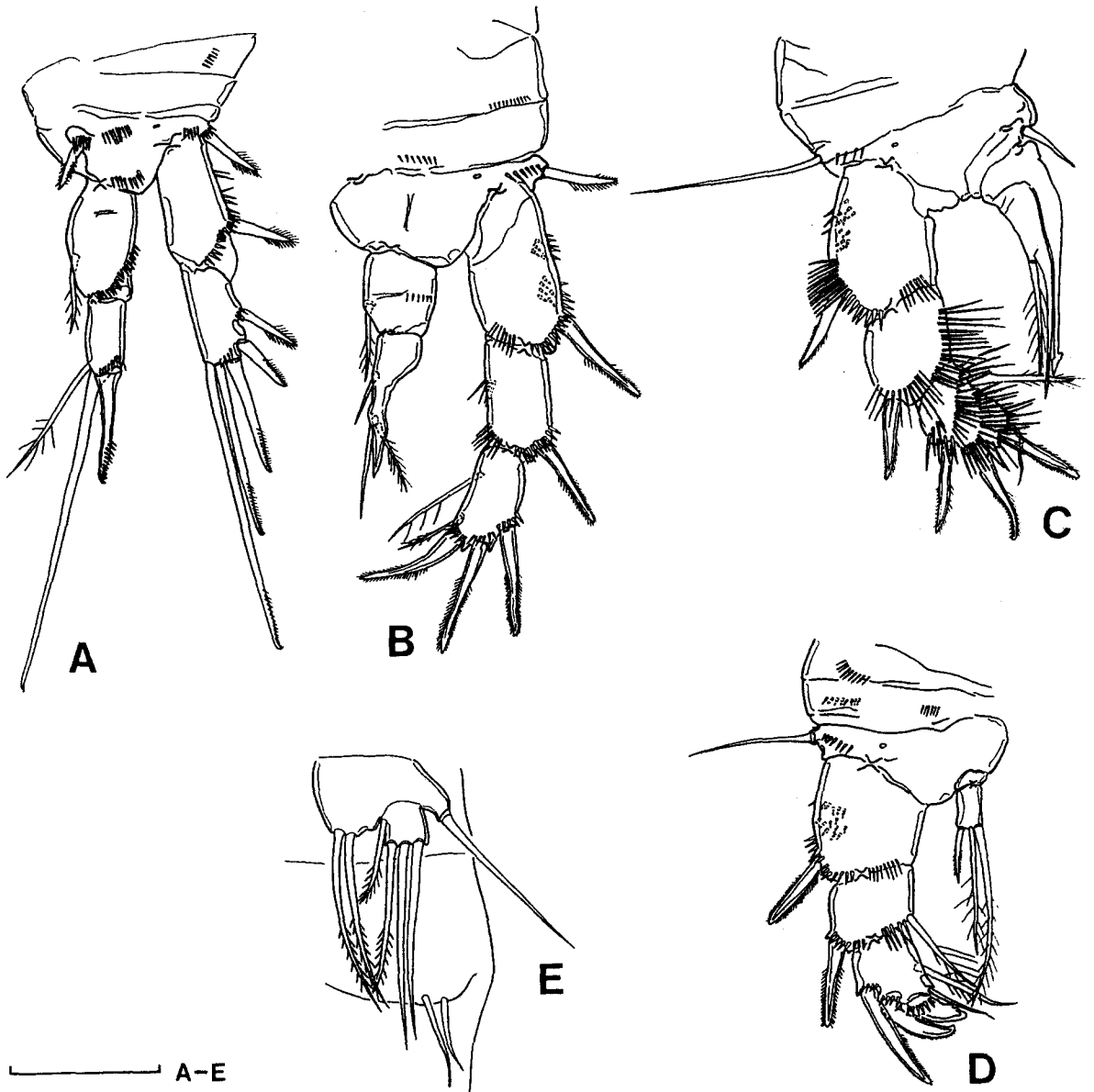


Fig. 4. *Glaciella yalensis* gen. n., sp. n., male, A-D, legs 1-4. E, legs 5 and 6. Scale bar: A-E = 50 μ m.

of male legs 2-4 and absence on setae on the caudal ramus of the female. Dussart (1976) reported that the baso-endopodite setation of leg 5 of *Maraenobiotus vejovskyi* was variable, illustrating either three or four setae. *Glaciella yalensis* bears two to five setae. *Hypocamptus* exopodites of legs 1-2 of the male are 2-segmented (Chappuis 1928). *Glaciella* exopodites of leg 1 and legs 2-4 in the male are 2- and 3-segmented respectively. *Neomaraenobiotus laurentiacus* Flöbner,

1992 has a 3-segmented exopodite on leg 1 of both sexes. However, *Glaciella yalensis* n. sp. exopodite of leg 1 in both sexes is 2-segmented.

Etymology. The species name is formed from name of glacier, Yala.

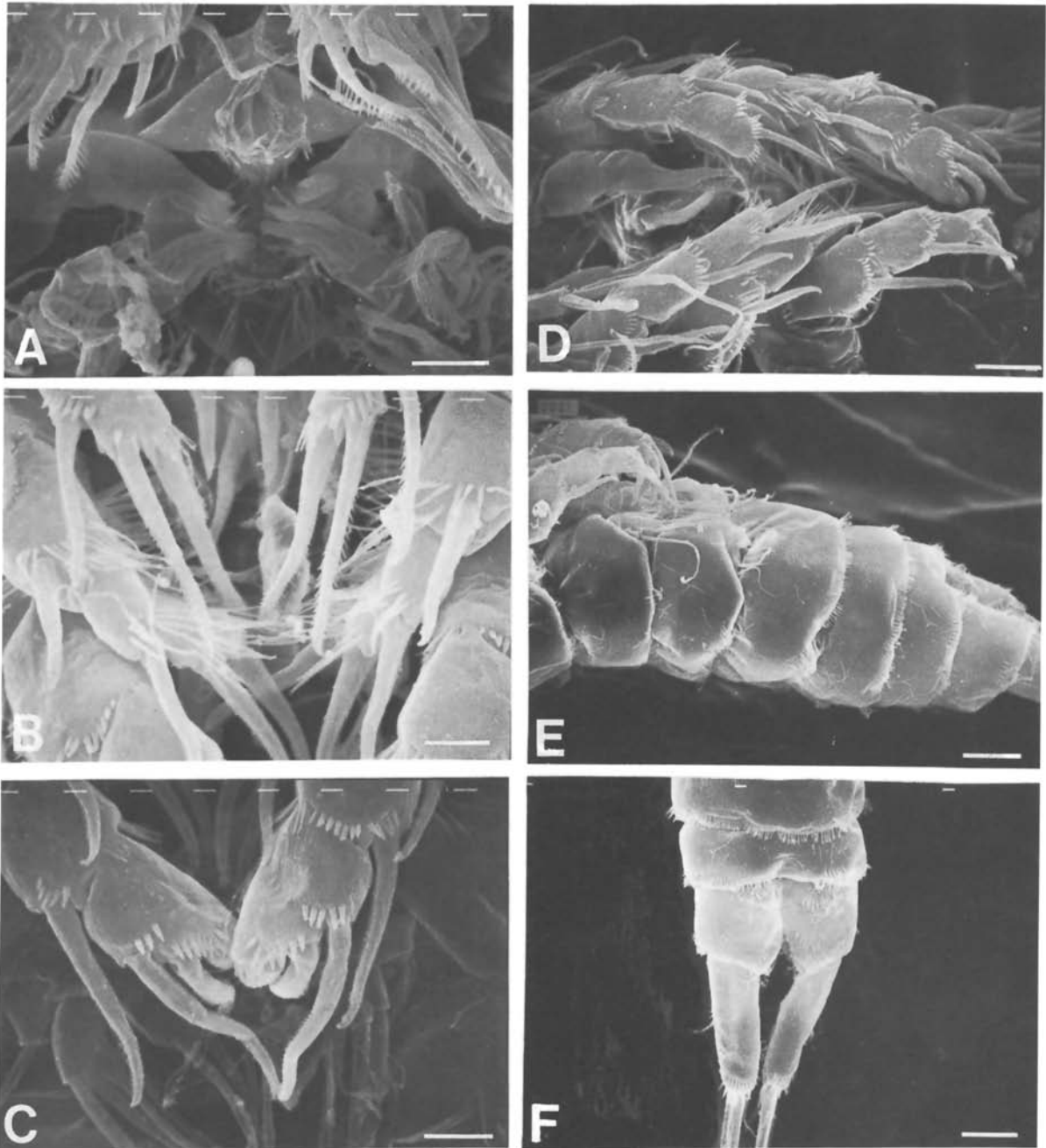


Fig. 5. SEM, *Glaciella yalensis* gen. n., sp. n., male, A, mouth parts. B, leg 3. C, leg 4. D, legs 2-4. E, abdomen, lateral. F, caudal rami, ventral. Scale bar: A-C = 10 μ m, D = 20 μ m, EF = 30 μ m.

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