

The description of *Laminaria yendoana* MIYABE

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Laminaria yendoana MIYABE was first proposed by MIYABE¹⁾ in his special lecture on the Laminariaceae of Hokkaido and Saghalien at the Hokkaido Meeting of the Japanese Society of Scientific Fisheries, October 1934. Subsequently, MIYABE²⁾ published *L. yendoana* as a *nomen nudum* in a report based on the manuscript of his lecture. Two years later, two descriptions of *L. yendoana* were published in OKAMURA's Nippon Kaiso-shi³⁾, one written by OKAMURA and the other by MIYABE⁴⁾. MIYABE contributed a taxonomic list of the laminariaceous species found in northern Japan to the Nippon Kaiso-shi on OKAMURA's request. According to OKAMURA³⁾, MIYABE's list⁴⁾ was based on the manuscript of the above-mentioned lecture. There are several discrepancies between these two descriptions.

The purpose of the present study was to determine the correct description of *L. yendoana* and to typify this species. This was done by examining historic specimens and those in later collections. The relationship between this species and *Laminaria sikotanensis* MIYABE et NAGAI is also discussed.

Materials and Methods

In translating OKAMURA's and MIYABE's descriptions of *L. yendoana* we have employed the terminology used by TOKIDA⁵⁾ when he translated MIYABE's Laminariaceae of Hokkaido (1902). Further, we have used the general format of MIYABE's type description. To these descriptions are added measurement data in italics. The measurement data are from five fertile plants collected by us on November 1, 1972 near the entrance of Muroran Harbour.

The herbarium specimens examined are deposited in MIYABE's herbarium which is located in the Herbarium of the Laboratory of Plant Pathology, Faculty of Agriculture, Hokkaido University, Sapporo (SAPA), and in YENDO's herbarium which is located in the Herbarium of the Department of Botany, University of Tokyo (TI).

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Results and Discussion

OKAMURA's (1936, P. 253) description of *L. yendoana* is as follows:

"*Laminaria yendoana* MIYABE, sp. nov. *Japanese name.* Yendo-kombu (MIYABE), Tororo-kombu (local name).

Thallus erect, small; holdfast composed of filamentous haptera; stipe cylindrical, short, mucilage ducts closely set in a single row in cortex; blade oblong, blade base at first cuneate but later becoming cordate, bullations present on both sides of median fascia while young; mucilage ducts present in outermost cortex of blade; sporangial sori covering most of blade on both surfaces except along margins.

Locality; Motomuroran and Mori in Volcano Bay (*Uchiura-wan*), *Hokkaido*; Sai, Aomori Prefecture (Saito Ho-on-kai, No. 48212).

Holdfast composed of slender filiform, filamentous haptera, branching five to eight times dichotomously uppermost haptera, arising in a whirl: stipe cylindrical, slightly compressed above, 6 cm in length, 3.5 mm in diameter at middle portion, 6-9 mm in diameter at uppermost portion, mucilage ducts arranged closely in a single row in cortex; blade linear-oblong, provided with two rows of bullations and broadly cuneate at the base while young, when old, oblong or elliptical-oblong, somewhat undulate on marginal portions, cordate, flat at base, dark brown in color; sporangial sori covering most of blade except along margins; blade 35 cm in length, 15-19 cm in width, mucilage ducts present in a single row in outermost cortex.

This species collected at first by Dr. K. YENDO at Muroran is rich in mucilage and closely related to *L. cichorioides* MIYABE. This has been known as an unpublished new species proposed by K. MIYABE, who kindly agreed with the author to describe it here."

Thus OKAMURA emphasizes that this species has mucilage ducts in the stipe but makes no further reference to the median fascia.

MIYABE's description of *L. yendoana* (in OKAMURA, 1936, p. 288) is as follows:

"*Laminaria yendoana* MIYABE. *Japanese name.* Yendo-kombu (MIYABE), Tororo-kombu (local name).

Holdfast composed of slender haptera branching five to eight times dichotomously, uppermost haptera not arising in a whirl, *thickest haptera 1.6-2.0 mm in diameter*, mucilage ducts sporadically present in cortex. Stipe slender (*3.8-4.3 mm in diameter at base*), 3.5 mm in diameter at middle portion (*2-2.5 mm when dried*), cylindrical below, slightly compressed above, cuneate (*2.8-4.1 mm in thickness and 6.6-9.8 mm in width*), rather long, 3.5-10.0 cm in length; mucilage ducts absent. Blade long-oblong, long-obovate or long-spatulate in outline; blade margin entire, slightly undulate; blade base rotundate or cordate; blade with

two longitudinal rows of bullations arranged on each side of median portion while young, but becoming smooth when fertile; blade without median fascia; upper portion of blade thin, wide and membranous while growing, but later decaying gradually from upper portion; blade up to 60 cm in width, usually 15–30 cm in width, up to 2.25 m in length, usually 60–90 cm in length when fertile (30 cm above blade base, blade margin 0.7–0.8 mm thick and median portion 1.7–1.8 mm thick), blade with one layer of large mucilage ducts in outer cortex; medulla very thin. Sporangial sori formed on both blade surfaces except along margins. Color dark brownish olive when fresh, becoming black in dried blades which are rigid and fragile. Blades soaked in fresh water are very viscous.

Locality: Growing on shells and stones, in a depth of 12.0–22.5 m.

[Hokkaido] Iburi Prov.: Muroan (NISUKE TAKAHASHI, 1908, January), Motomuroan (MIYABE, 1924, November), Ogonshibe (MIYABE, 1921, October), outside of Muroan Harbour in deep water (TOKIDA, 2.25 m long, 60 cm wide, 1934, July); Aomori Prefecture in Honshu. Shimokita Prov.: Sai (Saito Ho-on-kai, No. 48212, supplemented by OKAMURA).

Distribution: Endemic to the vicinity of Volcano Bay (*Uchiura-wan*), Hokkaido."

MIYABE's description contrasts with OKAMURA's in that according to MIYABE there are no mucilage ducts in the stipe and no median fascia on the blade. There are many specimens of *L. yendoana* in MIYABE's herbarium (SAPA). The collecting data of these specimens are as follows: 1) Abuta, Iburi Prov., on Aug. 19, 1890 by K. MIYABE; 2) Ogonshibe, Volcano Bay, Iburi Prov., on Sept. 29, 1931 by K. MIYABE; 3) Shukuzu in Muroan, Iburi Prov., on Sept 21, 1933 by M. NAGAI; and 4) Shukuzu in Muroan, 12 m depth, on July 12, 1934 by J. TOKIDA. These plants fit MIYABE's description. Of them, the specimens cited in MIYABE's description⁴⁾ are only those collected at Muroan by Dr. J. TOKIDA.

According to OKAMURA³⁾, this species was first collected at Muroan by Dr. K. YENDO. To examine the specimens observed by Dr. K. OKAMURA, we searched for them with Prof. M. KUROGI in OKAMURA's herbarium which is kept in the Herbarium of Department of Botany, Faculty of Science, Hokkaido University, Sapporo (SAP), but in vain. In YENDO's herbarium (TI), we found three sheets of *L. yendoana* MIYABE. The labels of these specimens bear "*Laminaria*, January 1908, Muroan, collected by NISUKE TAKAHASHI" in K. YENDO's handwriting and "*yendoana* MIYABE" in K. MIYABE's handwriting (see Fig. 2). We are indebted to Emer. Profs. Y. YAMADA, M. TATEWAKI and J. TOKIDA for their assistance in recognizing MIYABE's handwriting. These pressed specimens apparently do not have a median fascia. We sectioned two of YENDO's plants and found no mucilage duct in the stipe. Thus, these specimens fit MIYABE's description very well, but not OKAMURA's. Further, OKAMURA gave

in a note following his description the length and diameter of stipe and the length and width of blade. These measurements do not agree with those of the pressed specimens in YENDO's herbarium. We suppose that OKAMURA must have described *L. yendoana* on the basis of other specimens. His description seems to fit *L. cichorioides* MIYABE. This well-known species is characterized in having delicate haptera, mucilage ducts in stipe, crispate blade margins, round to cordate blade base, and blade with a median fascia (OKAMURA^{3,6}, MIYABE⁵). As for the type description of *L. yendoana* MIYABE we have adopted MIYABE's description for the following reasons: 1) according to Article 36 of the International Code of Botanical Nomenclature⁷, MIYABE's description should be considered as a valid publication though not accompanied by a Latin description or diagnosis; 2) his description fits the plants from Muroran in having slender haptera (Fig. 2) and mucilage ducts in the blade (Fig. 1, C) but no median fascia and no mucilage ducts in the stipe (Fig. 1, B); and 3) MIYABE¹ had presented his description orally two years before the publication of OKAMURA's book³) in which MIYABE's and OKAMURA's description of *L. yendoana* were published together.

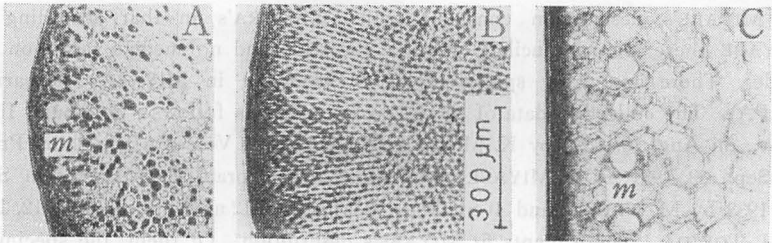


Fig. 1. Photomicrographs showing cross sections of hapteron (A), stipe (B), and blade (C) of *Laminaria yendoana* collected at Muroran on Nov. 1, 1972. m, mucilage ducts. Use scale in B for A-C.

MIYABE⁴) did not designate the holotype for his *L. yendoana*. So we have selected a lectotype, to typify this species, in accordance with the guidelines and Article 7 of the International Code of Botanical Nomenclature⁷). In searching the MIYABE's and YENDO's herbaria we found the specimens which were cited originally by MIYABE⁴). They came from two collections as stated previously. We have selected as the lectotype a specimen from YENDO's herbarium (Fig. 2). To make this selection we are much indebted to Emer. Prof. J. TOKIDA and Prof. Y. NAKAMURA for their valuable suggestions.

Laminaria yendoana MIYABE and *L. sikotanensis* MIYABE et NAGAI closely resemble each other as pointed out by NAGAI⁸). He stated that *Laminaria sikotanensis* is distinguished from the former in having a rather coarse and less

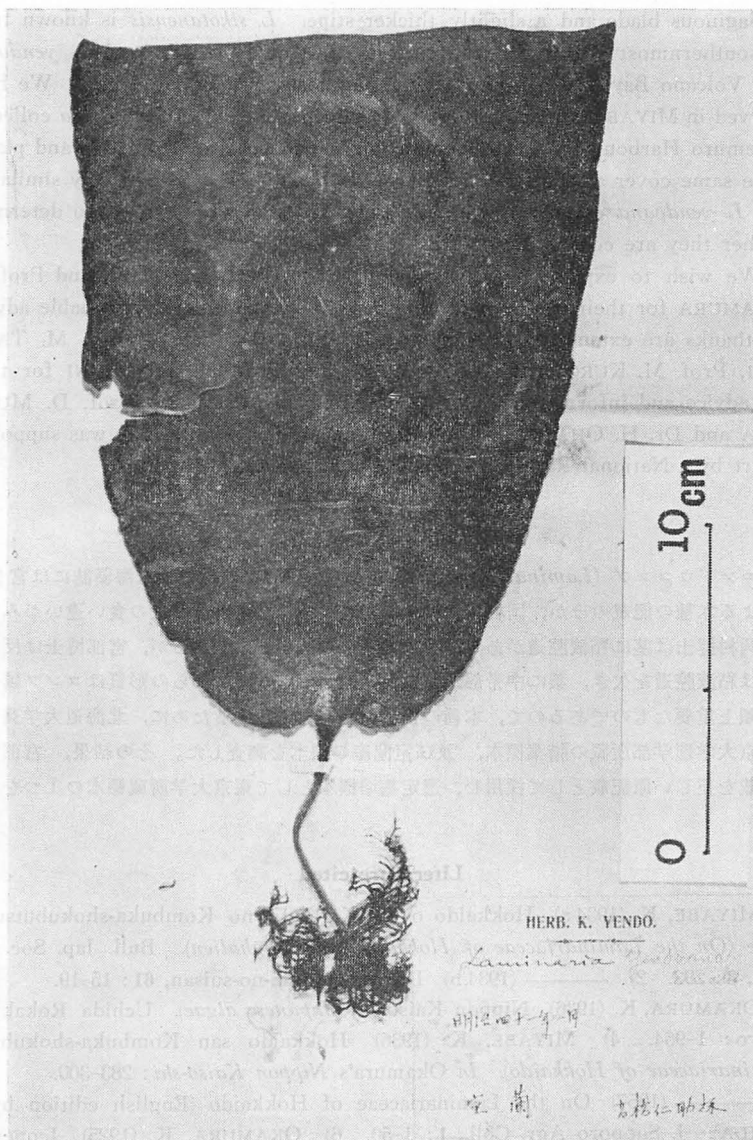


Fig. 2. The lectotype of *L. yendoana* MIYABE deposited in YENDO's herbarium housed in the Herbarium of Department of Botany, University of Tokyo (TI). The label, in YENDO's handwriting, states that the specimen was collected at Muroran, in January 1908, by Mr. NISUKE TAKAHASHI.

mucilaginous blade and a slightly thicker stipe. *L. sikotanensis* is known from the southernmost Kuriles off the eastern coast of Hokkaido and *L. yendoana* from Volcano Bay (Uchiura-wan) on the southern coast of Hokkaido. We have observed in MIYABE's herbarium seven specimens labelled as *Laminaria* collected in Nemuro Harbour and at On-neto on the eastern coast of Hokkaido and placed in the same cover as the specimens of *L. yendoana*. They are equally similar to both *L. yendoana* and *L. sikotanensis*. Further study is required to determine whether they are conspecific or not.

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要 約

エンドウコンブ (*Laminaria yendoana* MIYABE) について日本海藻誌には宮部博士による本種の記載のほか、岡村博士による記載があり、両者には次の食い違いがみられる。岡村博士は茎に粘液腔道があり、葉に中帯部があるとしているが、宮部博士は反対に茎には粘液腔道を欠き、葉に中帯部がないと明記している。これらの形質はコンブ属の種の分類上重要なものであるので、本種の正しい記載を決定するために、北海道大学農学部と東京大学理学部所蔵の腊葉標本、及び室蘭産の標本を調査した。その結果、宮部博士の記載を正しい原記載として採用し、選定基準標本として東京大学所蔵標本の1つを指定した。

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