

Odonthalia kawabatae sp. nov. (Rhodophyta, Rhodomelaceae)
from the Kurile Islands¹⁾

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A new species of *Odonthalia*, *O. kawabatae* MASUDA sp. nov. is described based on material collected from Shikotan Island, southern Kuriles. This alga is characterized by having narrow branches, midribs and broadly ovoid cystocarps with wide ostioles, and by a corymbose arrangement of cystocarps. A synoptical key is given for the species of *Odonthalia* with conspicuous midribs.

Key Index Words: *Odonthalia kawabatae*; *Odonthalia lyallii*; *Rhodomelaceae*; *Rhodophyta*; *taxonomy*.

KAWABATA (1936) reported *Odonthalia lyallii* (HARVEY) J. AGARDH from Shikotan Island, southern Kurile Islands. His voucher specimens preserved in the Herbarium of Faculty of Science, Hokkaido University, Sapporo (SAP) differ from genuine *Odonthalia lyallii* in several respects and are also distinguished from the other known species of this genus. Furthermore, the same alga was found in NAGAI's collection of algae from the Kurile Islands deposited in the Herbarium of Plant Pathology, Faculty of Agriculture, Hokkaido University, Sapporo (SAPA). The alga in question is described below as a new species, *Odonthalia kawabatae*.

Odonthalia kawabatae MASUDA, sp. nov.

Thalli plures erecti e disco basali communi effecti, omnino monopodiales, alterne-distiche ramosi (Figs. 2, 3), usque ad 10 cm in altitudine, specimen exsiccatum in colore atrorubrum et chartae adhaerens; axis principalis fere teres supra discum basalem et 600-800 μm in diametro, statim comprescens, extensus 1800-2300 μm latitudinem maximam ad partem mediam, costis solum ad partem infernam, ramis lateralibus in ramos sensim breviores usque ad 6-7 ordines divisus; rami laterales infra simplices, sed supra ramosi, costis solum ad partem infernam ramorum ordinis primarii in parte costata axis principalis portati (Figs. 4, 5); rami adventitii interdum in partibus infernis ad mediam axis principalis portati (Figs. 9, 10); costae primum in latus unum (Fig. 4) et demum utrinque crescentes (Fig. 5); ramuli procarpiferi polysiphonii, breves (Figs. 11, 12); cystocarpia in parte summa ramorum portata, corymbosa (Fig. 6), late ovoidea (Figs. 13-18), ostiolis latis (250-500 μm in diametro), 600-950 μm in longitudine et 600-950 μm in diametro, plerumque calcaribus (50-400 μm in longitudine); stichidia tetrasporangifera in parte summa ramorum portata, fasciculata (Fig. 7), leviter compressa, ad partem proximalem attenuata, 750-2300 μm in longitudine, 200-270 μm in diametro et 140-170 μm in crassitie; tetrasporangia in series longitu-

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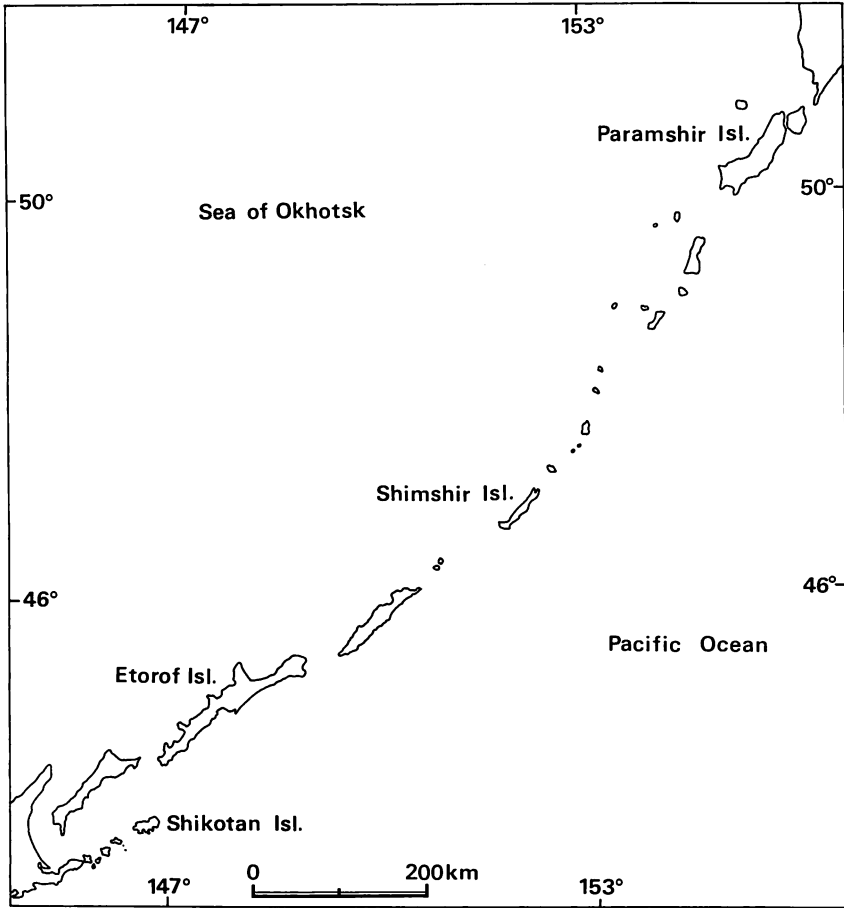


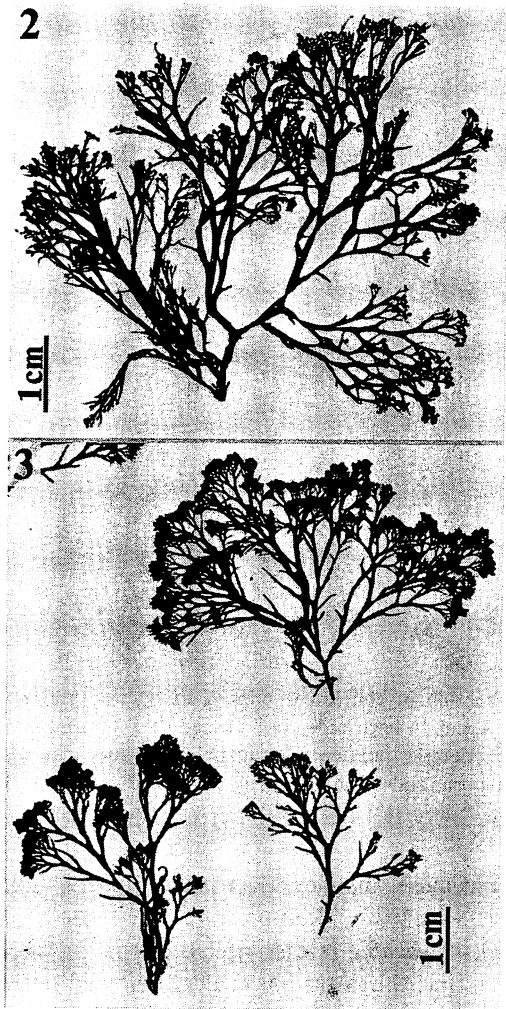
Fig. 1. Map of Kurile Islands, showing the four islands where the specimens of *Odonthalia kawabatae* was collected.

dinales duas (Fig. 8) ad 7-19 segmenta successiva stichidiorum formata, omnino cellulis obiectis duabus in latere instructa (Fig. 19), $100-120\ \mu\text{m} \times 100-130\ \mu\text{m}$, tetraedrice divisa; plantae spermatangiferae ignotae.

Holotypus: Specimen cystocarpiis (Fig. 2) ex insula Shikotan insularum Kurilensium australium lectum (SAP 15509A).

Several erect thalli issuing from a common basal disc, each thallus monopodial, alternate-distichously branched (Figs. 2, 3), up to 10 cm in height; dried specimen dark red in color and adhering to paper; main axis almost terete above the basal disc and $600-800\ \mu\text{m}$ in diameter, becoming immediately compressed, reaching a maximum breadth of $1800-2300\ \mu\text{m}$ at the middle por-

tion, with midribs only at the lower portion, with lateral branches divided into progressively shorter branches up to 6-7 orders; lateral branches simple below, but branched above, with midribs only at the lower portion of the first order branches borne on the costate portion of the main axis (Figs. 4, 5); adventitious branches sometimes borne on the lower to middle portions of the main axis (Figs. 9, 10); midribs appearing first on one side (Fig. 4) and later on both the sides (Fig. 5); procarp-bearing branchlets polysiphonous, short (Figs. 11, 12); cystocarps borne on the uppermost portion of branches, corymbose (Fig. 6), broadly ovoid (Figs. 13-18), with wide ostioles ($250-500\ \mu\text{m}$ in diameter), $600-950\ \mu\text{m}$ in length and $600-950\ \mu\text{m}$



Figs. 2-3. *Odonthalia kawabatae*. 2. Holotype specimen collected from Shikotan Island (cystocarpic, SAP 15509A) ; 3. Tetrasporangial specimens collected from Paramshir Island (SAPA).

in diameter, usually with calcars (50-400 μm in length); tetrasporangial stichidia borne on the uppermost portion of branches, fasciculate (Fig. 7), slightly compressed, attenuated to the proximal portion, 750-2300 μm in length, 200-270 μm in diameter and 140-170 μm in thickness; tetrasporangia formed in two longitudinal rows (Fig. 8) on 7-19 successive segments of the stichidia, each provided with two cover cells on the flank side (Fig. 19), 100-120 $\mu\text{m} \times 100-130 \mu\text{m}$, divided tetrahedrally; spermatangial plants

unknown.

Holotype: Cystocarpic specimen (Fig. 2) collected from Shikotan Island, southern Kuriles, in July 1933 by S. KAWABATA (SAP 15509A).

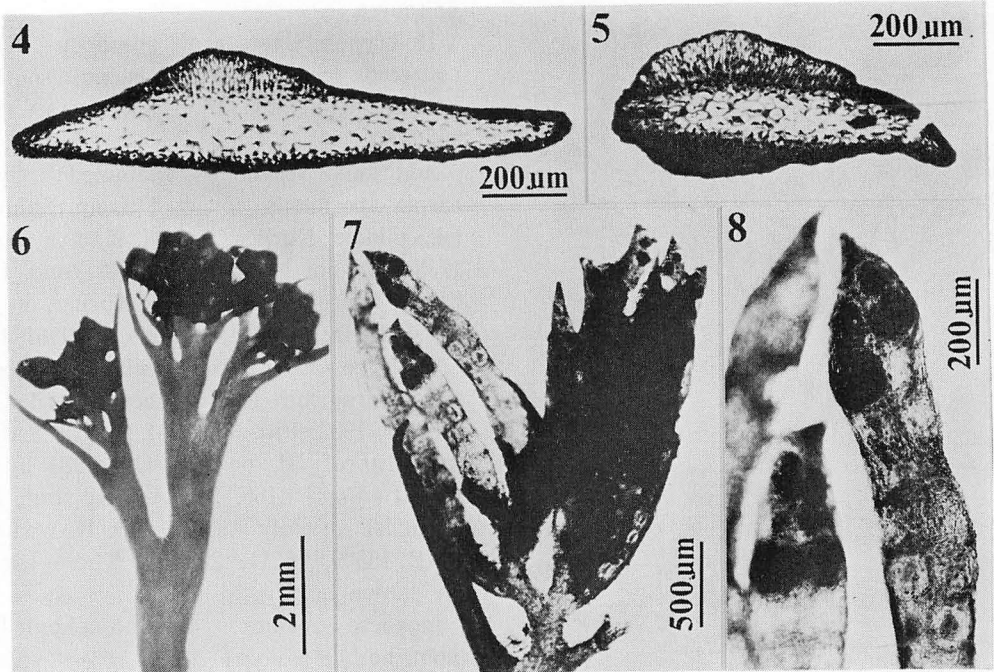
Additional specimens examined: Cystocarpic specimens collected from Shimshir Isl., middle Kuriles, by M. NAGAI (*Nagai* 1733, date not described, SAPA) and from Etorof (Iturup) Isl., southern Kuriles, on July 17, 1934 by M. NAGAI (*Nagai* 4161-4165, SAPA); tetrasporangial specimens collected from Paramshir Isl., northern Kuriles, on July 20, 1932 (Fig. 3) by M. NAGAI (SAPA), from Etorof Isl. on July 17, 1934 by M. NAGAI (*Nagai* 4160, SAPA) and from Shikotan Isl. in July 1933 by S. KAWABATA (SAP 15509, 15511, 22824). These islands are shown in Fig. 1.

Japanese name: Sikotan-nokogirihiba (nom. nov.)

The specific epithet *kawabatae* is dedicated to Dr. Seisaku KAWABATA who made the type collection of this species from Shikotan Island. According to KAWABATA (1936), this alga grows on rocks in the upper to middle intertidal zone. The description given above is based on materials collected from Shikotan Island. Other specimens gathered from Etorof Isl., Shimshir Isl. and Paramshir Isl. are similar in every respect to those from Shikotan Island. The distinction of this alga from other *Odonthalia* species is summarized below.

At present ten species are ascribed to the genus *Odonthalia*.¹⁾ These species can be divided into two groups on the basis of the nature of midribs. One group is characterized by conspicuously developed midribs. These include *O. dentata* (LINNAEUS) LINGBYE, *O. lyallii* (HARVEY) J. AGARDH, *O. ochotensis* (RUPRECHT) J. AGARDH, *O. kamtschatica* (RUPRECHT) J. AGARDH, *O. setacea* (RUPRECHT) PERESTENKO and *O. washing-*

1) *Odonthalia teres* PERESTENKO should be transferred to *Rhodomela* on account of the spiral branching and the presence of trichoblasts (MASUDA, unpublished).



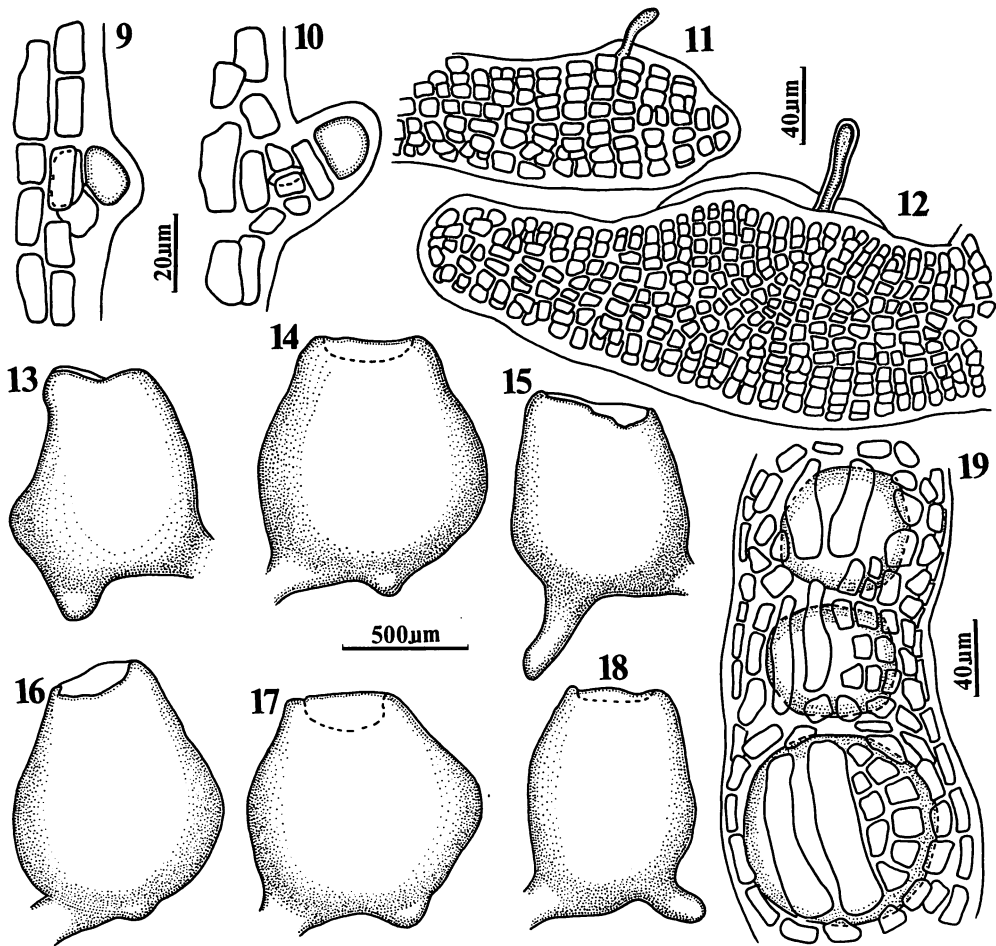
Figs. 4-8. *Odonthalia kawabatae*. 4, 5. Cross section of the lower portion of a first order branch, showing midribs developed on one side in 4 and on both sides in 5 (based on a specimen collected from Shikotan Island, SAP 15509); 6. Fertile portion of the holotype specimen, showing arrangement of cystocarps; 7, 8. Tetrasporangial stichidia borne on a plant collected from Shikotan Island (SAP 15509).

toniensis KYLIN. The other group has indistinct midribs or no midribs. These include *O. corymbifera* (GMELIN) GREVILLE, *O. floccosa* (ESPER) FALKENBERG, *O. oregona* DOTY and *O. annae* PERESTENKO. *Odonthalia kawabatae* is included in the first group and seems to be closely related to *O. ochotensis* on the basis of the narrow branches and the corymbose arrangement of cystocarps borne on the uppermost portion of ordinary branches (RUPRECHT 1850). However, *O. kawabatae* possesses large broadly ovoid cystocarps, but *O. ochotensis* bears small urceolate cystocarps. Cystocarpic features of *Odonthalia*, the shape, size, arrangement and position, have taxonomic significance at the species level (MASUDA and YAMADA, in press). *O. kawabatae* is distinguished from *O. kamtschatica* and *O. setacea* by the arrangement and shape of cystocarps. The latter two species have urceolate cystocarps arranged in a flexuose-

racemose manner (RUPRECHT 1850, PERESTENKO 1977, MASUDA and YAMADA 1980). *O. kawabatae* is distinguished from *O. lyallii* in that the latter has ecalcarate ovoid cystocarps with narrow ostioles (sometimes with slightly elevated necks) arranged in a flexuose-racemose manner (HARVEY 1862, MASUDA, unpublished). *O. kawabatae* differs basically from *O. dentata* and *O. washingtoniensis* in that reproductive structures of the latter two species are borne on special adventitious branches which characterize both the species (HARVEY 1846-51, NEWTON 1931, SETCHELL and GARDNER 1903).

The following synoptical key is given for the seven species with conspicuously developed midribs in the genus *Odonthalia*.

1. Reproductive structures borne on ordinary branches2
1. Reproductive structures borne on special adventitious branches.....3
2. Cystocarp arrangement corymbose....4



Figs. 9-19. *Odonthalia kawabatae*. 9-10. Young adventitious branches; 11-12. Procarp-bearing branchlets; 13-18. Mature cystocarps; 19. Portion of a tetrasporangial branch (flank-side view). Note two elongated cells in each segment being cover cells; 9, 10, 19, from a specimen collected from Shikotan Island (SAP 15509); 11-18, from the holotype specimen.

- 2. Cystocarp arrangement flexuose-racemose 5
- 3. Cystocarps pitcher-shaped *O. dentata*
- 3. Cystocarps globose.... *O. washingtoniensis*
- 4. Cystocarps small and urceolate
- *O. ochotensis*
- 4. Cystocarps large and broadly ovoid ..
- *O. kawabatae*
- 5. Cystocarps with well-developed calcars..
- *O. kamtschatica*
- 5. Cystocarps without calcars 6
- 6. Cystocarps ovoid with narrow ostioles
- *O. lyallii*
- 6. Cystocarps urceolate with wide ostioles

..... *O. setacea*

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増田道夫：千島列島産紅藻ノコギリヒバ属の新種について

KAWABATA (1936) が南千島の色丹島より採集し、*Odonthalia lyallii* (HARVEY) J. AGARDH として報告した藻が、真の *O. lyallii* 及び他の全てのノコギリヒバ属の種とも異なることが判明したので新種 *Odonthalia kawabatae*, sp. nov. (和名、シコタンノコギリヒバ) として記載した。本種は幅の狭い枝、中肋及び広卵形の嚢果を持つことと、嚢果が散房状に集合して生ずることが特徴である。本藻は故永井政次博士の千島産海藻の採集品のなかにも見いだされた。それによると、択捉島、新知島及び幌筈島にも生育する。ノコギリヒバ属のなかの中肋を持つ7種の検索表を与えた。(060 札幌市北区北10条西8丁目 北海道大学理学部植物学教室)