

Bryological Notes

Vittia salina L.Hedenäs & J.Muñoz, sp. nov., a new moss from Argentina

During fieldwork in the mountains around Tinogasta in Catamarca, Argentina, the second author collected, in two rivulets with salt water, a moss that was tentatively identified as *Hygroamblystegium*. The specimens were later sent to the first author for identification. The material turned out to belong to the genus *Vittia* and is superficially similar to *V. pachyloma* (Mont.) Ochyra, a widespread species that occurs in the Andes, south-eastern Brazil, southernmost South America, South Georgia Islands, Falkland Islands, Juan Fernandez Islands, South Africa, and Kerguelen. However, it differs from the latter species in several details that cannot be due to phenotypic modifications. We therefore describe the new species *Vittia salina* for this aquatic moss. Van der Wijk, Margadant & Florschütz (1964) and Ochyra (1987a) misunderstood Müller (1889) when suggesting that *Hypnum* sect. *Limbella* Müll. Hal., the basis for *Limbella* (Müll. Hal.) Müll. Hal., is invalid (cf. Buck, 1998). Despite this misinterpretation, Ochyra's (1987a) typification of *Limbella* is correct and the name *Vittia* must be used for the genus to which the species described here belongs.

Vittia salina L.Hedenäs & J.Muñoz sp. nov.

Diagnosis: *Vittia* *pachylomae* (Mont.) Ochyra affinis, sed costa tenuiore, (4–)5–6-stratosa, limbidio distali 1–2-stratoso, proximali 2–3(–4)-stratoso, cellulis laminae longioribus, et pseudoparaphylliis extimis anguste triangularibus.

Etymology: The species is named *salina* after the salt water in the rivulets where it was found.

Holotype: Argentina: Catamarca, Tinogasta, Las Lozas, 27°14'S, 68°06'W, 3700 m a.s.l., rocks and sandy banks of salt water rivulet in acidic area, 12 February 1999, B. Biasuso, R. Farías & J. Muñoz 99-60, MA-Musci (n° 14873); **isotypes:** BA, BM, H, JE, MO, NY, S.

Sexual condition unknown. *Plants* medium-sized, dark green. *Stems* elongate, irregularly or somewhat irregularly pinnately branched; central strand present, narrow, cortex of 2(–3) layers of small and incrassate cells; pseudoparaphyllia foliose, outer ones narrowly triangular, inner ones triangular or irregular in outline; paraphyllia absent; rhizoids inserted below leaf costa insertion, red-brown, slightly branched, smooth; axillary hairs 2–4 per axil,

strictly axillary, with 1 upper cell, 8.5–13.5 μm wide, pale brownish, basal 1–2 cells quadrate or shortly rectangular, brownish. *Stem leaves* erect to erect-spreading, straight or slightly falcate, slightly twisted when dry, ovate, gradually acuminate, 1.0–2.1 mm long, 0.5–1.0 mm wide, concave; costa single, strong, sometimes slightly curved, percurrent or shortly excurrent, smooth, 73.5–147.0 μm wide near base, in transverse section plano-convex or almost so, (4–)5–6-stratose and consisting of homogeneous cells, central cells slightly wider than epidermal ones; margin plane, entire throughout or sometimes very finely denticulate near apex, border present, above 5–7(–8) cells wide, of elongate-rectangular to linear cells, entirely or partly 2-stratose, otherwise unistratose, border near insertion broader, 10–15 cells wide, entirely 2-stratose or in portions 3(–4)-stratose; median laminal cells 19.0–71.5 \times 6.5–11.0 μm , elongate-rectangular, elongate-rhomboidal, or shortly linear, unistratose, slightly incrassate, eprose, smooth; basal cells wider than median laminal cells, slightly incrassate, eprose; alar cells hardly differentiated, but basal limbic cells along margin not inflated, rectangular or sometimes quadrate, not decurrent. *Branch leaves* smaller than stem leaves, proximal branch leaves triangular or broadly so, acute or shortly acuminate. (Sexual branches and sporophytes unknown).

Vittia salina differs from *V. pachyloma* in having considerably weaker costa and limbidium, longer median laminal cells, and narrowly triangular outer pseudoparaphyllia (cf. Fig. 1 and illustrations of *Vittia pachyloma* in Ochyra, 1987b). Moreover, *Vittia pachyloma* has 1–2-celled upper portions of the axillary hairs, and the leaf lamina is sometimes partly to entirely 2–4-stratose, whereas *V. salina* has one-celled upper portions of the axillary hairs and a unistratose lamina. The new species is also similar to the endemic Haitian *Limbella bartlettii* (H.A.Crum & Steere) W.R.Buck, but the latter species has broad and irregular pseudoparaphyllia, 1–3-celled upper portions of the axillary hairs, a more consistently 2(–3)-stratose limbidium, a slightly thicker, 5–7-stratose, costa, and longer median laminal cells (47.5–140.5 μm long, vs 19.0–71.5 μm in *V. salina*). *Limbella bartlettii* should also be placed in *Vittia*, and the new combination will be made elsewhere (Hedenäs & Muñoz in Hedenäs, in press). Finally, the endemic

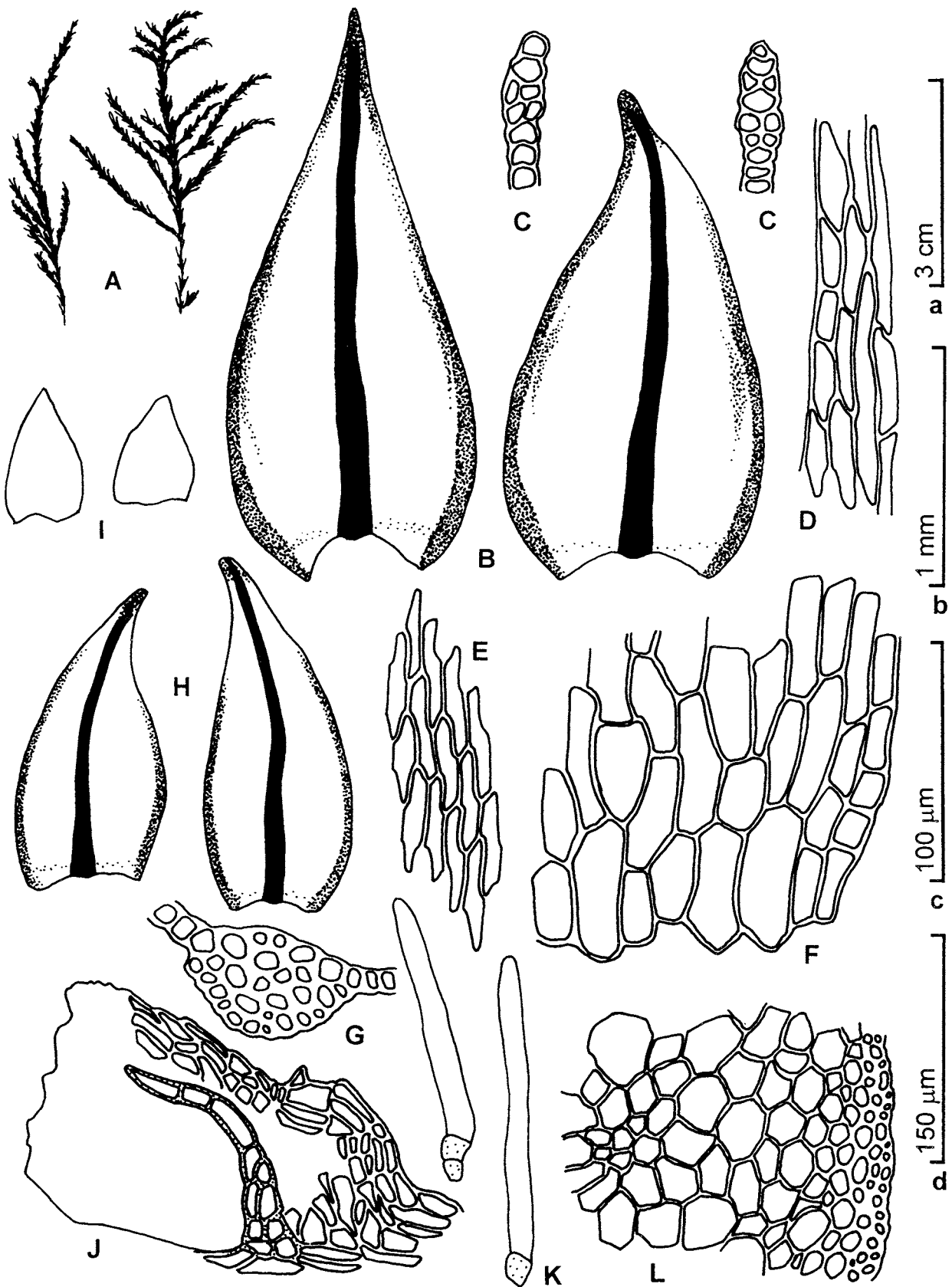


Figure 1. *Vittia salina* L. Hedenäs & J. Muñoz (from holotype, MA). A, habit; B, stem leaves; C, transverse sections of leaf margin in mid-leaf; D, marginal leaf cells in mid-leaf; E, median laminal cells; F, basal leaf cells; G, transverse section of costa in mid-leaf; H, branch leaves; I, proximal branch leaves; J, pseudoparaphyllia; K, axillary hairs; L, partial transverse section of stem. Scales: a: A. b: B, H, I. c: C-G, K. d: J, L.

North American *Platylomella lescurii* (Sull.) Andrews has a limbidium that is 2–4-stratose in the upper leaf, whereas the margin is unistratose below. In *P. lescurii* the margin is also denticulate or finely so in large parts, the median laminal cells are smaller and shorter than in *V. salina* ($6.5\text{--}38.0 \times 4.0\text{--}8.5$, vs. $19.0\text{--}71.5 \times 6.5\text{--}11.0 \mu\text{m}$), it has paraphyllia, and the axillary hairs have 3–6 upper cells.

Vittia salina was collected in two high altitude rivulets with fast running, saline water. It grew on rocks and banks, mostly well below the water surface at the time of collection. However, the collections were made in the rainy season and the areas covered by *V. salina* are probably above the water surface for most of the year, although always in the splash zone. The general area where *V. salina* was collected is characterized by a high altitude mountain climate, thus cold and very dry. The relative air humidity is also very low. The vegetation consists of an open steppe, dominated by tussocks of *Stipa chrysophylla* E. Desv. ('coirón amargo'), *S. frigida* Phil. ('vizcachera'), and *Adesmia* spp. Areas close to water courses, which are rare and almost all of them saline, are dominated by *Oxychloe andina* Phil. Despite the presence of running water, mosses are rare due to the high salt content of the water. In the holotype locality – Las Lozas, a streamlet of highly saline water – the only mosses besides *V. salina* were *Hennediella heimii* (Hedw.) R.H.Zander and *Pohlia integra* (Cardot) A.J.Shaw. These grew at tussock bases outside the splash zone and were common around streams above 3000 m a.s.l. In the other locality – Rumi Rayana, located at an altitude 700 m below the former – the stream is wider, still highly saline, and the aquatic species *Drepanocladus aduncus* (Hedw.) Warnst., *D. longifolius* (Mitt.) Paris, and *Bryum* sp. were found.

Vittia pachyloma, the other member of the genus occurring in southern South America, grows on rocks and boulders in brooks and rivers, in waterfalls, and sometimes also on wet rocks between 2600–4050 m in the Andes.

According to Ochyra (1987b) it generally grows in acidic habitats. The only thing known about *Limbella bartlettii* is that it grows in running water. *Platylomella lescurii* grows in brooks, waterfalls, or on cliffs with dripping water, both in calcareous and acidic habitats (Crum, 1972).

Additional specimen seen (paratype): Argentina: Catamarca, Tinogasta, Rumi Rayana, 27°43'S, 67°58'W, 3000 m a.s.l., fast running salt water stream in acidic area, 10 February 1999, B. Biasuso, R. Fariás & J. Muñoz 99-56a, MA-Musci (n° 14872), MO, S.

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TAXONOMIC ADDITIONS AND CHANGES: *Vittia salina* L.Hedenäs & J.Muñoz, sp. nov.

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Contribution to the bryoflora of Bolivia. I. Lowland mosses from two protected areas in the Department of Santa Cruz

The bryoflora of the Santa Cruz Department lowlands in eastern Bolivia is by far one of the least known in South America. Few botanists have collected mosses there in the past, and the situation has not changed much in recent

times (Churchill, Griffin & Muñoz, 2000). Reasons for this may be that mosses are not an important component of the Neotropical dry lowland vegetation, either in terms of frequency or cover, and that no professional bryologist