

First record of *Neorhodomela larix* (Turner) Masuda (Rhodomelaceae, Rhodophyta) in Korea

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한국산 홍조 빨간검둥이과 1미기록종, *Neorhodomela larix* (Turner) Masuda

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Abstract

Vegetative morphological information of the red alga *Neorhodomela larix* (Turner) Masuda (Rhodomelaceae) is given. This species is characterized by thalli up to 15 cm high, brownish black in color, pericentral cells with transverse division, the first order subulate branches with determinate growth, numerous adventitious branches produced at axils and absence of vegetative trichoblasts. Particularly, *N. larix* is distinct from other Korean *Neorhodomela* species by the lack of vegetative trichoblasts, which seems to be caused by their delayed production until reproductive structures are formed. This is the first record of *N. larix* in Korea.

Key Words : First record, Korea, *Neorhodomela larix*, Red algae, Vegetative morphology

I. Introduction

Neorhodomela Masuda (Rhodomelaceae, Rhodophyta) was first established by Masuda (1982). This red algal genus is delimited from the closely related genus *Rhodomela* in having vegetative and fertile trichoblasts produced on determinate branches in zigzag arrangement rather than spiral manner, and spermatangia formed on modified branches (trichoblasts) rather than from superficial

cortical cells of unmodified branches and sometimes trichoblasts (Masuda, 1982; Masuda & Kogame, 1998). In distribution, both genera also differ from each other (Masuda & Kogame, 1998). *Neorhodomela* is distributed in the North Pacific, whereas occurrence of *Rhodomela* is known in both the North Pacific and the North Atlantic (Masuda & Kogame, 1998).

Since Masuda (1982), six species are

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currently recognized in *Neorhodomela* in the world (Guiry & Guiry, 2010). Among them, two species, *Neorhodomela munita* and *N. aculeata*, have been recorded in Korea (Lee & Kang, 2002). *Neorhodomela larix*, which was originally described from British Columbia, is newly added to the Korean algal flora and its vegetative morphological information is given in this study.

II. Materials and Methods

Materials for this study were collected from the eastern coast of Korea. Taxonomic data were obtained from 10% formalin/seawater solution-preserved specimens. Plants were dissected by hand section using pith stick and razor blade, and then transferred to a slide glass with a drop of distilled water, and mounted in pure glycerin. Sometimes, smearing method for microscopic examination was employed. For permanent slides, the glycerin was exchanged with 50% Karo corn syrup. Measurements are given as length and diameter. For photographs the sections were stained with 0.5-1.0% aqueous methylene blue or hematoxylin. Photographs were taken with a digital camera (C5050, Olympus, Tokyo) attached to microscope (BX50, Olympus, Tokyo). All specimens examined in this study are deposited in the herbarium of Department of Marine Biology, Pukyong National University.

III. Results and Discussion

Neorhodomela larix (Turner) Masuda 1982:

308. Figs. 1-2.

Basionym: *Fucus larix* Turner 1819, p. 23, pl. 207.

Synonyms: *Rhodomela larix* (Turner) C. Agardh 1822, p. 376; *Lophura larix* (Turner) Kützing 1849, p. 850, *Fuscaria larix* (Turner) Ruprecht 1850, p. 219.

Type: ?

Type locality: Nootka Sound, Vancouver Island, Canada.

Habitat: Growing on rock near lower intertidal zone.

Korean name: Min-sae-ppal-gan-geom-dung-i nom. nov. (민새빨간검둥이: 신칭).

Specimens examined:

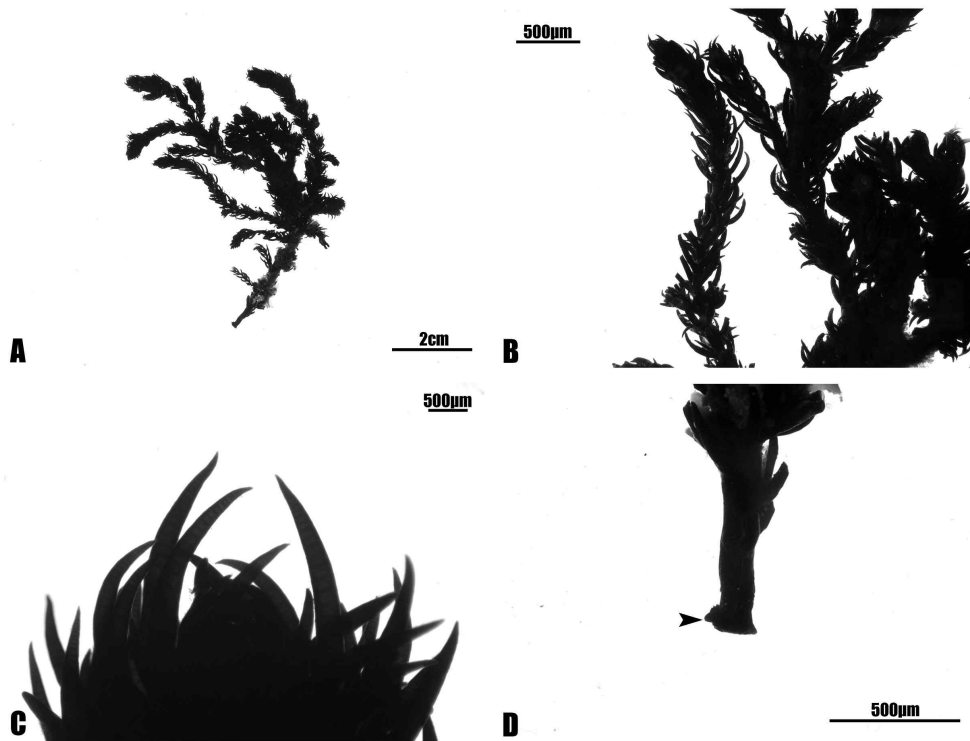
N10021801401-10021801402 (Byeonggok: 18.ii.2010), N08010301403-08010301406 (Pyeonghae: 3.i.2008), N09021201407-090212014011 (Eodal: 20.ii.2009).

Morphology: Thalli up to 15cm high [Fig. 1A], heavily corticated, brownish black in color, attached by discoid holdfast [Fig. 1D], tough in texture, not adhering to paper; main axes terete, with numerous branchlets, 100-200 μm diam. [Fig. 1B & C]; axial cells terete, 300-400 μm long, 50-70 μm diam.; indeterminate branches with 6 pericentral cells [Fig. 2B & C], with a dome-shaped apical cell divided transversely; determinate branches with 5 pericentral cells [Fig. 2D]; pericentral cells with transverse division [Fig. 2A]; upper pericentral cells retaining pit connection with axial cells; the first order branches simple, subulate, with determinate growth, 0.4-1.0 mm long, 400-500 μm diam.; vegetative trichoblasts absent; numerous adventitious branches produced at axils between axes and branches. Reproductive

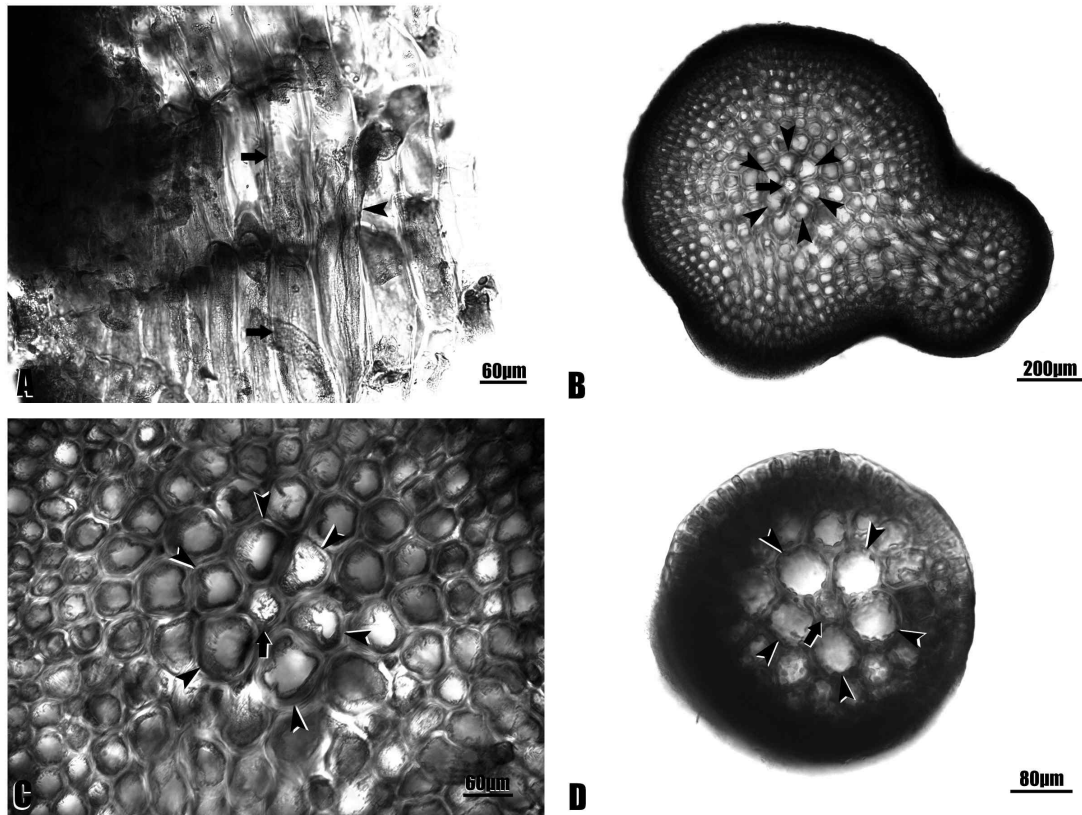
plants were not found in this study.

Remarks: *Neorhodomela larix* was first described as *Fucus larix* Turner (1819) from British Columbia. Recently, Masuda (1982) moved this species to *Neorhodomela* based on some vegetative and reproductive features, such as dorsiventral sporelings, zigzag arrangement of trichoblasts and spermatangial formation on specialized branchlets (meaning trichoblasts). These generic features were not confirmed in our specimens from eastern coast of Korea, because reproductive plants were not collected. However, this Korean entity seems to be referred to *Neorhodomela larix*, as considering habit and absence of vegetative trichoblasts. In usual, vegetative trichoblasts are present

abundantly in *Neorhodomela* species with some exceptions (Masuda, 1982; Masuda & Kogame, 1998). According to Masuda (1982), trichoblasts in *N. larix* appear to be produced just prior to formation of reproductive structures. Unlike in the other two Korean *N. munita* and *N. aculeata*, trichoblasts were not found in our specimens. This observation seems to be caused by the delayed production of trichoblasts, which was reported by Masuda (1982) in *N. larix*. This distinctive trichoblast feature together with general habit leads to the conclusion that our specimens are identified as *N. larix*. This is the first record of *N. larix* in Korea.



[Fig. 1] *Neorhodomela larix* (Turner) Masuda. A, Habit of vegetative plant; B & C, Details of main branches (B) and branch apex (C); D, Discoid holdfast (arrowhead)



[Fig. 2] *Neorhodomela larix* (Turner) Masuda. A, Axial cell (arrowhead) with pericentral cells (arrows) divided transversely in longitudinal section of main axis; B & C, Axial cell (arrow) with six pericentral cells (arrowheads) in transverse section of main axis; D, Axial cell (arrow) with five pericentral cells (arrowheads) in transverse section of determinate branch

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