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ON TWO SPECIES OF SPHACELARIALES NEW TO JAPAN.

BY

JUN TOKIDA

(With 6 Text Figures)

日本新産くろがしら族海藻二種に就て

時　田　　郁

According to the late Dr. K. YENDO (1914, p. 268), when he added to our algal flora an Atlantic species, *Sphacelaria radicans* Ag., there were found no less than nine species of *Sphacelaria* on our coast, of which only four, including just mentioned species, were determined with certainty. Afterwards Dr. K. OKAMURA, in his Meii, 2nd. ed. (1916), enumerated five species of *Sphacelaria* and one species of *Halopteris* as the members of the *Sphacelariaceæ* ever found in our boundary, and there has been no addition henceforth, as far as I know.

In the course of the preparation of the marine algal flora of the Southern Saghalien, I have found some interesting brown algae belong to *Sphacelariales*, and two of them are now identified with the following two species new to Japan.

In this opportunity I would express my sincere thanks to Dr. K. MIYABE for his kindest guidance and constant advices during my studies on the marine flora of the Southern Saghalien.

Sphacelaria plumigera HOLMES

Text figures 1-4.

HOLMES, New British Marine Algae, in Grevillea, Vol. XI, (1882-83), p.

145; REINKE, Uebersicht der bisher bekannten Sphacelariaceen, (1890), p. 208; DE TONI, Syll. Alg. III, (1895), p. 505; SAUVAGEAU, Remarques sur les Sphacelariacees, (1901), p. 94, f. 22.

Nom. Jap. *Hane-kurogashira.*

Loc. Saghalien at Tobuchi Lake, a lagoon in the Aniwa Bay (Herb. J. TOKIDA, no. 400, Aug. 1929), and Sakaehama on the east coast (Herb. J. TOKIDA, no. 409, Aug. 1929).

Distr. England, Helgoland, Cattegat and Écosse in North Sea.

Fronds 3.5 cm. high, densely corticated with rhizoidal filaments below, habit *Chaetopteris plumosa* like, of feathery shape, main axes alternately divided, lateral branches opposite and distichous, closely provided with pinnae arranged in the same manner, pinnae gradually increase in length from above downward for a short distance yielding a pyramidal shape in the terminal portions of axes and branches; apical segments of axes about 90 μ in diam., those of upper pinnae 47–57 μ in diam., while lower and longer pinnae, probably as "Kurztriebe" be called, lanceolate, tapering upwards, less than 30 μ in diam. at apices; unilocular sporangia broad ovoid, 48–60 μ in diam., 54–63 μ long, pedicellate, pedicels usually monosiphonous, simple or irregularly divided, distichous on the lower portions of older but ecorticated "Kurztriebe", either opposite and closely set accompanying no pinnules, or sparingly intermixed between pinnules, which are more thinner than the pinnae; plurilocular sporangium and propagulum unknown.

The above description is based upon the fertile plant found among the entangled masses of *Spongomorpha duriuscula* and *Chaetomorpha* thrown up ashore at Sakaehama, in August, 1929. Another locality in Saghalien is represented by a single specimen of sterile and more slender frond, axis being 60 μ and pinnae 30 μ in diameter.

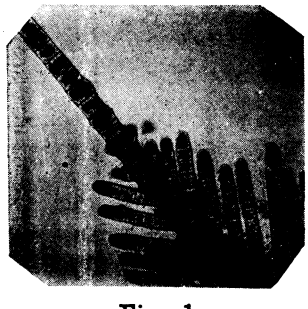

Fig. 1.

While the descriptions and illustrations in the works of the authors above cited assure that our plant is identical with the present species, I was able to ascertain that our plant, in general appearances, coincides with the Danish

specimens of this species, collected and probably determined also by Dr. F. BOERGESEN and distributed to the herbarium of Prof. Y. YAMADA, to whom I am much obliged for his valuable advices as well as his kind permission to examine above specimens for comparison.

Fig. 2.

Fig. 3.

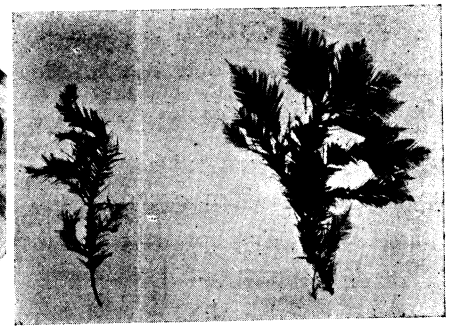

Fig. 4.

Figs. 1–4. *Sphacelaria plumigera* HOLMES. 1. Apical portion of a frond, showing the mode of branching. × ca. 33. 2. Fertile part of a frond, showing fertile ramuli scattered on the "Kurztriebe" distichous on lower axis densely covered with rhizoidal filaments. × ca. 33. 3. Unilocular sporangia. × ca. 83. 4. Two fronds from no. 409, showing the habit of the plant. Slightly larger than the natural size.

The photograph Fig. 4, as well as Fig. 6, on the page 219, is taken by Prof. T. HIKITA, to whom the writer returns his sincere thanks.

Halopteris scoparia (L.) SAUVAGEAU

Text figures 5 & 6.

SAUVAGEAU, Remar. sur les Sphac., (1904), p. 349–379, f. 69–73; BOERGESEN, Marine Algae from the Canary Islands, II, (1926), p. 75; *Conferva scoparia* L., Systema Naturae, II, (1759), p. 720; *Sphacelaria scoparia* LYNGB., Hydrophyt. Dan.. (1819), p. 104, t. 31, f. 4; HAUCK, Meeresalgen, (1885), p. 347, f. 145; *Stypocaulon scoparium* KUETZING, Phyc. gen., (1843), p. 293, t. 18, f. II; KJELLMAN, Algae of the Arctic Sea, (1883), p. 272; DE TONI, Syll. Alg., III, (1895), p. 518.

Nom. Jap. *Hake-kashirazaki.*

Loc. Saghalien at Tobuchi Lake,. a lagoon in the Aniwa Bay (Herb. J. TOKIDA, no. 267, July 1926, no. 395, Aug. 1929 and no. 422, Aug. 1930),

Airoppu on the east coast (Herb. J. TOKIDA, no. 141 and 272, Aug. 1927); Hokkaido at Nemuro (Dr. K. MIYABE, Aug. 1894).

Distr. Atlantic and North Sea coasts of Europe; West Indies; Arctic coasts of Greenland (?); Mediterranean, Adriatic and Baltic Seas; New Guinea; Australia.

Fronds 5–7 cm. high, growing on stones and shells, densely covered with rhizoidal filaments downwards, alternate in every direction, decomposito-pinnate, pinnae fastigiate, pinnules spinous, regularly alternate, distichous (f. *b*) or sometimes quaquaversal (f. *c*), stipe 308–322 μ in diam. including rhizoids, main axes up to 155 μ in diam. except rhizoids, "Kurztriebe" 42–49 μ in diam. at the base, gradually tapering upwards, apical cells of main axes and "Langtriebe" 45–154 μ in diam.; unilocular sporangia spherical, 98 μ in diam, pedicellate, pedicels

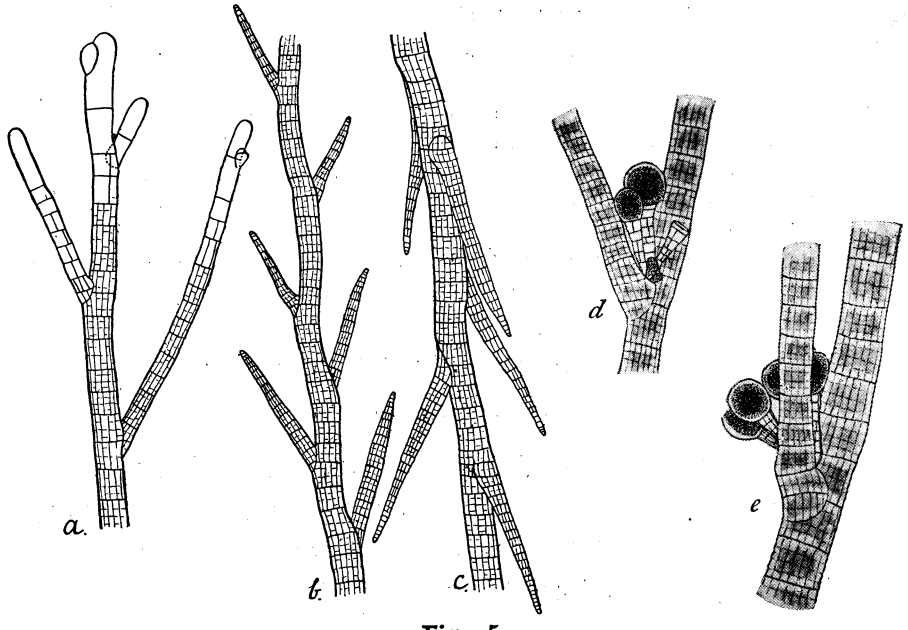

Fig. 5.

Fig. 5, a-e. *Halopteris scoparia.* a. apical growing region, × ca. 43; b & c. spinous branchlets on "Kurztriebe", × ca. 43; d & e. unilocular sporangia, × ca. 58.

simple, composed of a row of several cells axillary tufted (f. *d* & *e*).

The above measurement of the vegetative frond is based upon the plant from Airoppu, (no. 141), and that of sporangia upon a dwarf plant from the

same locality (no. 272). Text figure *a* shows the holoblastic character at the apical cells of our plant, and figures *d* and *e* unilocular sporangia axillary tufted. These characters lead us to place our plant in the genus *Stypocaulon* of KUETZING. Comparing with the illustrations by KUETZING cited in the Meeresalgen by HAUCK, l. c., our plant is proved to be none but the summer form of *Stypocaulon scoparium* Kuetzing. On the other hand I could compare, with a positive result, our plant with some Atlantic specimens of the present species, especially from the Canary Islands, collected and determined by Dr. F. BOERGESEN, which were laid in my hand by the kindness of Prof. Y. YAMADA. After J. REINKE (1890 and 1891), F. R KJELLMAN (1891) and DE TONI (l. c.) *Stypocaulon* is distinguished from *Halopteris*, having several sporangia instead of one in an axilla. In 1904, however, Prof. C. SAUVAGEAU published his new conception about the genus *Halopteris*, amalgamating three genera, namely, *Halopteris* and *Stypocaulon* of KUETZING and *Anisocladus* of REINKE, because there are found some intermediate forms of the extreme representatives of these genera.

In the herbarium of the Hokkaido Imperial University, there is kept a specimen collected by Dr. K. MIYABE at Nemuro in Hokkaido, in August, 1894, which has been labelled by him as *Sphacelaria (Stypocaulon) dura* Rupr. with a question mark. This is identical with our plant from Saghalien, and only material, as far as I know, to represent the occurrence of the species in our boundary outside Saghalien. As to the distribution of this species in the Arctic Sea at Greenland, KJELLMAN, (1883), followed ZELLER, although he himself had not seen any specimens.

Fig. 6.

Fig. 6. *Halopteris scoparia* (L.) Sauvageau, three plants from Airoppu (no. 141), left two showing the natural habit when dried, and right showing the mode of branching in a spread and pressed condition. ca. ⅔.

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摘　　要

樺太島南部(本邦領有地域)の海藻を調査中、褐藻類くろがしら族に屬する數種を發見したが、その中、二者を次の日本新産二種に査定し、自分の觀察を記載した。

Sphacelaria plumigera Holmes, はれくろがしら（新稱）

第一圖—第四圖。産地：遠淵湖及榮濱（樺太）。分布：北海。

第一圖は枝端生長部の一部の顯微鏡寫眞で、側枝が羽狀に櫛比するを示す。第二圖は体の下部の密に根樣絲を以て包被された軸(圖の上端黑き部)から羽出する短條枝に單子嚢を有する小枝の散在せるを示す。第三圖は數個の單子嚢を廓大して示す。第四圖は二個の植物の自然大より僅かに大い寫眞で、その分枝の有樣を示す。

Halopteris scoparia (L.) Sauvageau, はけかしらざき（新稱）

第五及六圖。産地：遠淵湖及愛郎（樺太）根室（北海道、宮部博士採集1894年八月）。分布：太西洋北海、地中海、西印度、濠洲等。

第五圖。*a*は先端生長点で特有な分枝法を示す。*b*, *c*, は短條枝上の短き刺狀の小枝が二列に互生せるもの(*b*)と、各方面に互生せるもの(*c*)とを示す。*d*, *e*, は何れも單子嚢が短い柄を有して枝の腋に叢生せる狀。第六圖は愛郎採集の三個の標本で左の二つは乾燥したものゝ自然の有樣、右の一つは擴げて腊葉にしたもので分枝狀態を示したもの。

此の報告を草するに當り、常に懇ろなる御指導を賜はる宮部博士に深甚の謝意を表すると共に、比較のため貴重なる標本を貸與され、又有力なる助言を下されし山田幸男氏並に、寫眞(第四及六圖)撮影の勞を辱うせし正田教授に感謝す。