Table 1. (*Contd…*)

Seaweed	Pre-monsoon	Monsoon	Post-monsoon
H. valentiae (Turner) Montage	++	–	+++
Sarconema filiforme (Sonder) Kylin	+	+	++
S. scinaioides Børgesen	–	–	+
Champia compressa Harvey	–	–	++
C. globulifera Børgesen	–	–	+
Centroceras clavulatum (C. Agardh) Montagne	+	–	++
Ceramium rubrum Auctorum	+	+	++
Wrangelia argus (Montagne) Montagne	++	–	–
Caloglossa leprieurii (Montagne) G. Martens	++	++	++
Bostrychia tenella (Lamouroux) J. Agardh	++	++	++
Chondria dasyphylla (Woodward) J. Agardh	+	++	++
Laurencia papillosa (C. Agardh) Greville	+	–	–
Polysiphonia platycarpa Børgesen	+	–	+

+++ Dominant; ++ Common; + Sparse; – Absent.

exhibiting live seaweeds, which could boost the ecotourism industry, and ultimately lead to the conservation of these species.

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A new *Orontobryum* Mitt. ex Fleisch. from Darjeeling, eastern Himalayas

Genus *Orontobryum* Mitt. ex Fleisch. was established by Fleischer[1] from Sikkim, eastern Himalayas with its type species *Orontobryum hookeri* (Mitt.) Fleisch**.** At the time of institution of this genus, Fleischer was little reluctant whether it should be separated as new genus because of its close affinity with genus *Macrothamnium* Fleisch. belonging to family Hylocomiaceae (order Hypnobryales), which was also the view of Brotherus[2]. However, Brotherus[3] revised his opinion and placed the *Orontobryum* in the family Hookeriaceae (order Hookeriales). The status of the genus given by Brotherus[3] has been followed by Gangulee[4] and the same is maintained during the present study. Genus *Orontobryum* was earlier represented in India by two species, i.e. *O. hookeri* (Mitt.) Fleisch. and *O. recurvulum* Gangulee known from Sikkim, and Sikkim and Bhutan respectively, and is endemic to eastern Himalayas. During the recent study on the bryophytes of Rimbick, Darjeeling some specimens approaching to genus *Orontobryum* have been encountered. A critical and comparative study has revealed that these specimens are clearly distinctive from the hitherto known species of the genus. Hence it is described here as *Orontobryum darjeelingensis* sp. nov**.,** which is new to the science.

Orontobryum darjeelingensis Nath, Asthana & Sahu sp. nov. (Figure 1)

Folia late cordata ± 1 mm longa et ± 1 mm lata, margineum serrata–dentata ad basa. Ramorum folia ovata–oblonga 0.064–0.7 mm longa et ± 0.35 mm lata, margineum dentata ad mediana. Foliorum cellulae apica 32–40 × 8–12 µm, mediana 40–44 × 4 µm, cellulae alares 30–32 × 25–37.5 × 12.5–20 µm, pale-light brown. Ramorum foliorum cellulae apica 34–40 × 4–7 µm, mediana 40–68 × 4 µm,

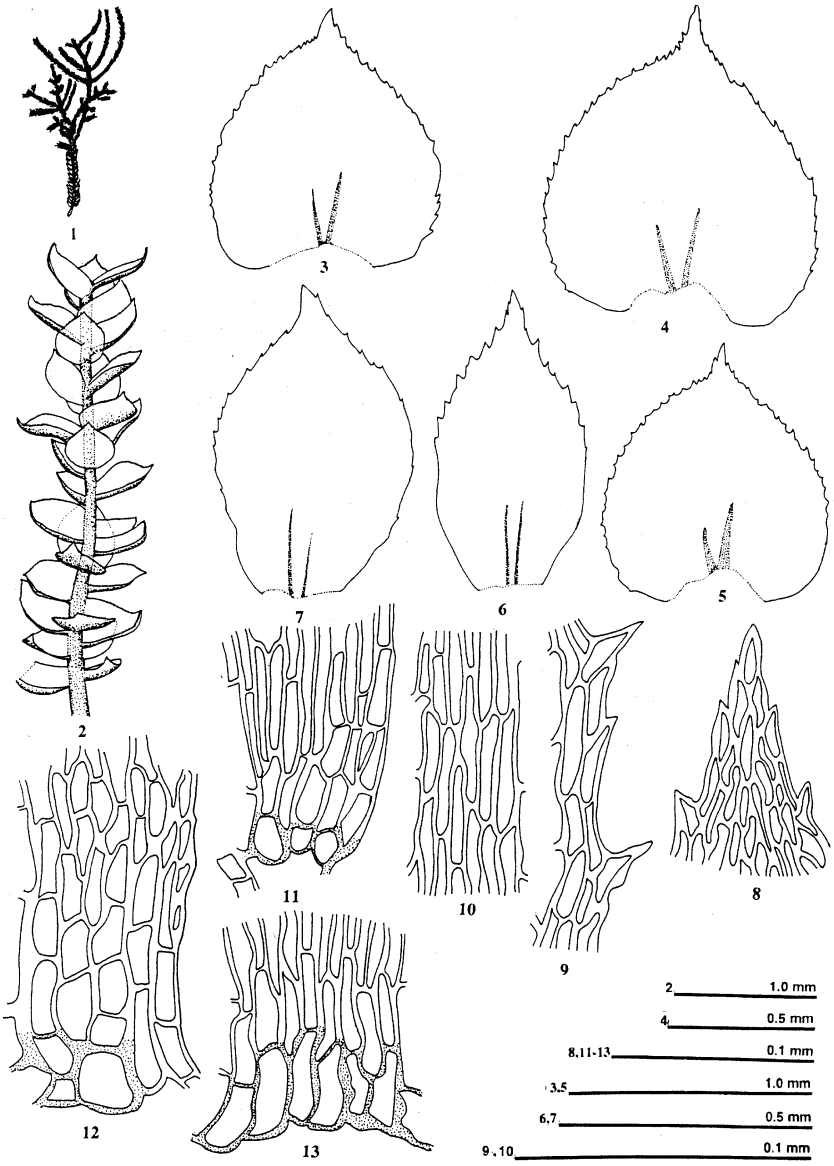

Figure 1. *Orontobryum darjeelingensis* sp. nov. 1, Plant (diagrammatic); 2, Plant (a portion); 3–5, Stem leaves; 6, 7, Branch leaves; 8, Apical cells (stem leaf); 9, Marginal cells (stem leaf); 10, Median cells (stem leaf); 11, Alar cells (branch leaf); 12, 13, Alar cells (stem leaf).

cellulae alares 27.5–35 × 12–16 μm, coloratae, cellulae ad juncturum caule parviores.

Plants medium to robust, yellowish-brown, pinnately branched, branches slender. Stem brown to reddish-brown. Leaves in several rows, sparsely arranged, recurved at base, acute at apex. Stem leaves larger, widely cordate with acute apex, ± 1 mm long and ± 1 mm wide, margin serrate–dentate nearly up to base; costa double, short and indistinct; leaf cells at apex 32–40 × 8–12 μm, at middle 40–44 × 4 μm, alar cells few and well differentiated, yellow to yellowish-brown, 32.5–37.5 × 12.5–20 μm. Branch leaves smaller, 0.64–0.7 mm long and 0.35 mm wide, ovate-oblong (cordate) with acute apex, margin dentate, dentitions 10–12.5 (–15) μm high up to middle, costa double, short, not distinct. Branch leaf cells at apex 34–40 × 4–7 μm, at middle 40–68 × 4 μm, alar cells yellowish brown, 27.5–35 × 12–16 μm, leaf cells somewhat pointed at ends. Fertile plants not seen.

Plants grow on stem bark under moist and shady conditions at Forest Rest House, Rimbick, district Darjeeling at an altitude of ca. 2286 m and temperature range 1.5 (min) to 15°C (max).

Specimens examined: *Orontobryum darjeelingensis* sp. nov. India: eastern Himalayas, Rimbick (alt. ca. 2286 m), 16.04.1965, Leg. S. Chandra, HOLOTYPE – 202016 A (LWG).

Orontobryum hookeri (Mitt.) Fleish. ex Broth. India: Sikkim Himalaya. Ratong river, Leg. J.D. Hooker 819 (W. 336) (Isosyntype).

Orontobryum recurvulum Gangulee. Bhutan: Khegumpa (alt. ca 6000 ft), Herb. of the Late East India Company No. 750, Hb. Griffith 130 (Isotype).

A critical and comparative study with the type specimens of allied Indian species of genus *Orontobryum* has revealed that plant specimens of *O. darjeelingensis* sp. nov. closely approach *O. recurvulum* Gangulee in plant habit, widely

cordate stem leaves, branch leaves with serrate–dentate margin and well differentiated, yellow–light-brown alar cells; but the former can be distinctly recognized from the latter in having sparsely arranged leaves on stem, widely cordate leaf shape (subtriangular to triangular in *O. recurvulum*), serrate–dentate margin nearly up to the base in leaves, larger apical cells, viz. 32–40 × 8–12 μm (25–27.5 × 5–7 μm in *O. recurvulum*) in stem leaves and 34–40 × 4–7 μm in branch leaves (20–22.5 × 7.5–10 μm in *O. recurvulum*), smaller dentitions (10–12.5 μm high) at branch leaf margins compared to *O. recurvulum* (15–17.5 μm high dentitions) and comparatively light coloured, larger alar cells in branch leaves (27.5–35 × 12.5–15 μm in *O. darjeelingensis* and 20–25 × 7.5–10 μm in *O. recurvulum*). *O. hookeri* can be well differentiated from *O. darjeelingensis* sp. nov. by closely arranged leaves on stem, ovate to oblong stem leaves (± 0.9 mm × 0.64 mm) with serrate–spinose margin restricted to apex, larger branch leaves (0.83 × 0.57 mm), narrower apical leaf cells and smaller inflated alar cells (± 27 × 15 μm). A comparative study with isosyntype and isotype specimens (obtained on loan from British Museum) of *O. hookeri* and *O. recurvulum* with specimens collected from Rimbick showed that the latter is clearly distinct from earlier known species. Hence it has been designated as *Orontobryum darjeelingensis* sp. nov.

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