

AQUATIC MOSSES FOUND IN LAKES OF THE SKARVSNES  
REGION, SYOWA STATION AREA, ANTARCTICA  
(EXTENDED ABSTRACT)

Hiroshi KANDA<sup>1</sup> and Yukira MOCHIDA<sup>2</sup>

<sup>1</sup>National Institute of Polar Research, 9-10, Kaga 1-chome  
Itabashi-ku, Tokyo 173

<sup>2</sup>Mt Hakkoda Botanical Laboratory, Tohoku University,  
Sugayu, Aomori 030

Aquatic mosses in lakes of the Antarctic regions were first recorded by SAVICH-LYUBITSKAYA and SMIRNOVA (1959) at a depth of 33-36 m in lakes at the Bunger Hills, Queen Mary Land. The mosses were described as a new species, *Bryum korotke-*

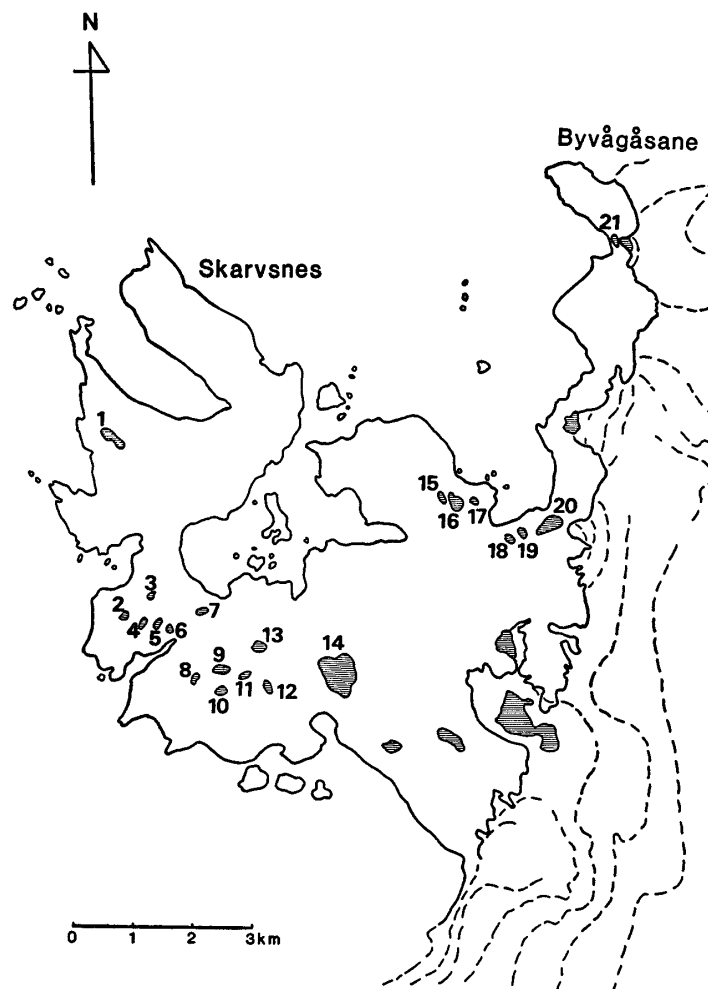


Fig. 1. Distribution of lakes and sampling sites of aquatic mosses in the Skarvsnes region, Antarctica. Lake numbers refer to those in Fig. 1.

Table 1. Aquatic mosses collected from lake beds in the Skarvsnes region, Antarctica.

Habitat number	Lake beds	Surrounding lands
No. 1	—	<i>Bryum pseudotriquetrum</i> <i>Pottia heimu</i>
2	<i>Bryum pseudotriquetrum</i> <i>Leptobryum pyriforme</i>	<i>Bryum pseudotriquetrum</i>
3	—	<i>Bryum pseudotriquetrum</i> <i>Ceratodon purpureus</i>
4	—	<i>Bryum pseudotriquetrum</i> <i>Ceratodon purpureus</i>
5	<i>Bryum pseudotriquetrum</i>	<i>Bryum pseudotriquetrum</i> <i>Ceratodon purpureus</i>
6	<i>Bryum pseudotriquetrum</i> <i>Leptobryum pyriforme</i>	<i>Bryum pseudotriquetrum</i>
7	<i>Bryum pseudotriquetrum</i>	<i>Bryum pseudotriquetrum</i>
8	—	—
9	—	—
10	<i>Bryum pseudotriquetrum</i> <i>Leptobryum pyriforme</i>	<i>Bryum pseudotriquetrum</i>
11	<i>Bryum pseudotriquetrum</i>	—
12	<i>Bryum pseudotriquetrum</i>	—
13	<i>Bryum pseudotriquetrum</i>	—
14	—	<i>Pottia heimu</i>
15	—	—
16	—	—
17	—	<i>Pottia heimu</i>
18	<i>Bryum pseudotriquetrum</i> <i>B. sp.</i>	<i>Bryum pseudotriquetrum</i>
19	—	—
20	<i>Bryum pseudotriquetrum</i> <i>B. sp.</i>	<i>Bryum pseudotriquetrum</i> <i>Ceratodon purpureus</i>
21	<i>Bryum pseudotriquetrum</i> <i>Leptobryum pyriforme</i>	<i>Bryum pseudotriquetrum</i> <i>Ceratodon purpureus</i>

—: indicates no moss was found.

*vicziae* and its variety, *B. k. var. hollerbachu*. The same authors (1964) also described another new species, *Plagiothecium simonovii*, from a depth of 32.3 m in Lake Glubokoye, Queen Maud Land.

In the Syowa Station area, the continental Antarctic, two aquatic mosses are recorded. One is the moss with peculiar globose gemmae found from lake bottoms at 3–5 m depth in the Skarvsnes region (NAKANISHI, 1977; IMURA and KANDA, 1986) and the other is a cosmopolitan moss, *Bryum pseudotriquetrum* (HEDW.) GAERTN., MEYER *et* SCHERB. found on lake beds in the Skarvsnes and Langhovde regions (KANDA and IWATSUKI, 1989; KANDA and OHTANI, 1991). Recent studies of the former moss indicate that it is *Dicranella* sp. which was never found in the continental Antarctic. Beside the features of gemmae, characteristics such as thin-walled cortical cells of stem, serrulation at the leaf tips and squarrose leaves with sheathing bases were used for the identification (KANDA and IWATSUKI, 1989). It was somewhat surprising that almost all of the aquatic mosses collected so far at deep lake beds in the continental Antarctic were new and endemic to Antarctica.

Joining the 29th Japanese Antarctic Research Expedition (1987–89) for a botanical study, we have dredged on lake beds by a moss sampler for summer and searched on ice surfaces of lakes for winter. Aquatic mosses were found in 11 lakes of Skarvsnes and Byvågåsane (Fig. 1). Most specimens were a submerged form of *B. pseudotriquetrum* but others included species of *Dicranella* in four lakes and *Bryum* sp. in two lakes. *Dicranella* sp. was recorded again after the lapse of 15 years since NAKANISHI's collection and is considered to be assigned to *Leptobryum pyriforme* (HEDW.) WILS. based on the terrestrial forms recovered by culture (IMURA *et al.*, 1992, this symposium). This moss was never found on the surrounding lands of these lakes, and reversely *Ceratodon purpureus* (HEDW.) BRID., which is one of the most abundant on the lands, and *Pottia heimii* (Hedw.) Hampe did not occur in the lakes (Table 1).

Thus, aquatic mosses from the Skarvsnes region were cosmopolitan species. In the past decade, OCHI (1979) has already reduced *Bryum algens* to *B. pseudotriquetrum* and SEPPELT (1983) has synonymized *B. korotkevicziae* and its variety to *B. pseudotriquetrum*. From these facts it may be reasonable to consider that most aquatic mosses were carried to Antarctica by air current from other regions rather than they are representative remnants of the pre-glacial climax vegetation.

#### References

- IMURA, S. and KANDA, H. (1986): The gemmae of the mosses collected from the Syowa Station area, Antarctica. Mem. Natl. Inst. Polar Res., Spec. Issue, **44**, 241–246.
- IMURA, S., HIGUCHI, M., KANDA, H. and IWATSUKI, Z. (1992): Culture of rhizoidal tubers on an aquatic moss in the lakes near Syowa Station area, Antarctica. Proc. NIPR Symp. Polar Biol., **5**, 114–117.
- KANDA, H. and IWATSUKI, Z. (1989). Two aquatic mosses in the lakes near Syowa Station, Continental Antarctica. Hikobia, **10**, 293–297.
- KANDA, H. and OHTANI, S. (1991): Morphology of the aquatic mosses collected in lake Yukidori, Langhovde, Antarctica. Proc. NIPR Symp. Polar Biol., **4**, 114–122.
- NAKANISHI, S. (1977): Ecological studies of the moss and lichen communities in the ice-free areas near Syowa Station, Antarctica. Nankyoku Shiryû (Antarct. Rec.), **59**, 68–96.
- OCHI, H. (1979): A taxonomic review of the genus *Bryum*, Musci in Antarctica. Mem. Natl. Inst. Polar Res., Spec. Issue, **11**, 70–80.
- SAVICH-LYUBITSKAYA, L. I. and SMIRNOVA, Z. N. (1959). Novyy vid roda *Bryum* HEDW. iz oazisa Banger (A new species of the genus *Bryum* HEDW. from the Bunger's Oasis) Inf. Byull. Sov. Antarkt. Eksped., **7**, 34–39.
- SAVICH-LYUBITSKAYA, L. I. and SMIRNOVA, Z. N. (1964): Glubokovodnyy predstavitel' roda *Plagiothecium* BR. et SCH. v. Antarktide. (A deep-water member of the genus *Plagiothecium* BR. et SCH. in Antarctica). Inf. Byull. Sov. Antarkt. Eksped., **49**, 33–39.
- SEPPELT, R. D. (1983). The status of the Antarctic moss *Bryum korotkevicziae*. Lindbergia, **9**, 21–26.

(Received July 10, 1991; Revised manuscript received September 12, 1991)