

Notes on the Distribution of *Pleuroblepharis* (Bonnemaisoniaceae) and the Status of *Odonthalia japonica* OKAMURA

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Following the 7th International Seaweed Symposium in Sapporo, Japan, I had the opportunity to visit the Herbarium of Hokkaido University, where so many important collections are stored. Upon examining the folder marked "*Odonthalia semicostata*", I recognized that the specimens were identifiable as *Pleuroblepharis stichidophora*, a taxon of the Bonnemaisoniaceae recently described¹⁾ from the Aleutian Islands. OKAMURA²⁾ introduced the name *Odonthalia japonica* for the entity that had earlier been termed *Odonthalia semicostata* in the Japanese literature. The purpose of this paper is to discuss the status of *Odonthalia japonica* OKAMURA and to present some supplemental data on the distribution of *Pleuroblepharis*.

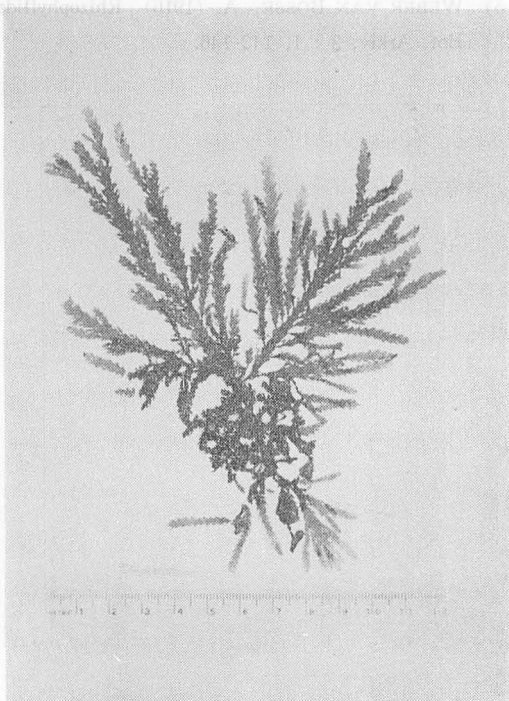


Fig. 1. *Pleuroblepharis japonica* (OKAMURA) WYNNE collected by M. NAGAI from Odomari, Onnekotan Is., North Kurils; August, 1935 (HOKK 22053). Epiphyte on *Ptilota*.

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***Pleuroblepharis* from the Kurils and Kamchatka**

Odonthalia semicostata MERTENS ex J. AGARDH was originally described³⁾ (Agardh, 1863, p. 898) on the basis of a specimen from Kamchatka in MERTENS' herbarium and with the attached manuscript name *Fucus semicostatus* MERTENS. Although *O. semicostata* has been reported from various localities in the North Pacific, these records (for other than the type locality) have been subsequently discounted. For example, SETCHELL and GARDNER⁴⁾ listed this species from the coasts of Washington and British Columbia in the eastern Pacific ; yet they recognized the thicker substance and darker color of the American material. COLLINS⁵⁾ also suspected that the alga in question differed in several respects from AGARDH's species.

Later Kylin⁶⁾ recognized SETCHELL and GARDNER's alga from North America as a distinct species, *Odonthalia washingtoniensis*, on the basis of its coarse, cartilaginous appearance.

Similarly, OKAMURA,^{s7)} (1916, pl. CLVII, figs. 1-6) observation of *Odonthalia semicostata* in the vicinity of Cape Lopatka on the Kamchatka Peninsula and YAMADA's⁸⁾ record from the Kurils have both been later corrected. OKAMURA⁹⁾ himself changed the name to "*Odonthalia* sp. nov.", while NAGAI¹⁰⁾ referred to the same plant as "*Odonthalia* sp.". Ultimately OKAMURA²⁾ introduced the name *Odonthalia japonica* for this entity.

A check of these specimens in the Herbarium of Hokkaido University revealed them to be *Pleuroblepharis stichidophora* WYNNE. One specimen (HOKK 15313), which had been labeled *Odonthalia semicostata* by YAMADA, had been collected at Kobune, Urup Island, the Middle Kurils, in August, 1934 ; it was epiphytic on *Ptilota*. The other two specimens had been labeled *Odonthalia* sp. by NAGAI ; HOKK 22051 was also from Kobune while HOKK 22053 (fig. 1) was from Odomari, Onnekotan Island, in the North Kurils. Both of these specimens were collected in August, 1935.

Although the width of the axes of *Pleuroblepharis stichidophora* is given as 4 mm¹⁾, the main axes in one of the specimens examined (HOKK 22051) reach a width of 8 mm. NAGAI¹⁰⁾ reported the width of the main axes to be 4-10mm. The material from the western Pacific seems to be more robust than the collections from Amchitka Island, the type locality. But the Japanese specimens show a range of values, and the basic features agree in all respects with the description of *P. stichidophora*.

Since OKAMURA's²⁾ designation of *Odonthalia japonica* lacks a description, it might at first glance appear to be a *nomen nudum*. However, it is definitely tied to the earlier description of *Odonthalia semicostata* sensu OKAMURA⁷⁾, and this is sufficient for its validation. The account of Volume VII, No. 10, which was arranged and edited by Pro-

fessor Y. YAMADA, was published following OKAMURA's death. This circumstance perhaps explains the reason that no reference was made to OKAMURA's description of this same alga as *Odonthalia* sp. nov. his 1936 treatise.

The above decision concerning the valid publication of *Odonthalia japonica* OKAMURA and its synonymy with *Pleuroblepharis stichidophora* WYNNE makes the following transfer necessary :

Pleuroblepharis japonica (OKAMURA) WYNNE comb. nov.

Basionym : *Odonthalia japonica* OKAMURA, 1942, p. 116.

Figures : OKAMURA, 1916, pl. 157, figs. 1-6 (as *Odonthalia semicostata*, nec *O. semicostata* MERTENS ex J. AGARDH).

Description : OKAMURA, 1916, p. 25 (as *Odonthalia semicostata*, nec *O. semicostata* MERTENS ex J. AGARDH); OKAMURA, 1936, p. 905 & 906 (as *Odonthalia* sp. nov.)

Synonym : *Pleuroblepharis stichidophora* WYNNE, 1970. p. 433, figs. 1-12.

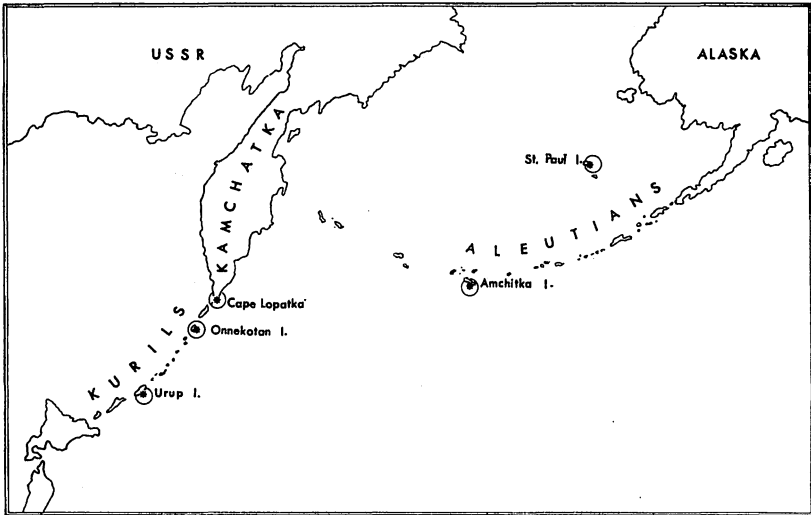


Fig. 2. Distribution of *Pleuroblepharis japonica* in the North Pacific.

Distinction of *Pleuroblepharis* and *Odonthalia*

The flattened, ribbon-like axes of *Pleuroblepharis*, with their short, subulate branches alternating to right and left, can easily be confused with sterile plants of certain species of *Odonthalia*. The Japanese workers did not observe fertile specimens in their collec-

tions. The presence of conspicuous gland cells scattered over the cortex of freshly collected plants is perhaps the best means to quickly distinguish sterile *Pleuroblepharis*. This characteristic was the first indication to the author that this alga belonged to the family Bonnemaisoniaceae (Nemaliales). The very delicate substance of the plants and their rapid disintegration after collecting are additional traits of the Bonnemaisoniaceae.

The most distinctive feature of *Pleuroblepharis* is the nature of the tetrasporangial fructifications. "Compound stichidia" of tetrasporangia have been described¹⁾ as arising in the axils of the determinate branches. The fertile branchlets consist of a uniseriate main filament and bear a distichous arrangement of alternating stichidia on opposite sides. Two or three cruciately divided tetrasporangia develop at each level of the stichidium in contrast to pairs of tetrahedrally divided tetrasporangia in the fertile branchlets of *Odonthalia* (FALKENBERG¹¹⁾, KYLIN^{12,13)}).

In addition to the present range extension of *Pleuroblepharis japonica* to the western Pacific given by these specimens, Dr. PAUL C. SILVA of the University of California at Berkeley has identified a tetrasporic specimen (UC 420836) from a collection made by CHARLES H. TOWNSEND in 1895 at St. Paul Island in the Bering Sea. I have confirmed his determination. Figure 2 represents the known range of *P. japonica*.

Status of *Odonthalia semicostata*

The question remains concerning the status of AGARDH's *Odonthalia semicostata*. Taxonomic and nomenclatural problems exist concerning this species. DETONI¹⁴⁾ (1903, p. 1141) listed *O. angustifolia* Suhr¹⁵⁾ as a synonym. Suhr described his plant to have a thick, cartilaginous texture and not adherent to the paper when dried. He illustrated an axillary fructification with tetrasporangia occurring singly per tier and thus different from *O. dentata*. If indeed *O. angustifolia* SUHR is the same as *O. semicostata*, the former name should have priority, since it antedates both *O. semicostata* and *O. angustifolia* POSTELS et RUPRECHT¹⁶⁾, which is a synonym of *O. kamtschatica* RUPRECHT. At the present time it appears that *O. semicostata* belong to the genus *Odonthalia*, judging from the original description. Obviously, a monographic treatment of *Odonthalia* is needed.

SUMMARY

1. On the basis of an examination of specimens of the Herbarium of Hokkaido University, *Odonthalia japonica* OKAMURA [= *O. semicostata* sensu OKAMURA, *nec.* *O. semicostata* MERTENS ex J. AGARDH] is recognized to be *Pleuroblepharis*

- stichidophora* WYNNE of the Bonnemaisoniaceae. The new combination *Pleuroblepharis japonica* (OKAMURA) WYNNE is made.
2. The geographical range of *P. japonica* is extended to the Kamchatka Peninsula and to the Middle and the North Kurils. It is also recorded from St. Paul Island in the Pribilofs of the Bering Sea.
 3. *Odonthalia semicostata* MERTENS ex J. AGARDH appears to be a genuine representative of that genus on the basis of its original description; its distribution is apparently restricted to the Kamchatka Peninsula.

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