

***Batrachospermum kushiroense*, sp. nov. (Rhodophyta, Nemalionales)
from Kushiro Moor in cool temperate Japan**

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KUMANO, S. and OHSAKI, M. 1983. *Batrachospermum kushiroense*, sp. nov. (Rhodophyta, Nemalionales) from Kushiro Moor in cool temperate Japan. Jap. J. Phycol. 31 : 156-160.

Batrachospermum kushiroense is described here as a new species of the section *Contorta* of genus *Batrachospermum* from Kushiro Moor in the eastern part of Hokkaido. This species resembles *B. capensis* STARMACH and *B. basilare* FLINT et SKUJA in having the loose agglomeration of gonimoblasts, but differs from them in the size of carpogonia, gonimoblasts and carposporangia.

Key Index Words: *Batrachospermum kushiroense*; *Nemalionales*; *Rhodophyta*; section *Contorta*; *Taxonomy*.

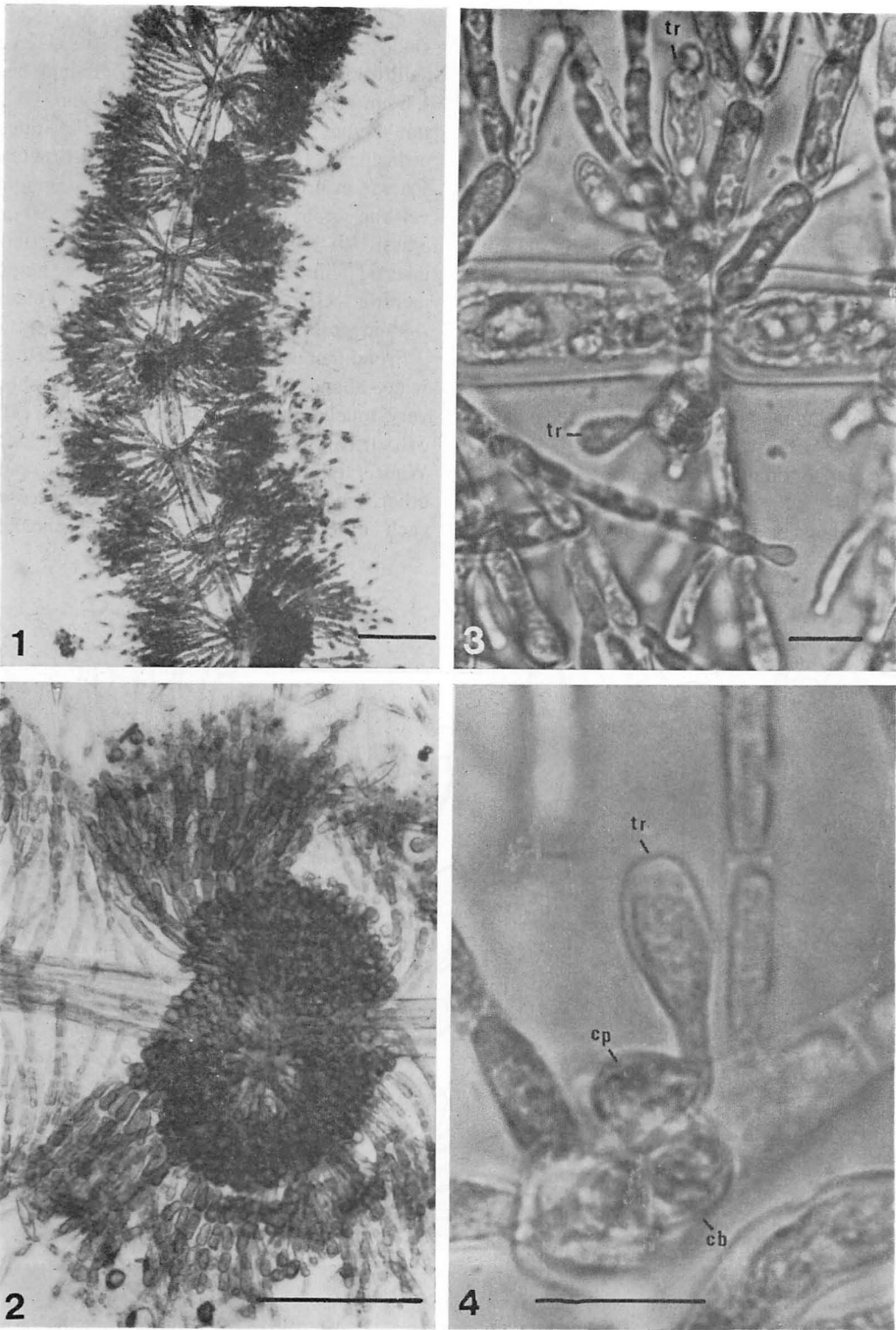
The section *Contorta* of genus *Batrachospermum* is characterized by the twisted carpogonium-bearing branch. SKUJA (1931) established this section based on *Batrachospermum procarpum* from tropical Brazil. As to tropical and subtropical species belonging to this section, STARMACH (1975) described *B. capensis* from the Seychelles in the Indian Ocean. *B. tortuosum* was described by KUMANO (1978), *B. tiomanense* and *B. hirosei* by RATNASABAPATHY and KUMANO (1972a, b) from tropical Malaysia. From subtropical Japan, *B. tortuosum* var. *majus* and *B. iriomotense* were described by KUMANO (1982). *B. basilare* was described by FLINT (1953) from Louisiana and reported from Florida in the United States of America. On the other hand, some species have been described from temperate regions and highlands in tropical region. For example, *B. intortum* was described from temperate China by JAO (1941); *B. lusitanicum*, *B.*

heriquesianum and *B. pseudocarpum* from Portugal by REIS (1965, 1972 and 1973); *B. woiwapense* from the Papuan highlands by KUMANO (1983). The specimen collected from Kushiro Moor in cool temperate Japan is found to belong to the section *Contorta* of genus *Batrachospermum*, and is described in the present paper as a new species of this section.

Kushiro Moor in Hokkaido

The Kushiro Moor, one of the largest moors in cool temperate Japan, is about 226 km², and situated at latitude 43°N and at an alluvial plain along the south-eastern coast of Hokkaido in Japan. The specimens of *Batrachospermum* were collected from an oxbow stagnant pond in the back-swamp along the Kushiro-gawa in this moor on 10th September 1981 by OHSAKI. At the time of collecting the specimens, the water temperature was 20.6°C and pH value was 6.9.

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Figs. 1-4. *Batrachospermum kushiroense* KUMANO et OHSAKI, sp. nov. 1. Structure of whorls showing axial cells, primary branchlets, cortical filaments and gonimoblasts inserted centrally; 2. A part of thallus showing two semiglobular gonimoblasts; 3. Two carpogonium-bearing branches arising from the basal cells of primary branchlets, a fertilized carpogonium and an unfertilized carpogonium are shown; 4. A young carpogonium-bearing branch. (cb: carpogonium-bearing branch, cp: carpogonium, tr: trichogyne). (Scale: 100 μ m for Figs. 1-2, 10 μ m for Figs. 3-4).

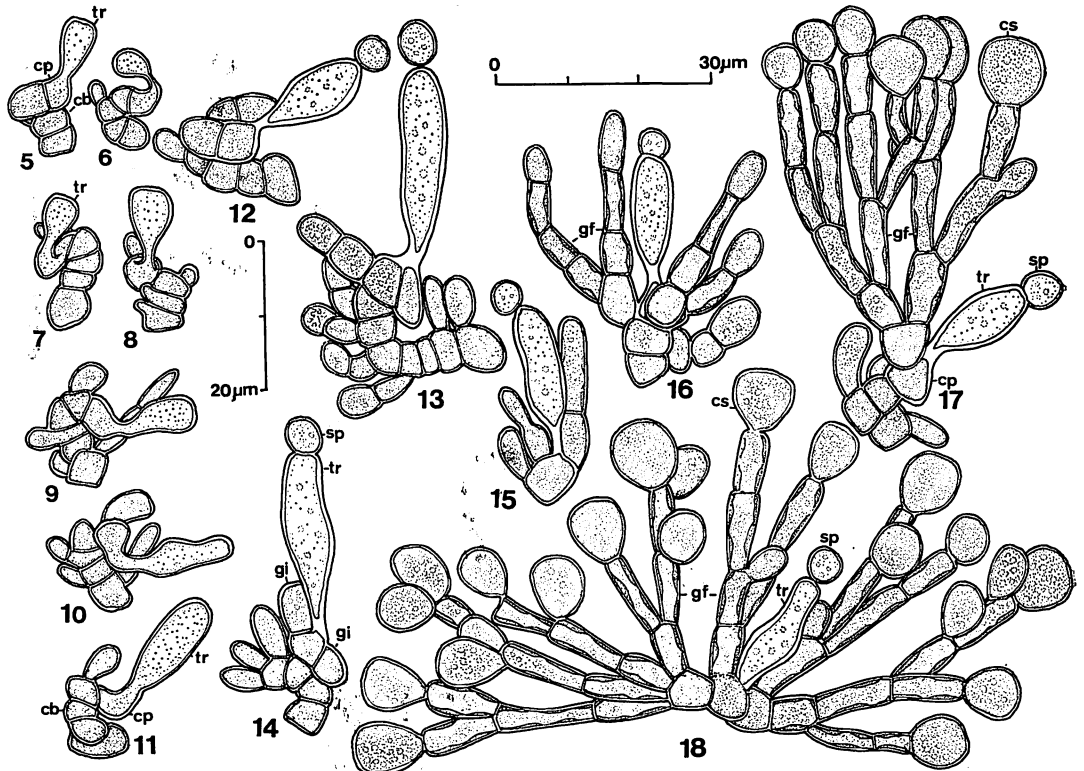
Description of Species

Batrachospermum kushiroense KUMANO et OHSAKI, sp. nov. (Figs. 1-22)

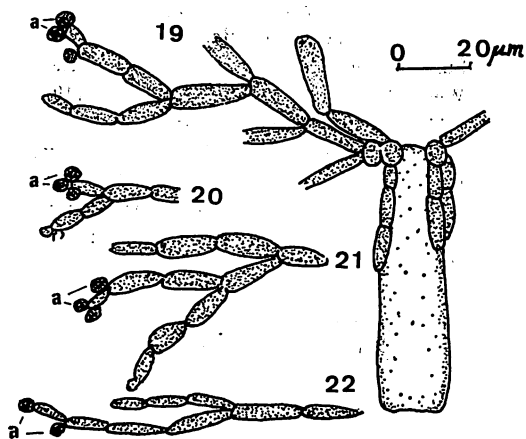
Frons monoica, 4.5 cm alta, 300-350 μm crassa, abundanter et irregulariter ramosa, parum mucosa, aeruginosa. Cellulae axiales cylindricae, 18-50 μm crassae, 70-300 μm longae. Verticilli distantes et ellipsoidei, vel contigui et plus minusve compressi. Ramuli primarii abundanter ramificantes, ex 7-12 cellulis constantes; cellulae fasciculorum cylindricae vel fusiformes, 2-8 μm crassae, 10-20 μm longae; pili nuli. Ramuli secundarii sparsi. Antheridia rari, globosa, 4-7 μm diametro, in ramulis primariis et secundariis terminalis. Ramuli carpo goniferi e cellulis basi ramulorum primariorum orientes, breves,

valde tortuosi, ex cellulis 3-7 disci- vel doliiformibus constantes; carpogonium basi 4-6 μm crassum, apice 4-7 μm crassum, 17-34 μm longum; trichogyne urniformis, indistincte pedicellata, ad basim saepe flexa. Bractee sparsae et brevissimae. Gonimoblasti singuli vel duo, globosi vel semiglobosi, 80-190 μm crassi, 40-130 μm alti, in centro verticilli inserti; fila gonimoblastorum laxe agglomerata. Carposporangia globosa vel ovoidea, 7-9 μm crassa, 7-11 μm longa.

Fronde monoecious, 4.5 cm high, 300-350 μm wide, abundantly and irregularly branched, very mucilaginous, bluish green. Axial cells cylindrical, 18-50 μm wide, 70-300 μm long. Whorls ellipsoidal and distant from each other, sometimes touching and compressed each other (Fig. 1). Primary branchlets



Figs. 5-18. *Batrachospermum kushiroense* KUMANO et OHSAKI, sp. nov. 5-11. Early stages in the development of twisted carponium-bearing branches; 12. A fertilized carpogonium; 13-16. Early stages in the development of gonimoblast filaments; 17-18. Carposporangia terminated on gonimoblast filaments. (cb: carponium-bearing branch, cp: carpogonium, cs: carposporangium, gf: gonimoblast filament, gi: gonimoblast initial, sp: spermatium, tr: trichogyne).



Figs. 19-22. *Batrachospermum kushiroense* KUMANO et OHSAKI, sp. nov. 19. Structure of a whorl showing an axial cell, cortical filaments and antheridia terminated on primary branchlets; 20-21. Antheridia terminated on primary branchlets; 22. Antheridia terminated on a secondary branchlet; (a: antheridium).

abundantly branched, consisting of 7-12 cell-stories; cells of fascicles cylindrical or fusiform, 2-8 μm wide, 10-12 μm long; hairs racking. Secondary branchlets sparse. Antheridia rare, globose, 4-7 μm in diameter, terminal on primary (Figs. 19-21) and secondary branchlets (Fig. 22). Carpogonium-bearing branch (Figs. 3-14) arising from the basal cell of the primary branchlets, short, twisted very much, consisting of 3-7 disc- or barrel-shaped cells; carpogonium 4-6 μm wide at the base, 4-7 μm wide at the apex, 17-34 μm long; trichogyne urn-shaped, indistinctly stalked, often bent at the base (Figs. 3-18). Bracts sparse and very short. Gonimoblasts (Figs. 1-2) single or couple, globular or semiglobular, 80-190 μm wide, 40-130 μm high, inserted centrally; gonimoblast filaments loosely agglomerated (Figs. 2, 17 and 18). Carposporangia (Figs. 17-18) globular or ovoidal, 7-9 μm wide, 7-11 μm long.

Holotype: OHSAKI No. 810910, 10/IX 1981, Herbarium of Faculty of Science, Kobe University. Isotype: OHSAKI No. 810910b (SAP 043462), Herbarium of Department of Botany, Faculty of Science, Hokkaido

University, SAP.

Type locality: An oxbow pond, Kushiro-gawa, Kushiro Moor, Hokkaido, Japan.

Habitat: This species lives on submerged macrophytes and molluscs in stagnant pools in an oxbow of Kushiro-gawa in the moor.

Distribution: Known from the type locality only.

This species resembles *B. iriomotense* KUMANO 1982, *B. capensis* STARMACH 1975 and *B. basilare* FLINT et SKUJA 1953 in the loose agglomeration of the gonimoblast filaments. However, *B. kushiroense* differs from *B. iriomotense* in the length of carpogonium-bearing branches. The carpogonium-bearing branch of *B. kushiroense* consists of 3-7 cells, while 8-12 cells for *B. iriomotense*. *B. kushiroense* differs from *B. capensis* and *B. basilare* in the size of their reproductive organs. Carpogonia of *B. kushiroense* are 17-34 μm long, while those of *B. basilare* are 45-65 μm long and those of *B. capensis* are 40-63 μm long, respectively. The size of gonimoblast was not described by FLINT and SKUJA (1953) for *B. basilare*. The gonimoblasts of *B. kushiroense* are 80-190 μm in diameter, while those of *B. capensis* are 600-850 μm in diameter. Carposporangia of *B. kushiroense* are 7-11 μm long, while those of *B. basilare* are 29-31 μm long and those of *B. capensis* are 11-15 μm long, respectively. Hence, *B. kushiroense* can be distinguished from the above-mentioned three species.

Acknowledgements

The authors wish to express their sincere thanks to Dr. H. HIROSE, Professor Emeritus of Kobe University and Professor M. KUROGI of Hokkaido University for the critical reading of the manuscript.

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熊野 茂*・大崎万治**：日本冷温帯の釧路湿原に産する *Batrachospermum kushiroense*,
sp. nov. (紅藻, ウミソウメン目)

北海道東部の釧路湿原にある釧路川のメアンダーの止水池からカワモヅク属の1新種 *Batrachospermum kushiroense* を記載した。本種はコントルタ節に属し、まばらに集合した嚢果をもつ点で *B. capensis* STARMACH 1975 および *B. basilare* FLINT et SKUJA 1953 に最もよく似るが、造果器・嚢果および果胞子の大きさによってこれらの種と区別できる。(*657 神戸市灘区六甲台 神戸大学理学部生物学教室。 **001 札幌市北区北10条西8丁目 北海道大学大学院環境科学研究科分類学講座：現住所 478 愛知県知多市金沢字大知山 県立知多高等学校)