

***Littorophiloscia lineata*, n. sp. from Korea with Remarks on the Synonymies associated with *Littorophiloscia nipponensis* Nunomura, 1986 (Isopoda, Oniscidea, Philosciidae)**

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Littorophiloscia lineata is described from Korea as new. Four *Littorophiloscia* species from Japan (*L. nipponensis* Nunomura, 1986; *L. hayashii* Nunomura, 1986; *L. longicauda* Nunomura, 1986; *L. hyugaensis* Nunomura, 1986) are considered to be conspecific. *L. nipponensis* is chosen as a valid name and *L. koreana* Taiti and Ferrara, 1986 from Korea is considered as another junior synonym.

KEY WORDS: Crustacea, Isopoda, Oniscidea, *Littorophiloscia*, new species, Korea, Japan.

Littorophiloscia Hatch, 1947 is primarily a tropical genus with a few species which are temperate in distribution. They occur in the dead seaweeds on strand line, in tidal marshes, and along margins of seashores and estuaries. Taiti and Ferrara (1986), in their comprehensive revision of *Littorophiloscia*, included 15 species as valid in the genus. About three months earlier than the publication of Taiti and Ferrara (1986), Nunomura (1986) described four species as new from Japan, which the Italian authors did not notice. Very recently Taiti *et al.* (1992) added *L. tominensis* from Sulawesi, Indonesia. During the course of identifying *Littorophiloscia* material from Korea, we re-examined the type specimens of four *Littorophiloscia* species from Japan which were studied by Nunomura (1986) for comparison. This revealed several new synonymies related to *Littorophiloscia koreana* Taiti and Ferrara, 1986, which was formerly the sole member of the genus in Korea. This is briefly stated with the description of a new species of *Littorophiloscia* from Korea.

Abbreviations

- IJB** Department of Biology, Inje University, Kimhae, Korea
MZUF Museo di Storia Naturale, Sezione di Zoologia "La Specola" dell'Università, Florence, Italy
TOYA Toyama Science Museum, Toyama, Japan

***Littorophiloscia nipponensis* Nunomura, 1986** 갯가쥐며느리(신칭)

(Fig. 1)

- Littorophiloscia nipponensis* Nunomura, 1986 (p. 10, fig. 61).
Littorophiloscia hayashii Nunomura, 1986 (p. 12, figs. 62-63). **n. syn.**
Littorophiloscia longicauda Nunomura, 1986 (p. 15, fig. 64). **n. syn.**
Littorophiloscia hyugaensis Nunomura, 1986 (p. 17, figs. 65-66). **n. syn.**
Littorophiloscia koreana Taiti and Ferrara, 1986 (p. 1369, figs. 14-15); Kwon, 1993 (p. 139). **n. syn.**

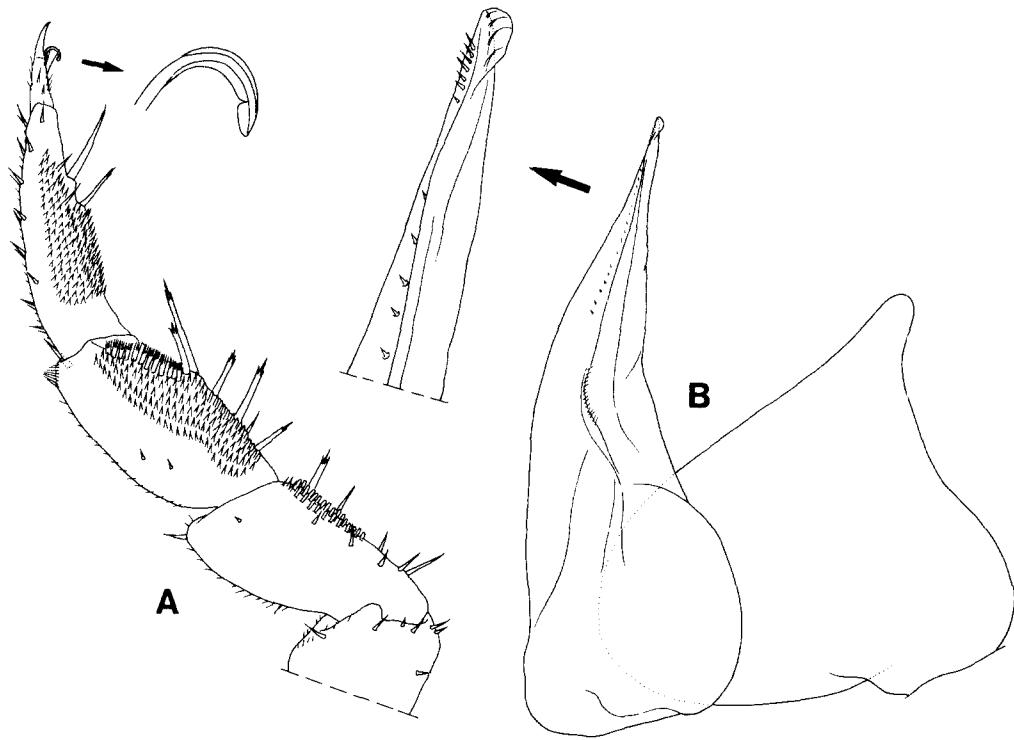


Fig. 1. *Littorophiloscia nipponensis* Nunomura, 1986, holotype male: A, pereopod 1; B, pleopod 1.

Material examined: JAPAN: 1 ♂ holotype, Ishikawa Pref, Suzu-gun, Uchiura-cho, Akasaki, leg. N. Nunomura 28.vi.1984 (TOYA-Cr-5354); 4 ♀ ♀, same data (TOYA); 1 ♂ (holotype of *L. hayashii*), Kanagawa Pref., Yokosuka City, Tenjinjima, leg. K. Hayashi & N. Nunomura 27.xi.1983 (TOYA-Cr-5422); 1 ♀ (paratype of *L. hayashii*), same data (TOYA-Cr-5428); 1 ♂ (holotype of *L. longicauda*), Mie Pref., Kumano City, Nikishima, leg. N. Nunomura 4.vii.1985 (TOYA-Cr-5410); 1 ♀ (paratype of *L. longicauda*), same data (TOYA-Cr-5416); 1 ♂ (holotype of *L. hyugaensis*), Miyazaki Pref., Miyazaki City, Aoshima, leg. N. Nunomura 23.ix.1983 (TOYA-Cr-5417); 1 ♂, same data (TOYA).

KOREA: 8 ♂ ♂, 8 ♀ ♀, Ch'ungch'ongnam-do, Anmyŏndo I., mid-west coast, primary sand dune & splash zone, leg. D.H. Kwon & K.H. Kang 14-15.v.1992; 31 ♂ ♂, 61 ♀ ♀, Kyŏngsangnam-do, Namhaedo I., Sangju-myŏn, Taeryang village, leg. D.S. Jeon & J.T. Kim 18.v.1993; 12 ♂ ♂, 17 ♀

♀, Chŏllanam-do, Tolsando I., Imp'ŏ, leg. D.S. Jeon 6.v.1993; 1 ♀, Cheju-do (Cheju I.), Cheju-shi, Yongdam-1-dong, near Yongduam Rock, leg. D.H. Kwon *et al.* 26.vi.1992; 9 ♂ ♂, 29 ♀ ♀, Cheju-do, Udo-myŏn, Obong-ri, under gravels and coarse sands in supralittoral zone, leg. D.H. Kwon *et al.* 25.vi.1992; 6 ♂ ♂, 48 ♀ ♀, Cheju-do, Sŏngsan-ŭp, Sŏngsan-ri, near seashore, leg. D.H. Kwon & D.S. Jeon 25.vi.1992; 3 ♂, 25 ♀ ♀, Cheju-do, Namwŏn-ŭp, Harye-ri, Mangjangp'o, near village, leg. D.H. Kwon *et al.* 24.vi.1992; 6 ♀ ♀, Cheju-do, Sŏgwip'o-shi, Chŏngbang-dong, leg. D.H. Kwon & J.T. Kim 22.vi.1992; 2 ♂ ♂, 8 ♀ ♀, Cheju-do, Hangyŏng-myŏn, Kosan-ri, near seashore, leg. D.H. Kwon *et al.* 27.vi.1992 (all in IJB).

Remarks: Nunomura (1986) described four species of *Littorophiloscia* from Japan, viz., *L. nipponensis*, *L. hayashii*, *L. longicauda*, and *L. hyugaensis*. The recognition of these species is hardly possible because he had little attention on

male characters, especially the apical part of pleopod 1, which are most important in identification of *Littorophiloscia* species. So we re-examined the type materials of Japanese species. This proved that they are identical in all details, particularly in the morphology of male pleopod 1 (Fig. 1B) endopod with a rounded lobe on outer margin at apex and exopod with a short posterior point. We choose *L. nipponensis* to have precedence over the other names because it appeared first. Also Japanese species and *L. koreana* Taiti and Ferrara, 1986 are considered to be synonymous (compare Figs. 15A and B in Taiti and Ferrara, 1986 and Fig. 1B). Because the Nunomura's paper was published in September, 1986 (after the date specified in the publication), while the Taiti and Ferrara's paper in December, 1986, *L. koreana* is considered here as a junior synonym. For the description and figures of this species see Taiti and Ferrara (1986, as *L. koreana*).

Distribution: Korea and Japan (Honshu and Kyushu).

***Littorophiloscia lineata*, n. sp.** 등줄갯가쥐며느리 (신칭)

(Figs. 2 and 3)

Holotype: ♂, 4.1 mm long, **KOREA**, Cheju-do (Cheju I.), Aewöl-üp, Aewöl-ri, Handam-dong village, near seashore, leg. D.H. Kwon *et al.* 27.vi.1992 (IJB).

Paratypes: **KOREA:** 12 ♂♂, 15 ♀♀, same data as holotype (IJB); 6 ♂♂, 7 ♀♀, same data (MZUF); 4 ♂♂, 4 ♀♀, Ch'ungch'öngnam-do, Poryöng-gun, Chugyo-myön, Kojöng-ri, leg. D.H. Kwon *et al.* 4.viii.1992 (IJB); 1 ♂, 4 ♀♀, Cheju-do, Cheju-shi, Yongdam-1-dong, near Yongduam Rock, leg. D.H. Kwon *et al.* 26.vi.1992 (IJB); 2 ♂♂, 4 ♀♀, Cheju-do, Kujwa-üp, Hado-ri, near seashore, leg. D.H. Kwon *et al.* 26.vi.1992 (IJB); 1 ♂, 4 ♀♀, Cheju-do, Udo-myön, Obong-ri, near seashore, leg. D.H. Kwon *et al.* 25.vi.1992 (IJB); 2 ♀♀, Cheju-do, Sögwip'o-shi, Chöngbang-dong, leg. D.H. Kwon & J.T. Kim 22.vi.1992 (IJB).

Description: Maximum length of male 4.5 mm, of female 6 mm. Habitus as in Fig. 2A. Color in alcohol dark brown with usual pale muscle spots; a lighter spot at base of pereonal epimera; a large

pale transverse band on each pereonite which are prominent on anterior ones. Noduli laterales with b/c and d/c co-ordinates typical of genus as in Fig. 2B. Dorsum rough with numerous dorsal scale spines as in Fig. 2C. No gland pores. Eye with about 8 ommatidia. Cephalon with supra-antennal line slightly bent downwards in middle and no frontal line. Telson (Fig. 2D) about 2.5 times as wide as long, with straight sides and rounded apex. Antennule (Fig. 2E) with third article bearing two aesthetascs at apex and a few aesthetascs subapically. Antenna with bumpy peduncular articles; fifth article of peduncle slightly longer than flagellum; ratio of flagellar articles 3:3:4; second and third flagellar articles with 5 and 3 aesthetascs respectively. Mandible (Fig. 2F) with molar penicil consisting of a tuft of plumose setae each arising separately. Maxillular outer branch with 5 + 6 (5 cleft) teeth on distal margin; inner branch with two subequal penicils on distal margin (Fig. 2G). Maxilliped (Fig. 2H) with rectangular endite bearing a plumose penicil near mesial corner of distal margin. Pereopods (Fig. 3A) with unguis slightly enlarged at apex. Uropod with exopod twice as long as endopod; insertion of endopod slightly proximal to that of exopod.

Male: Pereopod 1 (Fig. 3A) with propodus slightly swollen; propodus and carpus with large setose area on rostral surface. Pereopod 7 (Fig. 3B) without particular modifications. Pleopod 1 (Fig. 3C) exopod as long as wide with rounded apex, outer margin slightly concave; endopod with enlarged proximal part, distal part bent outwards and equipped with several curled setae subapically. Pleopod 2 (Fig. 3D) exopod slightly shorter than endopod, with sinuous outer margin and rounded apex; endopod with styliform distal part.

Etymology: *linea* (Latin, streak or band). The specific name is derived from the color pattern which shows a large transverse pale band on each pereonite.

Remarks: In the male pleopod 1 endopod with enlarged proximal part, *Littorophiloscia lineata* appears close to *L. vittata* (Say, 1818) from the Atlantic coasts of North America, *L. culebrae* (Moore, 1901) from Florida, Caribbean Islands, Angola and India, *L. riedli* (Strouhal, 1966) from Red Sea coasts of Egypt, and *L. pallida* Taiti &

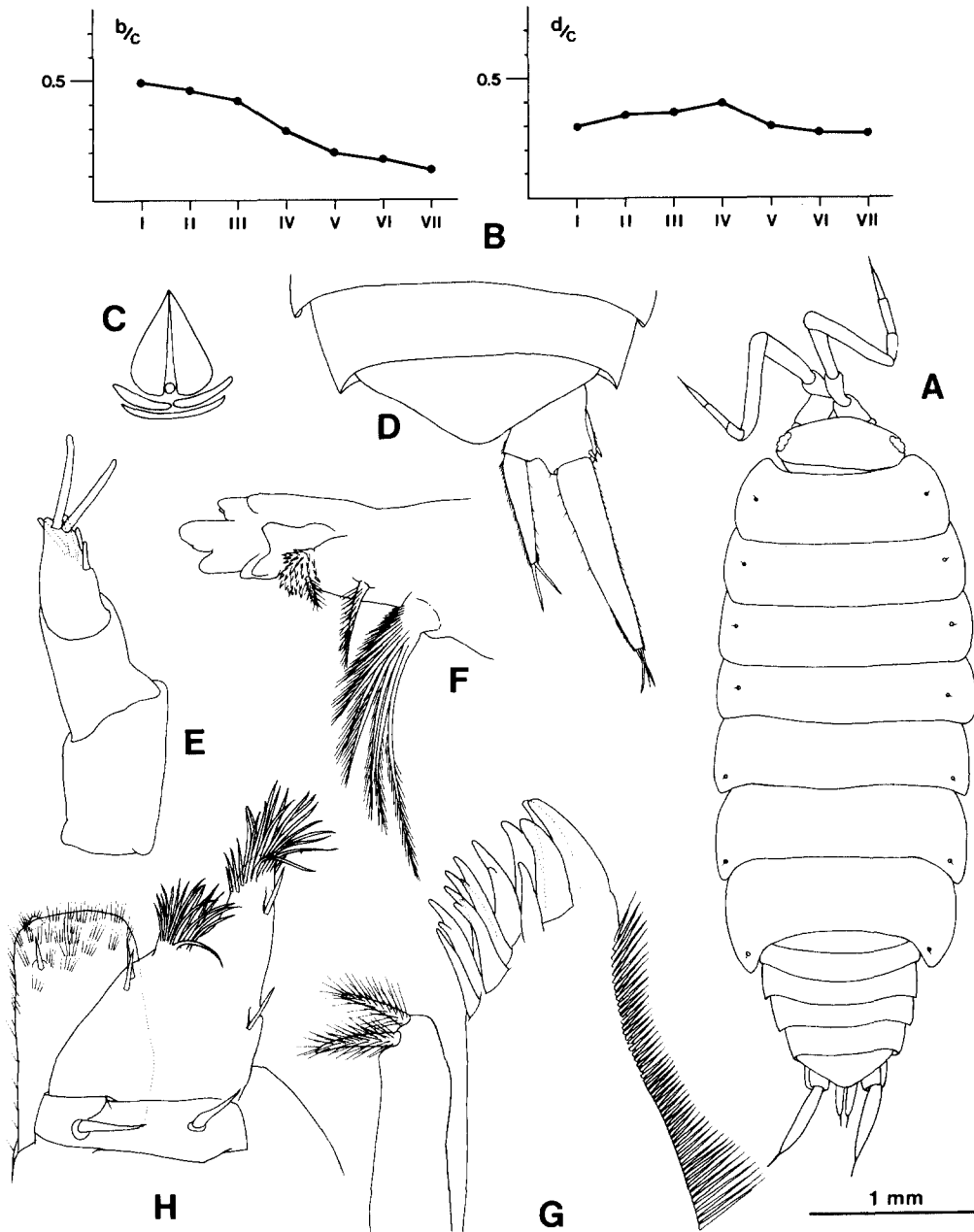


Fig. 2. *Littorophiloscia lineata*, n. sp., paratype male: A, habitus in dorsal view; B, co-ordinates of noduli laterales; C, dorsal scale-spine; D, pleonites 4-5, telson and right uropod; E, antennule; F, mandible; G, maxillule; H, maxilliped.

Ferrara, 1986 from Thailand. It differs from *L. vittata* in the shape of male pleopod 1 exopod (as long as wide vs. longer than wide) and the shape of unguinal seta of pereopods (compare Fig. 7D in

Taiti and Ferrara, 1986 and Fig. 3A), from *L. vittata*, *L. culebrae* and *L. riedli* in the telson with nearly straight sides, and from *L. culebrae* and *L. pallida* in the morphology of the apical

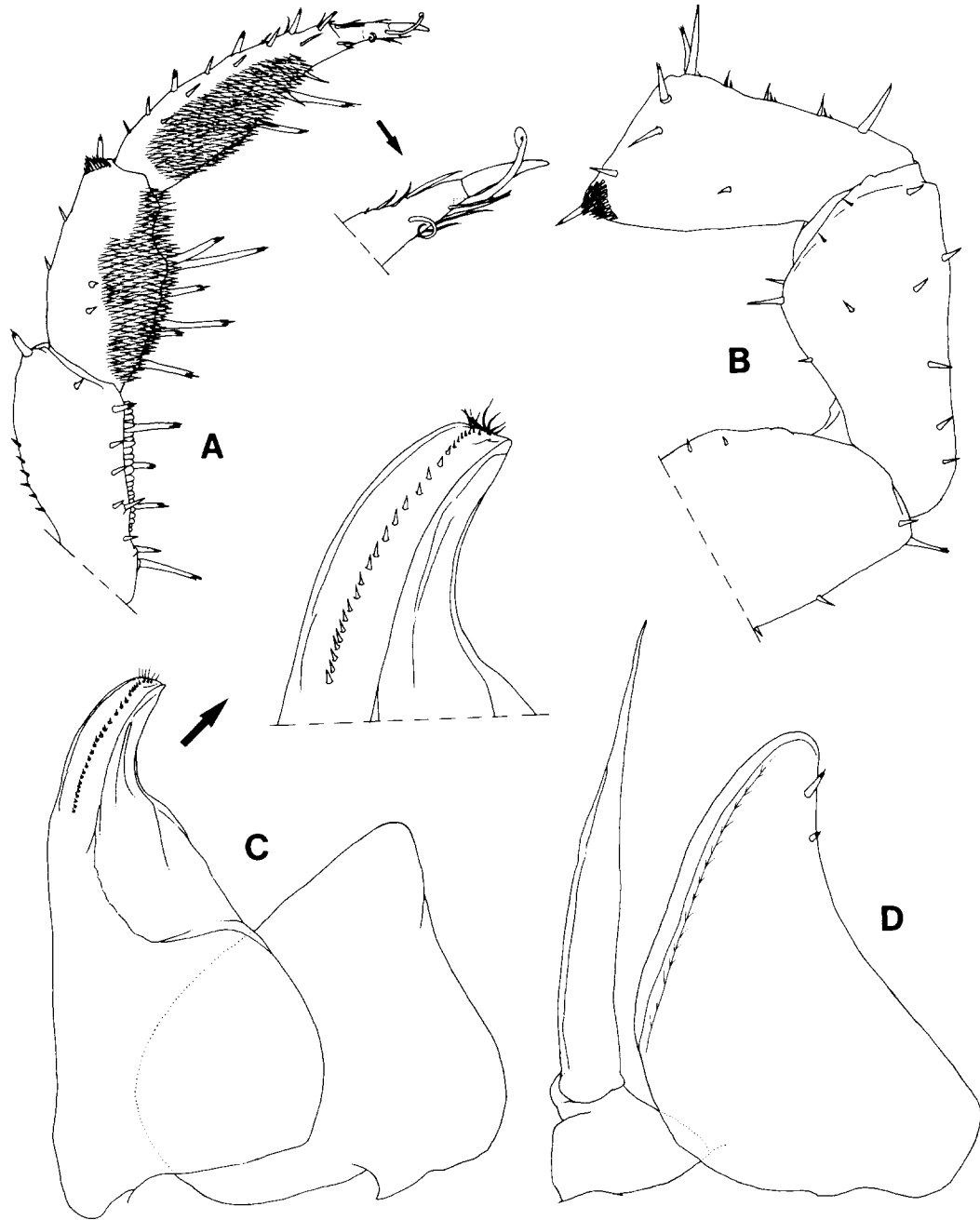


Fig. 3. *Littorophiloscia lineata*, n. sp., paratype male: A, pereopod 1; B, pereopod 7, merus, ischium and basis; C, pleopod 1; D, pleopod 2.

part of male pleopod 1 endopod (compare Figs. 8F and 17F in Taiti and Ferrara, 1986 and Fig. 3C).

Distribution: Korea.

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Littorophiloscia屬(等脚目 쥐며느리亞目 남방쥐며느리科)의 한국산 1신종의 기재 및 ***L. nipponensis*** Nunomura, 1986의 同物異名에 관하여
권도현 · 이경안 · 전대수(인제대학교 자연과학대학 생물학과)

한국산 쥐며느리 1종을 *Littorophiloscia lineata*로 명명하고 신종으로 기재한다. 일본산인 *L. nipponensis* Nunomura, 1986, *L. hayashii* Nunomura, 1986, *L. longicauda* Nunomura, 1986, *L. hyugaensis* Nunomura, 1986 등 4종은 同一種임이 확인되어 *L. nipponensis*를 有效名으로 선정한다. 한국을 모식산지로 기재된 *L. koreana* Taiti and Ferrara, 1986는 *L. nipponensis*의 新參同物異名으로 간주된다.