

Andinopatagonian species of *Plagiochila* (Plagiochilaceae, Marchantiophyta) Sectio Obcuneatae Carl

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Abstract: Sectio Obcuneatae Carl is modified to include *Plagiochila subpectinata* Besch. & C. Massal. and *P. riparia* Steph. These taxa, with citation of their type specimens, are described, illustrated, and comments are given on the synonyms, specimens examined, ecology and distribution. *Plagiochila fagicola* var. β *subpectinata* (Besch. & C. Massal.) Schiffn., *P. hyadesiana* Besch. & C. Massal., *P. fagicola* Schiffn., *P. elegans* Gottsche ex Schiffn. n. inval., *P. tristis* Gottsche ex Schiffn. n. inval., *P. obcuneata* Steph., *P. rectangulata* Steph., *P. arborescens* Steph., *P. flexicaulis* var. *paucidens* Steph. n. inval. and *P. subpectinata* fo. *olivacea* Besch. & C. Massal. n. herb. are considered new synonyms of *P. subpectinata* Besch. & C. Massal. *P. fernandeziensis* Steph. and *P. squarrosa* Steph. are new synonyms of *P. riparia* Steph.

Key words: Liverworts, *Plagiochila*, taxonomy, Argentina, Chile.

An alphabetic catalogue on the *Plagiochila* species from Chile and Argentina was presented by Hässel de Menéndez (1983), containing accepted names (*P. badia* Mitt. was overlooked at that time), other names referred to previous citations and those excluded from the genus. The infrageneric categories by Dugas (1929) and Carl (1931) were not included. As a result of the careful study of new collections from southern South America, a revision of the sections Robustae and Equitantes was published by the author (2004). The present article provides further information on some of the taxa within the Andinopatagonian area.

Carl (1931: 123) emphasized in Sectio Obcuneatae the presence of lateral intercalary branches below the fasciculate male branches, which he also mentioned, appear in female plants. Carl included only *Plagiochila obcuneata* Steph. in this section (no type specimen was indicated) but he mentioned, that because of the size of the leaf cells, *P. rectangulata* Steph., could also probably be included. *P. rectangulata* is considered by the present author to belong to the synonymy of *P. subpectinata* Besch. & C. Massal.

In this article the Sectio Obcuneatae is circumscribed to *P. subpectinata* Steph. and *P. riparia* Steph., because of the branching type, the strong lateral intercalary branches and the male fasciculate androecia. This characterization coincides in few words with Carl's description.

Plagiochila subpectinata Besch & C. Massal., which now includes *P. obcuneata* Steph. as synonym, was not studied by Carl (1931) nor was it cited in the corresponding index.

Sectio Obcuneatae Carl

Ann. Bryol. Suppl. 2: 123, 1931.

Plants with lateral intercalary pinnate branches, and lateral terminal branches of the *Frullania* type in the proximity of gynoecea and androecea. Strong lateral intercalary branches present, arising from below the pinnate system. Leaves dentate, obcuneate or oval, narrow at the insertion base, distant, orientation squarrose.

Androecea in general fasciculate at apex of shoots, limiting their growth, originating lateral innovations or some of them continuing growth, either as vegetative shoots, or as androecea. Perianth stipitate, cylindrical at base and pluristratose.

Type species: *Plagiochila subpectinata* Besch. & C. Massal. (= *P. obcuneata* Steph.).

This section comprises two species:

- 1) Leaves 1.3-1.6 mm long, 0.9-1.4 mm wide; dorsal margin entire but near apex 3-4 short teeth 1 cell long; ventral margin with 6-7 acute teeth, 3-4 cells long, leaf apex with 1-3 larger curved teeth. Lamina cells 18-28 μ m in diam. and 21 μ m thick, cell walls thin with

small trigones. Ventral lobe of perigonal bracts with 2 short apical teeth. Perianth (when sterile, sessile, cup shaped) 3.0 mm long, stipitate at cylindrical base, above inflated, distally compressed, mouth opening to 1.4 mm wide, the border dentate with triangular teeth.....

Plagiochila subpectinata Besch. & C. Massal.

- 2) Leaves 1.3-3.0 mm long, 1.0-2.7 mm wide; dorsal margin entire, ventral margin serrate with (23)-26-28 teeth, the uniseriate filament 1-5 (-8) cells long. Lamina cells 23-38 μ m in diam. and 26 μ m thick; cell walls thin except 2-4 rows of marginal cells with thickened walls. Ventral lobe of perigonal bracts with 5-6 apical teeth. Perianth 6.0 mm long, 2.0 mm wide at ciliate mouth (cilia 1-5 cells long); at base cylindrical, above laterally compressed with dorsal and ventral keels.*Plagiochila riparia* Steph.

***Plagiochila subpectinata* Besch. & C.**

Massal., *Bull. Mens. Soc. Linn. Paris* 1: 628, 1886 (1889).

(Figs. 1-4)

- = *Plagiochila fagicola* var. β *subpectinata* (Besch. & C. Massal.) Schiffn., Forschungsreise S. M. S. Gazelle 4 (4): 5, 1890 «1889». Typus: Chile, Camden I., passage Brecknock, Hahn 168 (VER ! lectotypus, BM !, FI ! islectotypi) (Hässel de Menéndez 1983).
- = *Plagiochila hyadesiana* Besch. & C. Massal. *Bull. Mens. Soc. Linn. Paris* 1: 628, 1886 (1889). **syn. nov.** Typus: Chile, Hoste I., inter *Symphogyna crassifrons*, Dr. Hyades 920 (VER ! holotypus, designated here, FI ! isotypus).
- = *Plagiochila fagicola* Schiffn., Forschungsreise S. M. S. Gazelle 4: 15, pl. 1, figs. 18-19, 1890 «1889» **syn. nov.** Typus: Chile, Tuesday Bay, Waldsaum am *Fagus betuloides*, Gazelle Exp. Naumann 2-2-76 sub var. *typica* (FH ! holotypus) (Hässel de Menéndez 1983).
- = *Plagiochila elegans* Gottsche ex Schiffn., Forschungsreise S. M. S. Gazelle 4: 5, 1890 «1889» n. inval. **syn. nov.** Original material: Chile, Fretum Magellanicum, Tuesday Bay, Naumann.
- = *Plagiochila tristis* Gottsche ex Schiffn., Forschungsreise S. M. S. Gazelle 4: 5, 1890 «1889» n. inval. Original material: Chile, Fretum Magellanicum, Tuesday Bay, Naumann.
- = *Plagiochila obtuneata* Steph., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 26 af. III (6): 30, 1900 **syn. nov.** Typus: Chile, Patagonia occidentalis, Guaitecas I., Dusén 384 (UPS ! lectotypus, M !, S !, islectotypi); I. Newton ad Columbine Cove, Dusén 214 (G 20352 !, UPS !, SGO 088700 !); prope Pto.

Varas in Quebrada del Diavolo in terra crescens, Dusén (syntypi) (Hässel de Menéndez 1983).

- = *Plagiochila rectangulata* Steph., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 26 af. III (6): 31, 1900 **syn. nov.** Typus: Chile, Patagonia occidentalis, Pto. Bueno in terra, Dusén 109 (M ! typus).
- = *Plagiochila arborescens* Steph., Kongl. Svenska Vetensk.-Akad. Handl. 46 (9): 26, 1911 **syn. nov.** Typus: Chile, Magallanes, Félix I., Skottsberg 263 (UPS !, G 29840 !, SGO 088743 ! isotypi).
- = *Plagiochila flexicaulis* var. *paucidens* Steph., Kongl. Svenska Vetensk.-Akad. Handl. 46 (9): 30, 1911 n. inval. **syn. nov.** Original material: Chile, Patagonia occidentalis, Pacheco I., in lacusculo, Halle & Skottsberg 27-V-1908 (UPS !).
- = *Plagiochila subpectinata* fo. *olivacea* Besch. & C. Massal. n. herb. Original material: Chile, Cambden I., Brecknock, Hahn 628 (VER !, FI !).

Illustrations

Bescherelle et Massalongo (1889) pl. 2 fig. V; Bescherelle et Massalongo (1889) pl. 2 fig. VI, as *Plagiochila hyadesiana* Besch. & C. Massal.; Dugas (1929) fig. 39, as *Plagiochila hyadesiana* Besch. & C. Massal.; Schiffner (1889) pl. II fig. 1-3, as *Plagiochila fagicola* var. β *subpectinata* (Besch. & C. Massal.) Schiffn.; Schiffner (1889) pl. I fig. 18-19, typus of *Plagiochila fagicola* Schiffn.; Stephani (1911) fig. 10 a, typus of *Plagiochila arborescens* Steph.

Description

Plants dendroid, 7.0-12-? cm long. Stem dark brown at base, cylindrical, dorsi-ventrally flattened, 244-293 μ m (\pm 18 cells) wide, 195-200 μ m thick; with distant leaves. Branches lateral intercalary, pinnate at apex. Strong lateral intercalary innovations from below the pinnate growth limited by gynoecea; these giving rise to a similar pinnate branch system, with or without intermediate leaves. Cortex 3-stratose, cells with brown thickened walls; medulla cells with hyaline thin walls, all 14-19 μ m in diam.; cuticle 7 μ m thick. Stolons present in lower parts of the plant. Leaves quite distant, squarrose, obtuneate to oval, increasing in size acropetally along stem and obtaining largest size on branches, but diminishing towards apex, 1.30-1.66 mm long, (0.48)-0.92-1.48 mm wide; insertion short oblique with ventral inverted U arch; cnemis oblique; lamina nearly flat, oblique to stem; dorsal border flat, entire, near the apex of leaf 3-4 short, acute teeth 1 cell long directed to the apex; ventral border rounded when well developed with 6-7 distant acute triangular 3-4 cell long teeth with

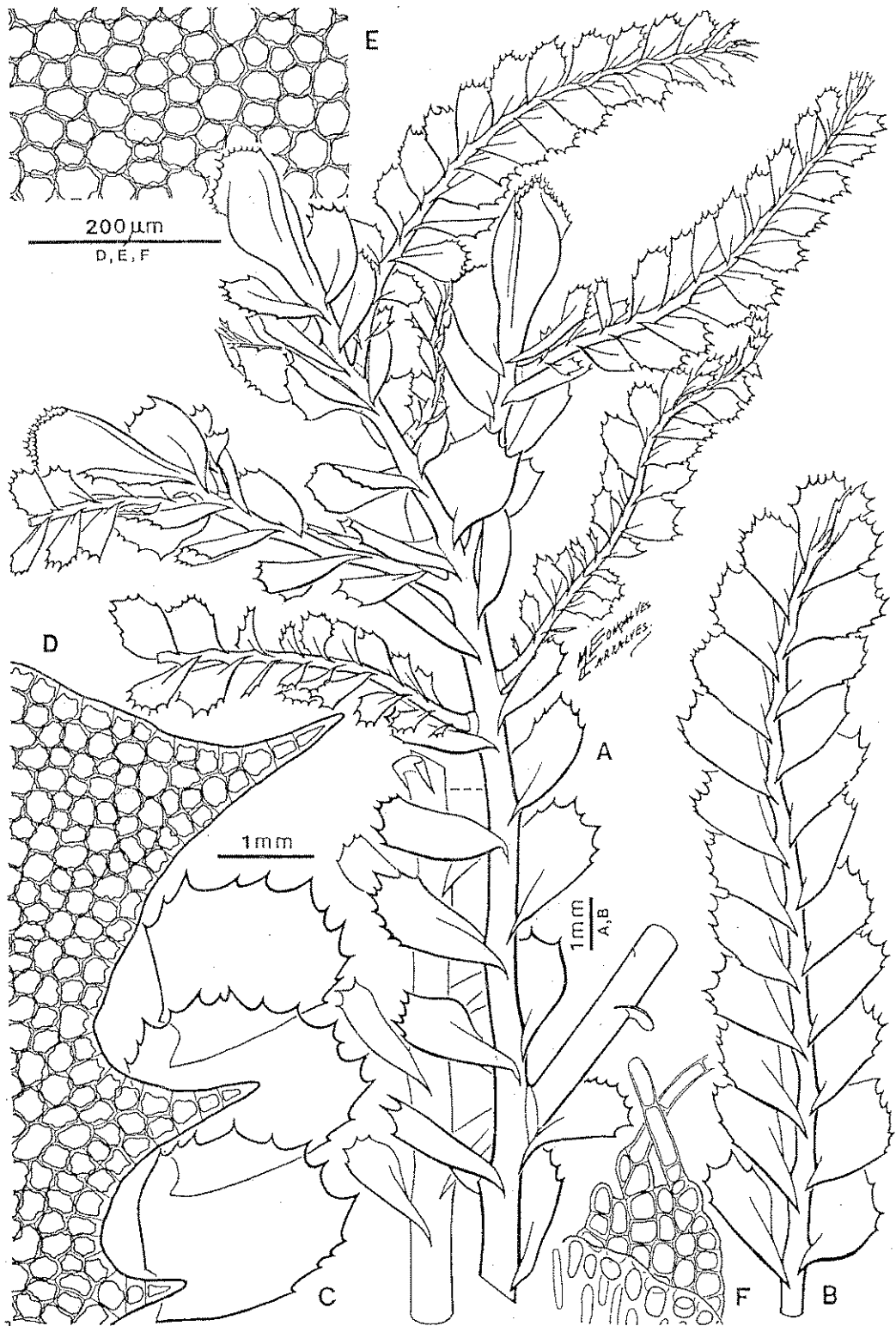


Fig. 1. *Plagiochila subpectinata* Besch. & C. Massal.- A Dorsal view of part of female plant.- B Dorsal view of branch.- C Leaves.- D Detail of apex of leaf.- E Leaf cells.- F Amphigastrium. A-F from Virtudes I. Eskuche 138-E23 (CTESN).

thickened cell walls, and at the leaf apex 1-3 larger curved teeth. In small leaves the teeth number is reduced and no marginal lateral teeth are present. Lamina cells 18-28 μm in diam., 21 μm thick, with slightly thickened walls and small trigones and sometimes small intermediate thickenings; basal cells enlarged; the border thickened in marginal cells. Oil bodies whitish greyish, ovoid to botuliform 8-12 μm long and 3-5 μm in diam., 4-7 per cell. Dorsal merophyte of stem free of leaves equals 2-3 cells; ventral merophyte free of leaves is 8-10 cells wide. Amphigastria small bifid. Dioicous. In male plants 2 or 3 androecia on lateral terminal branches of the *Frullania* type, at apex of stem or on lateral intercalary branches, slender, lax, fusiform, 0.55-0.74 mm wide, with 7-8 pairs of distant perigonal bracts; some androecia successive by alternating with sets of normal vegetative leaves or continuing only like a narrow vegetative branch; underneath additional androecia present of lateral intercalary origin, as well as on new lateral intercalary branches below this system. Bracts to 0.49 mm long, at apex with 2 short teeth; dorsal ventricose lobe 0.24-0.29 mm long; 1 antheridium per bract. Female plants with gynoecia at apex of stem and branches with subfloral innovations. Bracts similar to leaves, to 2.2 mm long and 1.8 mm wide, distant from perianth. Perianth 3 mm long, sessile, inflated, frequently with opened mouth when sterile; when sporophyte is developed the perianth is stipitate, 3.3 mm long, cylindrical at base (here multistratose; all cells with very thickened walls), the bilabiate dentate mouth 1.4 mm wide appears closed but is inflated below; teeth triangular, similar to leaf teeth, the central ones longer than those of the sides. Seta short, exceeding the perianth, 146 μm (6-9 cells) in diam. with 18-35 peripheral cells. Capsule red brown, 0.6 mm long, 4-stratose; outer cells with thin walls, 58-70 μm long, 35-37 μm wide and 23-28 μm thick; inner cells sinuose, 7 μm thick with radial and semiannular red brown thickenings. Spores brown, baculate, 14 μm in diam. Elaters brown, torn, with 2 helicoidal thickenings, \pm 94 μm long, 7 μm in diam.

Discussion on morphology

The main characters used for the arrangement of the synonymy are the presence of *Frullania* type branches (a condition which is quite unique in the southernmost species of the genus *Plagiochila* in southern South America) in addition to the lateral intercalary branches of *Plagiochila* type, and the fascicles of long male branches at the end of

shoots. The leaves are variable, from the simplest form illustrated by Bescherele & Massalongo (1889 b), referred to *P. subpectinata* and *P. hyadesiana*, to those more dentate, which are illustrated by Schiffner (1889) in reference to *Plagiochila fagicola*. There are also differences between sterile perianths, which are short and globose, and those which have developed sporophytes, which look stipitate at their base, while the bilabiate mouth, in lateral view, is expanded; fan shaped and dentate.

Discussion on synonyms and their citations

Plagiochila subpectinata Besch. & C. Massal. was also reported by Herzog et al. (1940:6) from Chile, Cerro Tesoro and by Engel (1976:135) from Argentina, Tierra del Fuego, Lapataia. These reports have not been confirmed.

Reports by Stephani (1905:329) of *Plagiochila hyadesiana* Besch. & C. Massal. from Chile, Desolación I., (1911:32) from Pto. Chacabuco and Seno Skyring; by Dugas (1929:70) from Cap Horn; by Herzog (1942:704) from Juan Fernández I. and Tierra del Fuego, (1960:186) from Chile, Río Futa; by S. Arnel (1957:6) from Juan Fernández Is., have not been confirmed.

Geissler and Bischler (1989:159) considered *Plagiochila fagicola* Schiffn. to be a nom. inval. because of Art. 67.1 of the ICBN (= *Plagiochila subpectinata* Besch. & C. Massal. 1886). Schiffner (1889:5) indicated, along with the description and locality, -Fretum Magellanicum, Tuesday Bay, 2. 76 with *P. patagonica*-, two varieties [*alfa typica* and *beta* var. *subpectinata*], and *P. tristis* Gottsche Ic. Hep. Ined. and *P. elegans* Gottsche Msc., and mentioned *P. subpectinata* Besch. & C. Massal. ist trotz ihres anderen Aussehens sicher nur eine Form von *P. fagicola* «. Hässel de Menéndez (1983: 101, 120) maintained, at that time, that these were separate species. Engel (1990:147) mentioned the presence of *P. fagicola*, based on an indirect reference, from the Malvinas Is. due to Inoue.

The name *Plagiochila tristis* was used on three occasions. First by Schiffner (1889:5) for southern South America, as a n. inval. derived from Gottsche Ic. Hep. Ined., without indication of locality. Later, Stephani (1900:33) cited material from Aysen (at UPS, S) under this same name but belonging to *P. obovata* Steph. and finally (1902:240) he described *P. tristis* Steph. from Mexico. However, this plant is not present in the area, as stated by Hässel de Menéndez (1983:122).

Other citations of *Plagiochila obcuneata* Steph. (now a synonym of *Plagiochila subpectinata* Besch. & C. Massal.) are by Stephani (1906:308) from

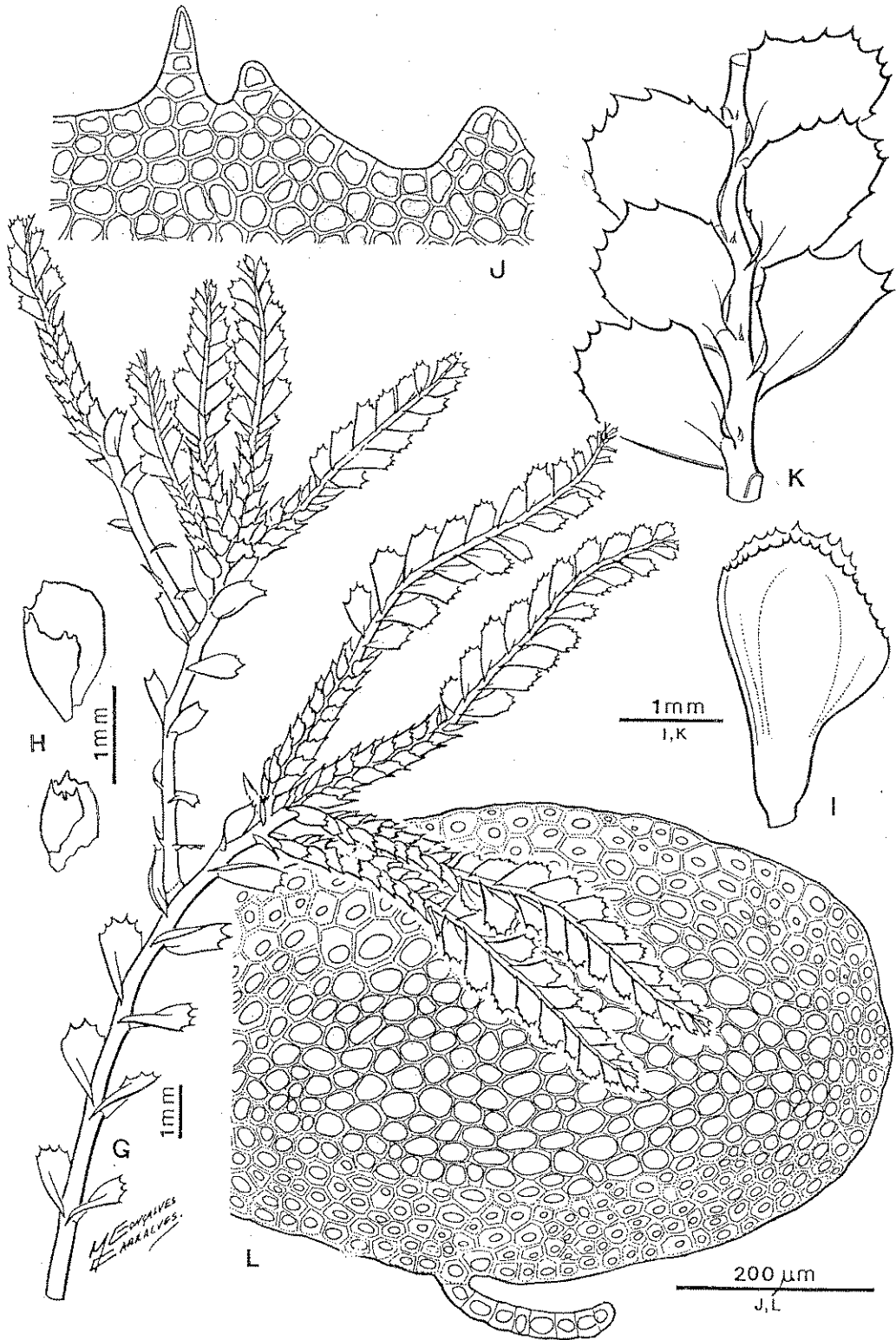


Fig. 2. *Plagiochila subpectinata* Besch. & C. Massal. - G Dorsal view of part of male plant. - H Perigonal bracts. - I Perianth. - J Detail of perianth mouth. - K Ventral view of branch. - L Transverse section of stem. G-L from Virtudes I. Eskuche 138-E23 (CTESN).

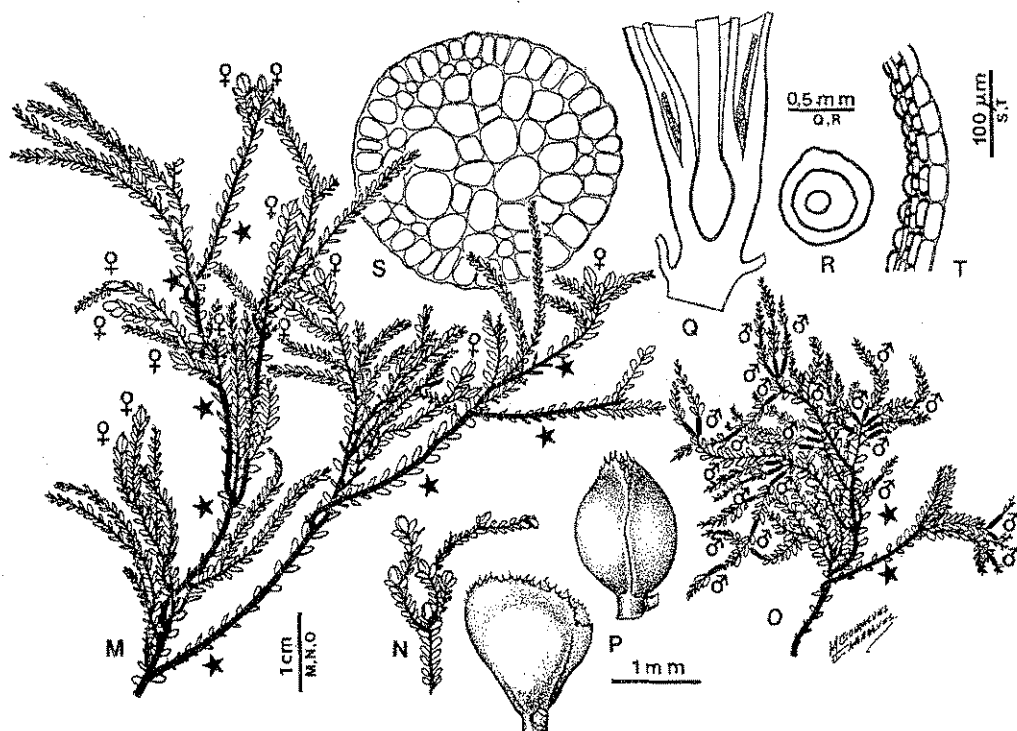


Fig. 3. *Plagiochila subpectinata* Besch. & C. Massal.- M Half schematic habitus of female plant, ★ represent strong lateral intercalary branches below pinnate branch system.- N representing female plant without sporophytes.- O Half schematic habitus of male plant, ★ representing strong lateral intercalary branches.- P Perianths containing unfertilized archegonia.- Q Longitudinal section through perianth with sporophyte.- R Transverse section through base of perianth with sporophyte.- S Section through seta.- T Section through capsule wall. M-N from Virtudes I., G. H. M. TBPA-B 1909; O from Ancón Sin Salida, G. H. M. TBPA-B 634; P from Isla de los Estados G. H. M. 4041; Q-T from Piazzzi I. G. H. M. TBPA-B 1091.

Chile Australis and Occidentalis, (1905:324) from Desolación I., by Stephani (1911:32) and Kühnemann (1936:95, 1949:348) from Argentina, Malvinas Is.; by Dusén (1903:7) from west Patagonia, by Massalongo (1906:9) from Chile, Poyo-huapi; by Carl (1931:124) from west Patagonia, by Buch (1934:2) from Tierra del Fuego; by Inoue (1984:85, pl. 5, fig. 5) from Osorno and by Barrera (1991:7) from Newton I. These citations are all not confirmed.

Except the type of *Plagiochila rectangulata* Steph. (now a synonym of *Plagiochila subpectinata* Besch. & C. Massal.), other specimens reported under this name, have not been analysed, i. e. by Stephani (1901) from Cape Froward, (1904:483) from Patagonia Occidentalis, (1905:29) from Desolación I., (1911:34) from Félix I., by Carl (1931:135) from Patagonia, by Herzog (1942:705) from Juan Fernández Is., (1957:209) from Argentina, Lago

Moreno, (1960:185) from Chile, Co. Lungoico, by S. Arnell (1957:6) from Juan Fernández Is. Engel (1978:211) mentioned that he had not found the species on the Brunswick Peninsula.

The identity of the specimens cited by Engel (1978:205) and Barrera (1991:6) as *Plagiochila arborescens* Steph. (now a synonym of *Plagiochila subpectinata* Besch. & C. Massal.), has not been confirmed.

Plagiochila flexicaulis var. *paucidens* Steph. n. inval. was also applied by Reimers (1926:33) to specimens from Chile, Panguipulli; by Herzog (1938:10) to specimens from Valdivia and (1960:186) from Chile. No further information exists about these specimens.

Previous confirmed citations

CHILE: Aysen by Stephani (1900; 1911) as *Plagiochila obcuneata* Steph.; Guaitecas Is., Pto. Bueno; Piazzzi I., Rennel I., Vidal Gormaz I., Vir-

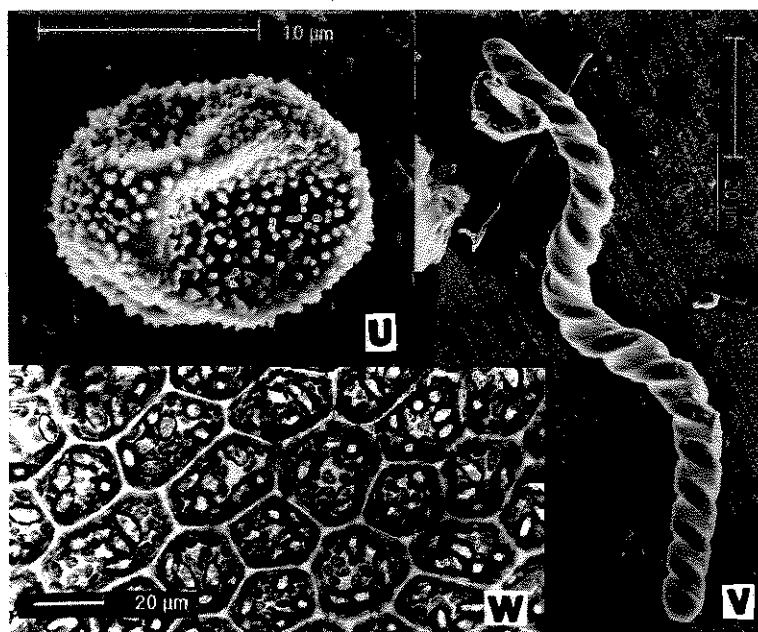


Fig. 4. *Plagiochila subpectinata* Besch. & C. Massal.- U Spore.- V Elater.- W Detail of leaf cells. U-V from Piazzì I. G. H. M. TBPA-B 1091; W from Isla de los Estados G. H. M. 3133a.

tudes I., Felix I., Pto. Toro, Ancón Sin Salida, Newton I., Pens. Brunswick by Hässel de Menéndez y Solari (1985) as *Plagiochila fagicola*; Pacheco I., Hoste I. by Hässel de Menéndez (1983) as *Plagiochila hyadesiana* Besch. & C. Massal.; Fretum Magellanicum by Stephani (1917) as *Plagiochila arborescens* Steph.; Fretum Magellanicum by Stephani (1904) as *Plagiochila fagicola* Schiffn.; Pto. Chacabuco, and Chiloé by Stephani (1911) as *Plagiochila obcuneata* Steph.; Straits of Magellan by Hässel de Menéndez (1983) as *Plagiochila fagicola* Schiffn.; Fuegia by Stephani (1904); Brecknock by Hässel de Menéndez (1983); Hoste I., by Bescherelle et Massalongo (1889) as *Plagiochila hyadesiana* Besch. & C. Massal.; Fretum Magellanicum by Stephani (1903) as *Plagiochila hyadesiana* Besch. & C. Massal. ARGENTINA: Tierra del Fuego, Hässel de Menéndez y Solari (1985).

Specimens examined

CHILE; Valdivia, La Unión, Guallería, 600-800 m, Sparre 3717 p. p. (♀) (US); id. (S as *P. chilensis* Steph.); id. Sierra Pelada, camino de Unión a Hueicolla, Chivería, G. H. M.* 2333 (♀), 2345; id. Cerro Mirador, turbera, G. H. M. 2259 (♂); Los Ulmos, paredón en antigua carretera, G. H. M. 10776 (♀); Pto. Chacabuco, ad truncos, Halle 285

(S as *P. obcuneata* Steph.); camino de Pto. Chacabuco a Pto. Aysen, Lago Riesco, Drehwald 576 (DREHWALD); Chiloé, «tepual», G. H. M. 11574 (♂); id. Chilcón, G. H. M. 11469 (♂); I. Refugio, Villagrán 112 (♂) (VILLAGRAN); carretera entre Coihaique y Puyuhuapi, km 147 pasando Amengual 330 m, G. H. M. & M. Rubies 12561 (♂ ♀); Pto. Yungai, cascada, G. H. M. & M. Rubies 12026 (♂ ♀); Rennel I., Eskuche 61-35 (♀) (CTESN); I. Rennel, G. H. M. TBPA-B 1266b; id. 1326a (♂ ♀); id. 1355c (♂); id. 1539 (♂ ♀); id. 1604 (♂ ♀); id. 1669b (♀); id. 1842a (♂ ♀); Virtudes I., Pto. Virtudes, Eskuche 138-E22 (♂ ♀, c. caps) (CTESN); Virtudes, G. H. M. TBPA-B 1908b (♂ ♀); id. 1909 (♀, c. caps); I. Piazzì, Caleta Ocasión, G. H. M. TBPA-B 1091 (♀, c. caps.); id. 1096 (♂ ♀); id. 1196c (♀); I. Diego de Almagro, G. H. M. TBPA-B 1881 (♂); Ancón Sin Salida, Seno Unión, G. H. M. TBPA-B 634 (♂); id. Eskuche CH 9-22 (♀) (CTESN); Seno Última Esperanza, Pto. Bellavista, Cerro Morro, Schiavone TBPA-B 2212 (♀); id. Pto. Toro, Cerro Balmaceda, Schiavone TBPA-B 2660. I. Desolación, Pto. Angosto, Dusén 162 (♀) (S, UPS, BA as *P. obcuneata* Steph.); id. Dusén 219 (FI as *P. hyadesiana* Besch. & C. Massal.). ARGENTINA: Tierra del Fuego, Isla de los Estados (Staten I.). Bahía Flinders, G. H. M. 4629; Bahía Hoppner, G. H. M. 4698 (♀); id. 4706 (♀, c. caps.); id. 4661 (♂);

id. 4663; Basil Hall, G. H. M. 4042a; id. 4041 (♀); Pto. Cook. Cascada Arroyo Fernández G. H. M. 3133a (♀, c. caps).

* G. H. M. at BA.

Ecology and distribution

Plagiochila subpectinata Besch. & C. Massal. is known to be present in Chile, on the continent from Valdivia to the Seno Unión, and on Tierra del Fuego, but also in the Channel Islands, as far as Desolación I. and Hoste I., where it is found on the ground of the *Nothofagus betuloides* and *Pilgerodendron uviferum* forest. In Argentina, it was only found on the Isla de los Estados (Staten I.) by Tierra del Fuego.

Plagiochila riparia Steph., *Kungl. Svenska.*

Vetensk. -Akad. Handl. 46 (9): 34, fig. 11 e,

1911.

(Figs. 5-6)

Typus: Chile, Juan Fernández Is., Masafuera, Skottsberg 183, 1908 (G 20873 ! holotypus, here designated, S ! isotypus).

- = *Plagiochila (Jungermannia) dichotoma forma (prior)* Nees & Mont., *Ann. Sc. Nat.* ser. 2 (5): 53, 1836. (syn. art. 24 ICBN 2000).
- = *Plagiochila trapezoidea* var. *α rigescens* Gottsche, *Lindenb. & Nees, Syn. Hep.*: 50, 1844. (syn. art. 11.2 ICBN 2000). *Typus:* Chile, Bertero 1563, hb. Hochstetter (STR ! holotypus, here designated).
- = *Plagiochila fernandeziensis* Steph., *Kungl. Svenska. Vetensk. -Akad. Handl.* 46 (9): 30. 1911 **syn. nov.** *Typus:* Chile, Juan Fernández Is., schattiger Wald am Yunque (typus).
- = *Plagiochila squarrosa* Steph. *Spec. Hep.* 6: 215, 1921 (non Steph 1900 n. nud.) n. illeg., **syn. nov.** *Typus:* Chile, Juan Fernández Is., Masatierra ad Montem Yunque, Skottsberg 24-VIII-1908 (UPS !, G 20880 ! isotypi).

Illustrations

Stephani (1911) fig. 11 e, as *Plagiochila riparia* Steph., Stephani (1911) fig. 11 f, as *Plagiochila fernandeziensis* Steph.

Description

Plants pale green to yellowish when dry, 7.0-11.0 cm long, 4.0-6.0 mm wide between leaf tips of opposite sides, with creeping system composed of naked brown stolons; shoots with pinnate lateral intercalary branches, and others from below originating strong innovating lateral intercalary branches; besides some arise without leaves and are directed towards the substrate.

Stem not straight, rather in a zigzag line, cylindrical dorsi-ventrally flattened, 388-436 μm (22-24 cells) wide, 290-340 μm thick; cortex 4-stratose, outer 2 strata darker brown, the cortical cells 12-14 (-18) μm in diam. with thickened walls and cuticle; medulla cells 14-18 μm in diam. with hyaline walls. Leaves obovate, brittle, 1.3-3.0 mm long, 1.0-2.7 mm wide, distant, insertion short oblique and short decurrent; cnemis short oblique and lamina nearly plane giving to the leaves a squarrose appearance in combination with the zigzag branch; dorsal margin entire, scarcely recurved, at rounded apex of leaves and ventral serrate margin about (23-26)-28 teeth, all directed towards tips; teeth at their base 2-4 cells wide, then uniseriate filament 1-5 (-8) cells long, the uppermost cell is acute; the cells 11-18 μm long, the walls thickened. Lamina cells isodiametric, 23-35 μm in diam. and 26 μm thick, with small trigones; a small area close to the insertion with elongated cells to 66 μm long and 42 μm wide with longitudinal walls thickened; the marginal cells in about 2-4 rows with uniformly thickened cell walls; these thickenings also extending to the teeth; cuticle 4-5 μm thick. Oil bodies 8-18 per cell, spherical, 2-5 μm in diam. Amphigastria reduced. Androecia terminal at apex of shoots, in groups of (2)-3, formed by 1 terminal androecium and others equivalent to lateral terminal branches, but capable of continuing growth as a vegetative branch with a further intercalary isolated androecium or a terminal group of androecia. Androecia cylindrical, 1.5 mm wide, lax, flexuose, with (4)-6-9 distant dorsally saccate bracts, nearly all of the same size; the basal bract due to its lateral terminal origin is small; the bracts in general are 0.4 mm long; dorsal lobe ventricose not touching dorsally opposite bract, 0.24 mm long, the margin entire to repand, stiff and not recurved; ventral lobe stiff, entire except the 5-6 short apical teeth. Gynoecia at apex of shoots or branches with subfloral innovations. Bracts similar to the leaves, but slightly larger; lamina cells 17-23 μm in diam., trigones enlarged, nearly confluent; marginal fringe of cells with thickened walls ± 10 cells wide; area of large cells at base of bracts also larger. Perianth stipitate, 6.0 mm long and 2.0 mm wide, at its base cylindrical 7-10 cells thick, above cylindrical flattened 2 cells thick, with dorsal and ventral keels; these with some low projections; at mouth perianth one cell thick, the mouth ciliate, teeth with uniseriate filament 1-5 cells long, with thickened cell walls. Seta 7-8 cells in diam, ± 20 peripheral cells. Sporophyte unknown. Asexual reproduction not present.

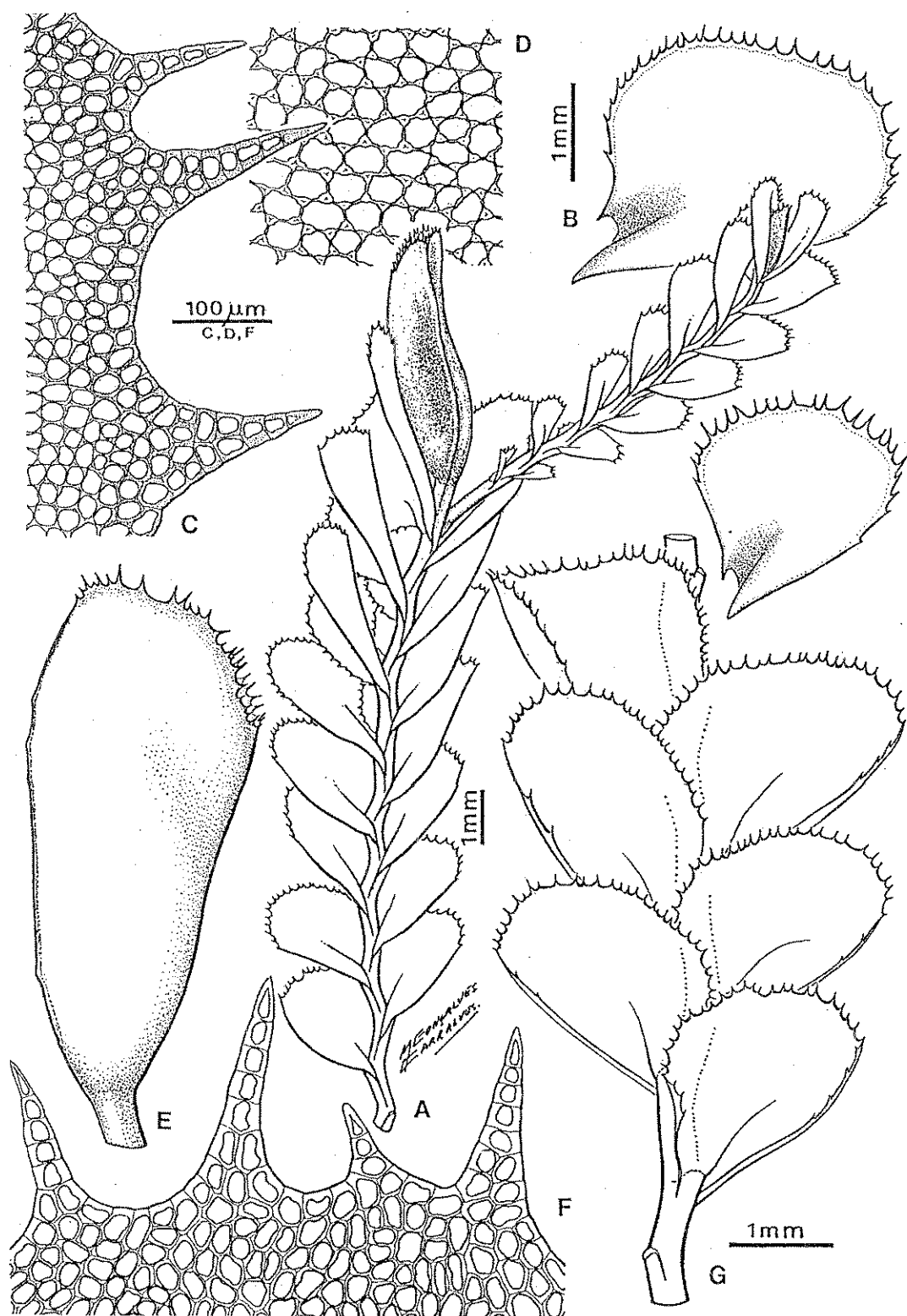


Fig. 5. *Plagiochila riparia* Steph. - A Dorsal view of part of female plant. - B Leaves. - C Detail of apical portion of leaf. - D Leaf cells. - E Perianth. - F Detail of perianth mouth. - G Ventral view of branch. A-G from Juan Fernández Is., Masafuera, Hatcher & Engel 555 (MSC).

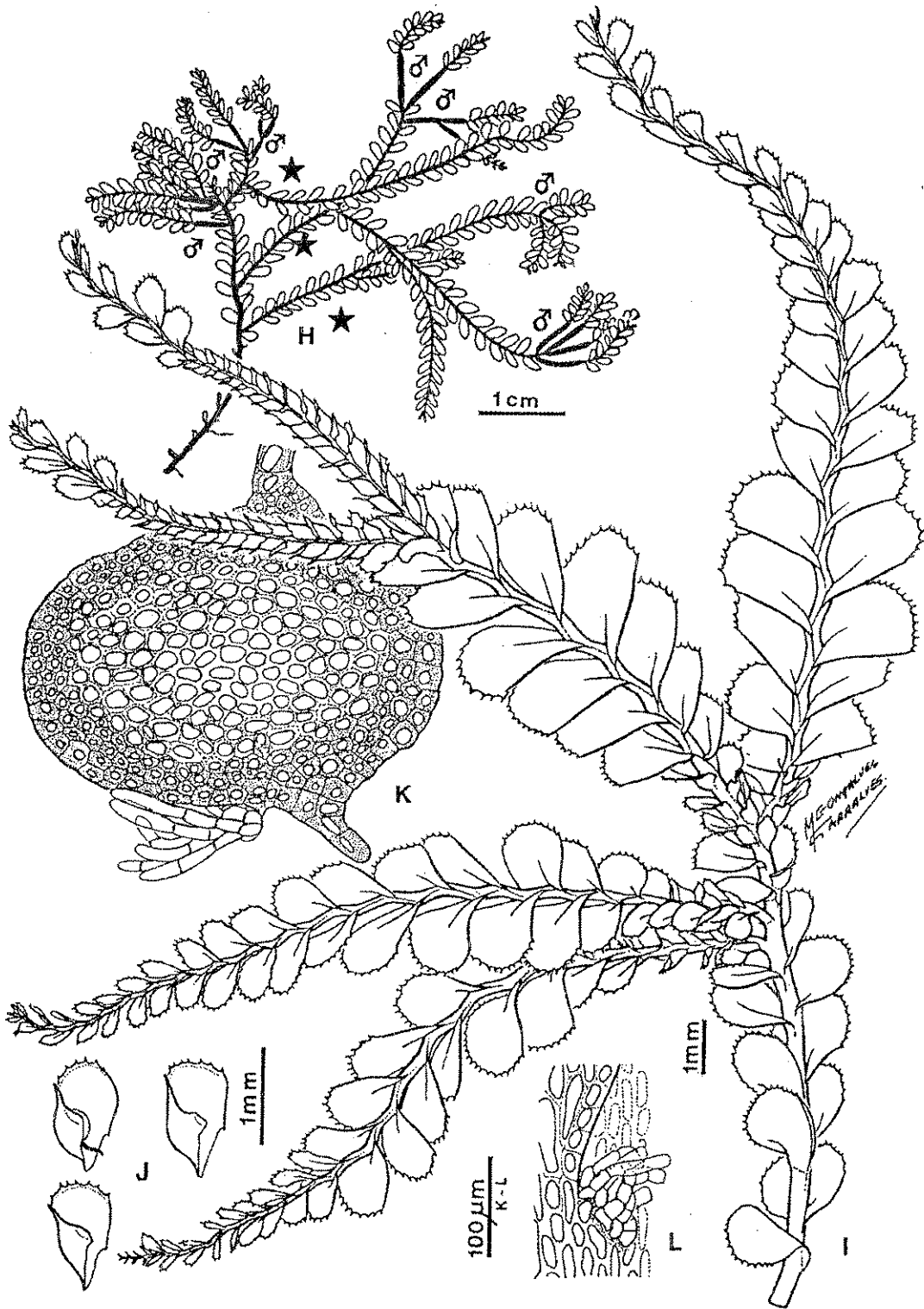


Fig. 6. *Plagiochila riparia* Steph.- H Half schematic habitus of male plant, ★ strong lateral intercalary branches.- I Dorsal view of part of male plant.- J Perigonal bracts.- K Transverse section of stem. - L Amphigastrium. H-J from Juan Fernández Is., Masafuera, Hatcher & Engel 443 (MSC); K-L id. Hatcher & Engel 555 (MSC).

Previous confirmed citations

Chile, Juan Fernández Is., by Hassel de Menéndez (1983: 121) as *P. squarrosa* Steph.

Discussion

The first name used to designate this taxon, *Plagiochila (Jungermannia) dichotoma* forma (prior) Nees & Mont., cannot be used as a basionym due to the Rules of the ICBN 2000 (art. 23.6). The second name, *P. trapezoidea* var. *rigescens*, based on the same type specimen, cannot be used either because «var. *rigescens*» has no priority, as it is outside the rank (art. 11.2).

The type specimen of *Plagiochila fernandeziensis* Steph., has not been located, as stated by Hassel de Menéndez (1983:102). Herzog (1942:711) considered this name a synonym of *Plagiochila squarrosa* Steph. Some of these specimens have now been analysed. See specimens examined.

Specimens examined

CHILE: JUAN FERNANDEZ ISLANDS: Masafuera, trail to Inocentes, Hatcher & Engel 555 (♂ ♀) (MSC as *Plagiochila squarrosa* Steph.); id. Camp Correspondencia, Hatcher & Engel 452 (♂) (MSC as *P. squarrosa*); id. Cordón del Barril, C. & I. Skottsberg 64 (♂) (UPS); id. among boulders on steep shaded slope, Hatcher & Engel 443 (♂) (MSC as *Plagiochila hyadesiana*). Masatierra: Piedra Agujereada, C. & I. Skottsberg 418 (♀) (JE as *P. squarrosa*); id. ridge below Piedra Agujereada and Piedra Laura, C. & I. Skottsberg 48 (♀) (S), id. 61 (♂) (S), id. 49 (♂) (JE, S); id. Cordón Centinela, C. & I. Skottsberg 80 b (♀) (S); id. 67 (♂) (UPS as *P. squarrosa*); id. mountain ridge S of Pangal, E of Yunque, C. & I. Skottsberg, St. 29 (UPS as *P. squarrosa*); id. Salsipuedes, *Dicksonia* forest (UPS as *P. squarrosa*); id. C. & I. Skottsberg 58 (♀) (S); Valle Colonial, wood below Portezuelo de Villagra, C. & I. Skottsberg H16; id. G. Looser 85B (UPS as *P. squarrosa*); id. Hatcher & Engel 702 (MSC); id. Slope above Plazoleta del Yunque, C. & I. Skottsberg (♂) (UPS as *P. squarrosa*); Valle Anson, C. & I. Skottsberg 212 (♂) (UPS as *P. squarrosa*).

Ecology and distribution

Plagiochila riparia Steph. is known from Chile, Juan Fernández Is., both the Masafuera and Masatierra islands. It was found dwelling from 400 to 3800 ft. on the ground among dense shrubbery, also by a trail among boulders on a steep shaded slope, and on the ground in a *Dicksonia* forest, as well as on the trunk of *Blechnum cycadiifolium*.

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