

# Three species of bryophytes from the Fildes Peninsula of Antarctica under the observation of SEM

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**Abstract** This article is to describe the characteristics of morphological structure of sporogona of three bryophytes observed under the SEM from the Fildes Peninsula, Antarctica, which has riched research information of bryophyte study of the area.

**Key words** Fildes Peninsula, sporogonium, SEM.

## 1 Introduction

In 1988 – 1989, we had made extensively investigation of terrestrial community in the Fildes Peninsula and its nearby islands, where we collected an amount of bryophyte specimens. Due to the special environment in Antarctica (short period of summer with low temperature), most species of bryophyta have no sporogona. We have observed 54 species and 2 varieties of bryophyta, among which 10 species bear sporogonia (Chen *et al.* 1993, 1995). In order to rich the research information of this area, we have made detailed study of these specimens by using SEM.

## 2 Material and methods

The bryophyte specimens for observation in this article were collected by Li Xuedong (1988 – 1989) from the Fildes Peninsula and its nearby islands, Antarctica. The certificated specimens are stored at the herbarium of Capital Normal University.

The method for the preparation of material used by SEM is: After wetting the specimens soaked in the steam water, then flatten and stick on sample table with transparent two-sided adhesive tape and let them to be dried naturally. They were observed and photoed under HITACHIS-800 SEM after spouting gold colour.

## 3 Results and discussion

### 3.1 *Bartramia patens* Brid. (Plate: 1 – 3)

This plant belongs to Bartramiaceae. Plants grow thickly, 0.5 – 9.0 cm high, dark green to light-yellow green, branching in cross form. Stems are dark-brown, lower part of stems usually has brown or light-red brown rhizoids. Leaves are 2.0 – 10.0 mm long, composed of two parts: leaf sheath and ligule, intersex with same involucre, fairly dioecism. Seta is 5 – 30 mm long with light-red brown. Capsules obliquely grow, oblong-ovate, with bilateral symmetry. Wall of sporangium has or-

amentation of longitudinal rib, operculum is conic in form, mouth of sporangium is fairly narrow, peristomal teeth is of single layer.

This plant is distributed at the Fildes Peninsula, Barton Peninsula, Ardley Island, Nelson Island, Two summit Island, etc.. It grows on fairly wet rock face with thin soil and on the slope or in other masses of dryophyta, often mixed grow with lichenes.

Specimen Nos: GS4, GS14, GS21, GS22, GS23, GWS7, WS10, GWN36, GWN37, GWN39, FT7, BA8, BA12, K5, K6(B), AN3, AN21(B), NS1, S7, etc..

### 3.2 *Dicranoweisia grimmiacea* (C. Muell.) Broth. (Plate: 4 – 5)

This plant belongs to *Dicranaceae*, *Dicranoweisia* Lindb. ex Mild. Plant grows thickly in close cushion form, yellow-green to dark-green, 0.5 – 4 cm high; when dry, leaf apex subuliform in form strongly rolled; when wet, leaf apex stands erect, not falcate in form. Leaves are 1.5 – 2 mm long, 0.2 – 0.6 mm wide. Seta of sporophyte is long, thin and straight, 2 – 3 mm long, capsules are cylindric in form, 1 mm long, with striations. Operculum is long, oblique and rostrate. In 1890, Mueller firstly discribed this species as *Blindia grimmiaceae* C. Muell at the South Island. In 1901, Brotherus put this species into *Dicranoweisia* Lindb. ex Mild. (Bell 1976; Newton 1973).

This plant is distributed at the Fildes Penninsula, Nelson Island, etc.. It grows on thin soil of rock crack and rock surface or on the slope.

Specimen Nos: BA15, NS7, GWN25, GWS2, WS9, FT6, WS26, GWN24.

### 3.3 *Encalypta patagonica* Broth. (Plate: 6 – 9).

This plant belongs to *Encalyptaceae*, *Encalypta* schreb. ex Hedw. The plant is straight, yellow-green, 0.5 – 1.5 cm high, it grows thickly on thin soil of rock crack or rock surface. Leaves are dense, rolled when dry, unfolding when wet, half inclined, spoon in form, 1.5 – 3 mm long; Midrib is sturdy, red, the projecting leaf apex forms tranparent long-apices with hair. The cells in upper part of leaves are fairly small with unregularly round form and dense verrucae, the cells in leaf base rectangular. Seta is 6 – 9 mm long, red-brown. Capsules are long-tube in form, 2 – 3 mm long with longitudinal straitions in form, but with twisted canaliculations when dry. Without peristomal teeth, clitellum cell is red, square. Calyptra is with verrucae, base is split openly and unregularly. In 1974, Newton reported the distribution of this species in Antarctica. For the present species in Antarctica, the special differences between this species with other two is that this species is without peristomal teeth (Kanda 1987).

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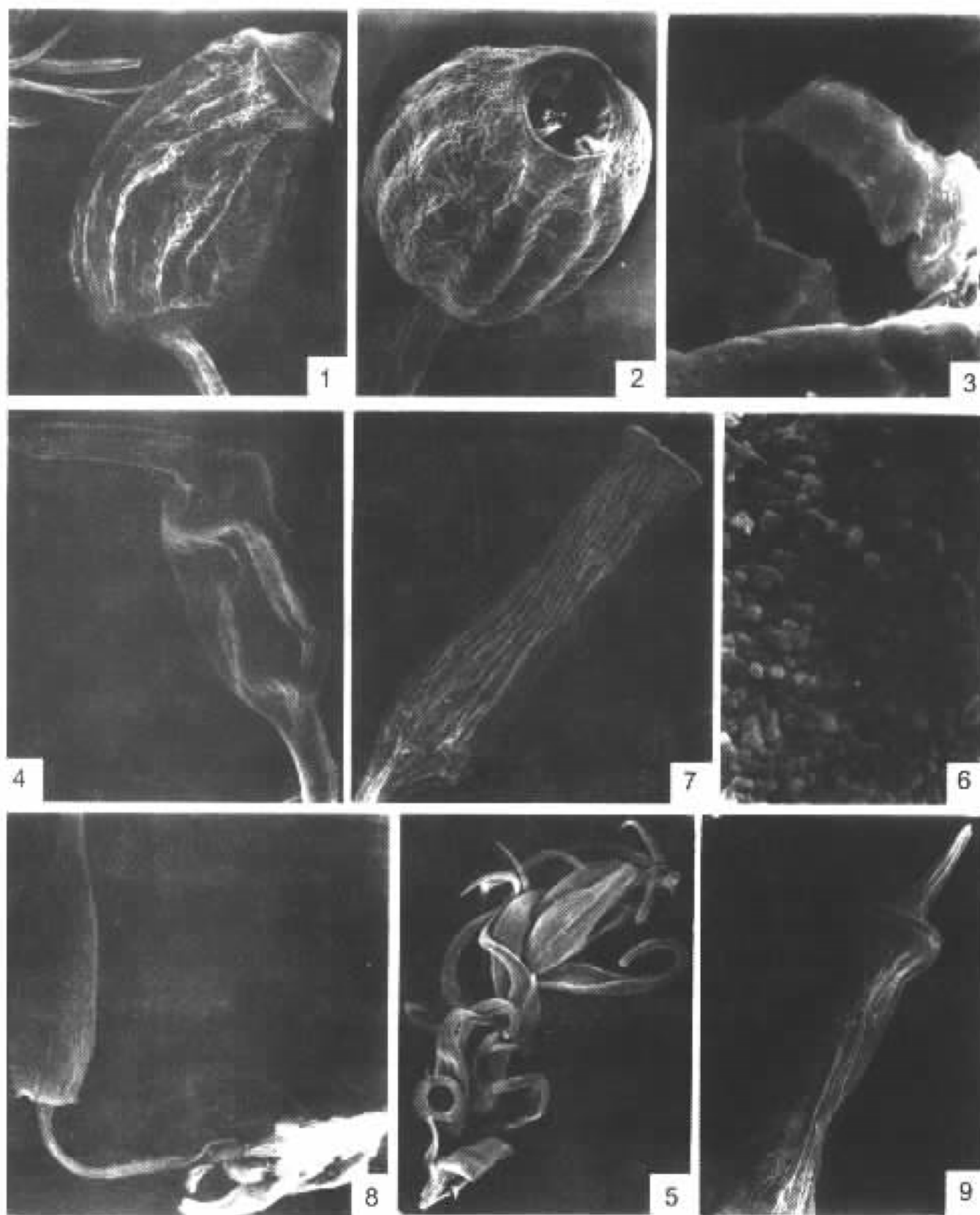


Plate I: 1 - 3 *Bartramia patens* Brid. : 1. sporophyte ( $\times 40$ ); 2. capsula ( $\times 40$ ); 3. peristomal teeth ( $\times 500$ ); 4 - 5 *Dicranoweisia grimmiae* (C. Muell.) Broth. : 4. sporophyte ( $\times 60$ ); 5. plant ( $\times 20$ ); 6 - 9 *Encalypta patagonica* Broth. : 6. leaf surface ( $\times 1000$ ); 7. capsula ( $\times 50$ ); 8. plant ( $\times 30$ ); 9. sporophyte ( $\times 40$ ).