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New or interesting records of Brazilian Bryophytes, V

ALFONS SCHÄFER-VERWIMP

ABSTRACT

SCHÄFER-VERWIMP, A. (1996). New or interesting records of Brazilian Bryophytes, V. *Candollea* 51: 283-302. In English, English and French abstracts.

Thirty four bryogeographically interesting findings are listed. Three species, *Cololejeunea minutilobula*, *Lophozia decolorans* (from Southern Argentina) and *Neesioscyphus bicuspidatus* are new to South America, and *Lophozia bicrenata* and *Eucladium verticillatum* are reported for the first time for the Southern hemisphere. The genera *Lophozia*, *Aloina*, *Eucladium*, *Pseudoleskea*, *Pseudosymblepharis*, and *Richardsiopsis* have never been mentioned for Brazil before. *Cladastomum ulei* var. *elator* Broth. and *C. ulei* C. Müll. var. *ulei* are put into synonymy. New lectotypes are chosen for *Cladastomum ulei* var. *elator*, and *C. robustum*. Perianths of *Diplasiolejeunea latipuensis* are described and illustrated for the first time. The Brazilian distributions of *Syntrichia amphidiacea* and *Syntrichia pagorum* are mapped.

RÉSUMÉ

SCHÄFER-VERWIMP, A. (1996). Bryophytes brésiliens nouveaux ou intéressants, V. *Candollea* 51: 283-302. En anglais, résumés français et anglais.

Trente-quatre trouvailles bryogéographiques intéressantes sont énumérées. Trois espèces *Cololejeunea minutilobula*, *Lophozia decolorans* (du sud de l'Argentine) et *Neesioscyphus bicuspidatus* sont nouvelles pour l'Amérique du Sud. *Lophozia bicrenata* et *Eucladium verticillatum* sont signalés pour la première fois dans l'hémisphère sud. Les genres *Lophozia*, *Aloina*, *Eucladium*, *Pseudoleskea*, *Pseudosymblepharis* et *Richardsiopsis* n'ont jamais été cités pour le Brésil auparavant. *Cladastomum ulei* var. *elator* Broth. et *C. ulei* C. Müll. var. *ulei* sont mis en synonymie. De nouveaux lectotypes sont désignés pour *Cladastomum ulei*, *C. ulei* var. *elator* et *C. robustum*. Les périanthes de *Diplasiolejeunea latipuensis* sont décrits et illustrés pour la première fois. Les distributions brésiliennes de *Syntrichia amphidiacea* et *Syntrichia pagorum* sont cartographiées.

KEY-WORDS: Brazil – Bryophytes – New records.

Introduction

As a result of recent collecting many insufficiently known ranges of species have been widened considerably. The most spectacular examples are those species reported here as new to the Southern hemisphere like *Lophozia bicrenata* and *Eucladium verticillatum* as well as the species previously unknown from the South American continent: *Cololejeunea minutilobula* and *Neesioscyphus bicuspidatus*, both previously known only from Central America, and *Lophozia decolorans*, hitherto known only from high mountains of the other continents. Other important findings are those of *Syzygiella liberata*, *Leptodontium luteum*, and *Richardsiopsis lacustris*

which support the bryogeographical relationship between the high Andes and the upper mountain and páramo-like vegetation zones in SE-Brazil, e.g. in the Serra de Itatiaia and the Serra de Caparaó.

On the other hand, there is a bryogeographical relationship between the mountainous regions of SE and S-Brazil and Patagonia. *Lophozia patagonica* and *Pseudoleskea chilensis* may be added to the list of these elements. Extensive field work in S-Brazil may result in more species common to these two regions. *Lepicolea ochroleuca* is confirmed to have a tricentric distribution pattern in South America.

Several species reported here have been previously known only from a few old (partly only last century) collections, e.g. *Ceratolejeunea caducifolia*, *Cololejeunea manaosensis*, *Cladastomum ulei*, and *Homalia defoliata*, or have been reported very scarcely from the country: *Colura calyptrifolia*, *Micropterygium campanense*, *Blindia magellanica*, and *Pinnatella minuta*. *Cololejeunea minutilobula*, *C. surinamensis*, *Diplasiolejeunea latipuenis*, *Sematophyllum tereticaulos*, and *Cylindrocolea obtusifolia* were hitherto known only from the types.

Concluding from the numerous collections of *Syntrichia amphidiacea* and *Syntrichia pagorum* these two species may have been simply overlooked, in part due to their occurrence in towns and city centers. Once recognized these species may be easily discovered even as single plants among other bryophytes. Thus both species could be reported as new to Venezuela from the center of Mérida, a bryologically relatively well known region of the country.

Some species may have been expected to occur in Brazil as they either were known from neighbouring areas like *Frullania platycalyx* and *Lejeunea cancellata*, or are more or less widespread in the Neotropics like *Lepidozia incurvata*, *Neckera urnigera*, and *Pseudosymblepharis schimperiana*. Other species have an almost worldwide distribution but were previously unknown from Brazil: *Didymodon australasiae*, *Leptodontium flexifolium*, and *Trichostomum brachydontium*.

Before doing a bryogeographical analysis of the Brazilian bryophyte flora, there is an urgent need of more extensive fieldwork as well as monographic treatments of many genera. The list of Brazilian bryophytes is far from complete. A considerable number of new species and even new genera (*Crumuscus*, *Paranapiacabaea*, *Bromeliophila*, *Pluvianthus*, *Vitalianthus*) have been added to this list in recent times, most of these probably endemic. On the other hand it still contains too many "unproved endemics" and species names in genera where modern monographs are lacking. However, the 1896 species names of mosses and 1106 names of hepatics (YANO, 1981; 1984) probably will decrease even by adding numerous new discoveries in the future as the loss of "species" by synonyms is rather high. Since the publication of the checklist of Brazilian Mosses (YANO, 1981) I have noted more than 250 synonyms from the recent literature, and the loss will continue by every monograph dealing with Brazilian bryophytes.

For each taxon in the following alphabetically arranged list of 17 liverworts and 17 mosses taxonomical and bryogeographical comments are given.

All specimens are deposited in the private herbarium of the author with duplicates in herbaria of the specialists or elsewhere (as indicated).

Abbreviations: SV: leg. Schäfer-Verwimp; V: leg. Inge Verwimp

***Ceratolejeunea caducifolia* (Spruce) Steph.**

Minas Gerais: Serra de Caraça, humid secondary vegetation South of the monastery, on well illuminated rock, 1320 m alt., ca. 20° 8' S, 43° 33' W, 14 Oct. 1986, SV & V 7689 (G, JE, STU, Z, herb. Schwab), det. Grolle.

Distr.: Previously known only from a few old collections from Amazonas, Pará (FULFORD, 1945, with description and figures), and São Paulo (SCHIFFNER & ARNELL, 1964). New state record for Minas Gerais. Concluding from the literature the species may be

more widespread in Amazonian region, however it is unconfirmed since nearly 100 years. The collections from São Paulo made by Schiffner in 1901 (SCHIFFNER & ARNELL, 1964) and from Minas Gerais seem to be outlying stations of this apparently rare species. All earlier reported specimens are from bark, the above cited is the first one from rock.

Cololejeunea manaosensis (Herz.) Herz.

Amazonas: Borba, rain forest on BR 319, epiphyllous, c. per., ca. 70 m alt.; 4° 04' S, 60° 19' W, 6 July 1988, *SV & V 9779* (JE, Z, herb. Schwab), det. Grolle. **Mato Grosso:** Sinop, rain forest on BR 163, km 848 (ca. 25 km North of Sinop), epiphyllous, c. per., 380 m elev., 6 July 1989, *SV & V 11337* (G, PC), det. Tixier; Reserva Indígena de Xingú, rain forest on BR 080, epiphyllous, c. per., 350 m alt., 9 July 1989, *SV & V 11399* (PC, STU), det. Tixier. **Pará:** Santarem, primary rain forest west of the town, epiphyllous, with *Cololejeunea ensifolia* ca. 30 m alt., 16 July 1986, *SV & V 7214/A*, det. Tixier (PC). **São Paulo:** Cabreúva, valley of the Rio Tieté, secondary rain forest near the “gruta”, epiphyllous, c. per., 620 m, 4 March 1987, *SV & V 8271* (G, PC, STU, Z, herb. Arts); road SP 258 Capão Bonito to Ponta Grossa (Paraná), on riverside between Itapeva and Itararé, epiphyllous in humid shrubby vegetation, c. per., 700 m alt., ca. 24° 04' S, 49° 09' W, 14 Dec. 1991, *SV & V 15118* (PC); both det. Tixier.

Cololejeunea manaosensis was described and figured by HERZOG (1931, as *Leptocolea manaosensis*) from a few collections made by Lützelburg in the surroundings of Manaus, Amazonas. All collections known are epiphyllous. The records from Mato Grosso and São Paulo constitute a considerable range extension for this species.

Cololejeunea minutilobula Herz.

Paraná: Ponta Grossa, rain forest in the park of Vila Velha on southern slope, epiphyllous; 900 m elev., ca. 25° 13' S, 50° 02' W, 8 Febr. 1988, *SV & V 9426* (PC). **São Paulo:** Aguas de Santa Barbara, epiphyllous in rain forest near the “cascata”, 600 m alt., 16. Febr. 1988, *SV & V 9479* (PC), both det. Tixier.

Distr.: Previously known only from the type collection from Costa Rica, described and figured by HERZOG (1951). SCHUSTER (1980: 1283) compares this species with *Cololejeunea cardiocarpa* (Mont.) Schust. from which it differs by the uniformly small lobules. A similar species with reduced lobules is *Cololejeunea verwimpitii* Tixier which differs from *C. minutilobula* by the more largely extended hyaline cells (TIXIER, 1991: 281, fig. 8). In both *C. cardiocarpa* and *C. minutilobula* these cells are confined to a small group at the leaf apex. First record of the species for South America.

Cololejeunea surinamensis Tixier

Amazonas: Manaus, primary rain forest on Rio Janauaca ca. 50 km SW of the town, epiphyllous in the understorey, ca. 40 m alt., ca. 3° 28' S, 60° 17' W, 20 July 1986, *SV & V 7242* (G, PC, STU, Z), 7247 (PC, herb. Arts). **Mato Grosso:** Serra do Cachimbo on the road BR 163 near Cachimbo, epiphyllous in secondary rain forest, ca. 500 m alt., 7 July 1989, *SV & V 11365* (PC), all det. Tixier.

Distr.: Hitherto known only from the type from Surinam (TIXIER, 1980). New to Brazil.

Colura calyptriifolia (Hook.) Dum.

Rio de Janeiro: Serra de Itatiaia, bush-vegetation near Hotel Alsene, at base of shrub, c. per., 2350 m elev., 14 Oct. 1991, *SV & V 15016*, ver. Jovet-Ast.

Distr.: *Colura calyptriifolia* is an oceanic-temperate Afro-American and European species (GRADSTEIN & al., 1983: 159, with distribution map). PÓCS (1991: 35) gives details concer-

ning its distribution in tropical East Africa (Fig. 6) and an updated world distribution map (Fig. 5). The occurrence of *C. calyptrifolia* in Brazil has only been pointed out by SOLARI (1983: 545), however without citing a specimen.

Cylindrocolea obtusifolia Fulf.

Espírito Santo: Linhares, Reserva Florestal da Vale do Rio Doce on the road BR 101 at km 115,5, Mata atlântica, on sand along small road, well illuminated, c. per., 50 m alt., 17 July 1990, *SV & V 12991*, det. Vána (BRNO, KRAM, PRC, Z); creeping on rotting fungus, c. per., *SV & V 13004*.

Distr.: Previously known only from the type collection from Rio de Janeiro (FULFORD, 1976).

Diplasiolejeunea latipuensis Tixier (Fig. 1).

São Paulo: Serra do Mar above Caraguatatuba, humid secondary forest, epiphytic as pioneer on small branchlets, associated with *Leucolejeunea xanthocarpa*, *Anoplolejeunea conferta*, 700 m alt., 23° 34' S, 45° 27' W, 22 March 1989, *SV & V 10926/a* (JE) and 9 Sept. 1989, *SV & V 11733* (c. per.), both det. Tixier; Ilha de São Sebastião, humid secondary vegetation on western slope near Rio da Toca, epiphytic on *Tibouchina*, well illuminated, c. per., with *Diplasiolejeunea cavifolia* and *Leucolejeunea xanthocarpa*, 220 m elev., 8 Sept. 1989, *SV & V 11720c*.

Distr.: Hitherto known only from the type collection from Guyana (TIXIER, 1991). New to Brazil.

The original description is from a sterile specimen. Two of the above cited specimens bear a few perianths which may be described as follows: perianth rostrate, oblong-ovate to cylindrical in outline, 0,9-1 mm long, 0,5 mm broad, slightly compressed, with 4 prominent keels and one small or even rudimentary lateral one; female bracts oblong-ovate, ca. 0,5 mm long, bifid at apex, lobes broadly rounded, bracteole ca. 0,4-0,45 mm long, with two broadly rounded lobes (see fig. 1). *Diplasiolejeunea latipuensis* is probably most closely related to *D. zacatepetensis* Tix. from Mexico and *D. borhidiana* Reyes from Cuba. From both it is easily distinguishable by the broadly rounded lobes of the underleaves, from *D. zacatepetensis* also in the broadly rounded lobes of the female bracts and bracteole, and from *D. borhidiana* in the different shape of the perianth (see TIXIER, 1985, fig. 22: 9, 10 page 396 [*D. borhidiana*] and fig. 24: 9 page 400 [*D. zacatepetensis*]). *D. latipuensis* is apparently dioecous, male inflorescences not seen.

Frullania platycalyx Herz.

Paraná: Foz de Iguaçu, epiphytic on tree trunks in the park around the falls, ca. 160-180 m elev., 3 Febr. 1988, 19 August 1991, *SV & V 9328a, 14858*; Palmeira between Ponta Grossa and Curitiba, Praça in the center of the town, epiphytic; 850 m elev.; 25° 25' S, 50° 00' W, 17 Dec. 1991, *SV & V 15172* (STU, Z). **Santa Catarina:** Tangará, secondary forest at roadside of SC 303, km 30, epiphytic, ca. 750 m alt., 27° 04' S, 51° 15' W, 12 Oct. 1987, *SV & V 1987*. **Rio Grande do Sul:** Chui, Avenida Uruguay, on tree trunk, 5 m alt., 21 Dec. 1986, *SV & V 7887*; São Miguel das Missões, on half exposed stone wall of the ruins, 320 m elev., 30 Dec. 1988, *SV & V 10736*; all det. or conf. Reiner-Drehwald (1994).

Distr.: Previously known only from Argentina, Prov. de Misiones and Prov. de Buenos Aires (Reiner 1988). New to Brazil.

The collection *SV & V 10736* is the first one from non-epiphytic substrate and shows that *Frullania platycalyx* is not an obligate epiphyte. The species was not treated by YUZAWA (1991) in his monograph of *Frullania* subgen. *Chonantheia*.

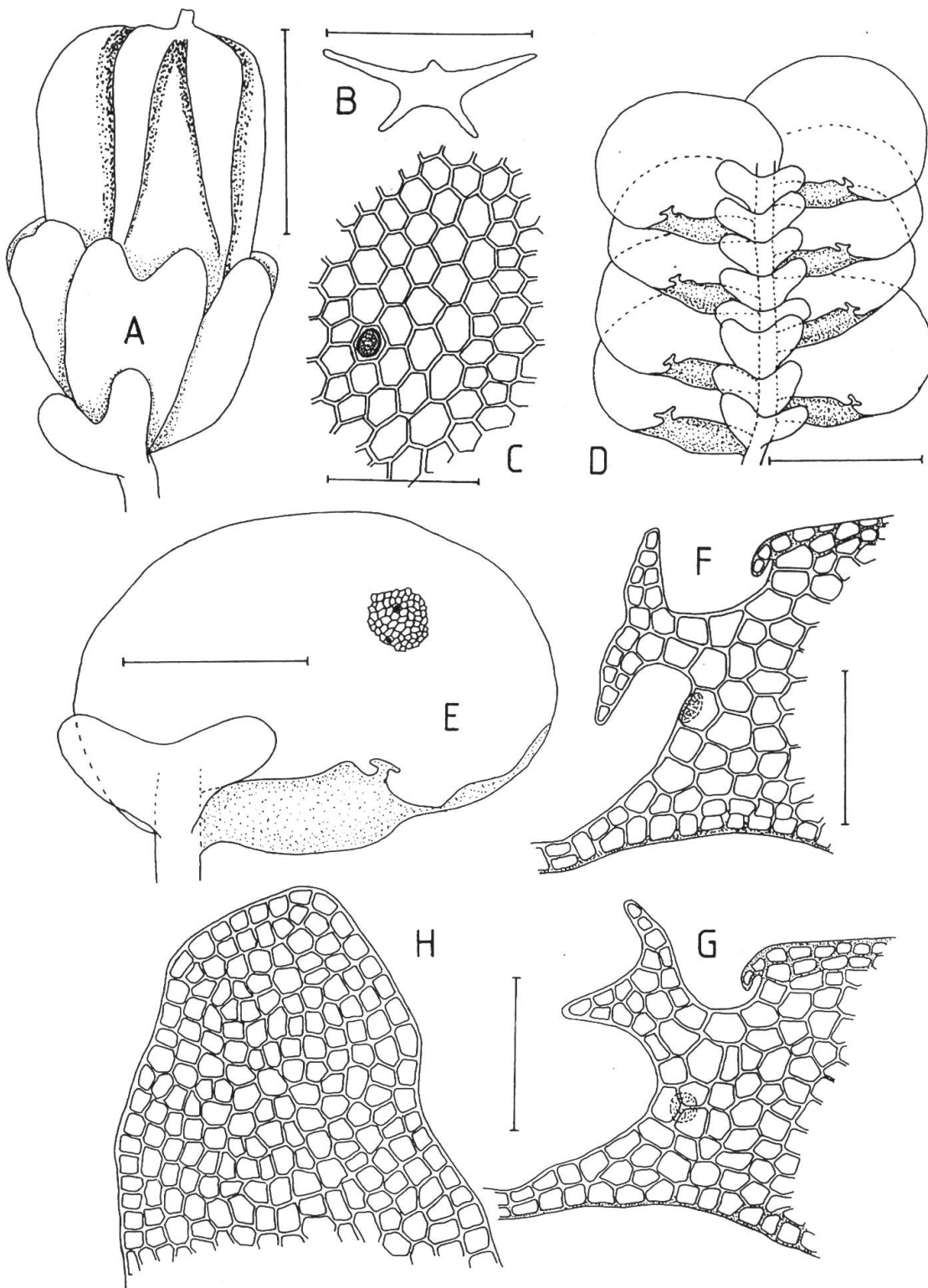


Fig. 1. – *Diplasiolejeunea latipuensis* Tixier

A Perianth with bracts and bracteole. **B** cross section of perianth near apex. **C** mid leaf cells of leaf lobe. **D** median portion of a plant, ventral view. **E** leaf lobe with lobule and underleaf. **F-G** typical teeth of two leaf lobules, with hyaline papillae. **H** part of underleaf. Scales: **A, B, E**: scale = 0,5 mm; **C, F-H**: scale = 100 μ m; **D**: scale = 1 mm; (all fig. from SV & V 11733).

Lejeunea cancellata Nees & Mont. in Mont.

Santa Catarina: Ilha de São Francisco, restinga vegetation near Ubatuba, epiphytic, 5 m alt., 26° 14' S, 48° 36' W, 2 Jan. 1991, *SV & V 13597/B*. **São Paulo:** Serra do Mar near Ubatuba, Fazenda Capricornio, epiphytic in cocoa plantation, 60 m alt., 23° 24' S, 45° 04' W, 31 Oct. 1988, *SV & V 10407*, ver. Reiner-Drehwald.

Distr.: Cuba, Florida (GROLLE, 1985); recently reported from the province of Misiones, Argentina, by DREHWALD (1995). First record for Brazil. The species was excellently described and figured by SCHUSTER (1980), as *Lejeunea cladiophora* (Schust.) Schust.

Lepicolea ochroleuca (Spreng.) Spruce.

Santa Catarina: Serra do Rio do Rastro, Urubici, epiphytic in small area of humid forest on the road to Morro da Igreja, 1750 m alt., 22 Dec. 1988, *SV & V 10532* (G, STU, Z, herb. Arts); 1650 m, ca. 28° 3' S, 49° 24' W, 31 Dec. 1990, *SV & V 13555* (FLAS, KRAM); Serra do Rio do Rastro between Bom Jardim da Serra and Lauro Müller, cloud forest at the upper side of the steep slope, epiphytic, 1450 m alt., ca. 28° 23' S, 49° 33' W, 24 Dec. 1988, *SV & V 10599*.

Distr.: South Africa, Central America and southern South America (GRADSTEIN & al., 1983: 155, with distribution map). In addition, the species has long been known to occur in Rio Grande do Sul, Brazil (LORSCHUITTER, 1973: 6 and REIMERS, 1926: 40). New state record for Santa Catarina. In Latin America *Lepicolea ochroleuca* has a tricentric distribution pattern.

Lepidozia incurvata Lindenb.

Santa Catarina: Serra do Rio do Rastro, Urubici, humid forest on road to Morro da Igreja, epiphytic, 1750 m alt.; ca. 28° 03' S, 49° 24' W, 22 Dec. 1988, *SV & V 10545* (JE, Z), det. Grolle.

Distr.: Guatemala, Costa Rica, Colombia, Venezuela, Peru, Bolivia (FULFORD, 1966). First record for Brazil.

Lophozia bicrenata (Schmid. ex Hoffm.) Dum. [= **Isopaches bicrenatus** (Schmid. ex Hoffm.) Buch]

Espírito Santo: Serra de Caparaó National Park, páramo-like vegetation above “Terreirão”, on exposed soil, associated with *Anastrophyllum pearcei* (Steph.) Schust., 2400 m alt., 20° 25' S, 41° 49' W, 20 July 1989, *SV & V 11486* p.p. **Rio de Janeiro:** Serra de Itatiaia, páramo-like vegetation near Abrigo Rebouças, on exposed soil beside the road covered by short grass, mosses (*Aongstroemia orientalis* Mitt., *Cladastomum ulei* C. Müll., and others) and lichens, c. per., 2400 m alt., ca. 22° 22' S, 44° 39' W, 6 July 1991, *SV & V 14624* (G, PRC); on small rock partially covered by long grass (“xaxim”), 2400 m, 6 July 1991, *SV & V 14635* (PRC); shrubby vegetation near Hotel Alsene, on humus under dwarf shrubs, c. per., 2380 m, 14 Oct. 1991, *SV & V 15015* (PRC), all det. Vána.

Distr.: Europe east to Siberia, North America (SMITH, 1990: 112). First record for the southern hemisphere. With regard to all collection sites in Brazil I don't have the impression that the species may have been introduced to the area – in contrary I am convinced that *Lophozia bicrenata* is an indigenous member of the Brazilian hepatic flora. The genus *Lophozia* is firstly reported for Brazil. *Lophozia rhodina* Spruce ex Steph., mentioned in the checklist by YANO (1984: 490), is a synonym of *Neesioscyphus carneus* (Nees) Grolle fide SCHIFFNER & ARNELL (1964, as *Notoscyphus*) and GROLLE (1967, as *Neesioscyphus*).

Lophozia (Isopaches) decolorans (Limpr.) Steph.

ARGENTINA: Prov. Chubut, Esquel, Los Alerces National Park, *Nothofagus*-dominated forest on Lago Futalaufquen, on exposed soil along trail, c. per., associated with a few plants of

a small sterile Polytrichaceae, some tiny cushions of *Bryum argenteum* var. *lanatum*, and a variety of small lichens, 460 m alt., 30 Dec. 1986, *SV & V 7952* (PRC), det. Vána.

Distr.: *Lophozia decolorans* is a rare and highly disjunct species previously known from Europe (Alps, Norway, Bulgaria), Soviet Union (Kola Peninsula, E Siberia), Himalaya (Nepal, Bhutan), and VÁNA (1982) reported it from tropical Africa (Mt. Cameroon, Mt. Kilimanjaro, Mt. Meru); world distribution map in GRADSTEIN & VÁNA (1987: 400, fig. 14). Very recently SCHUSTER (1995) reported it from British Columbia, Canada, as new to North America. This is the first record for South America.

VÁNA (in litt. 1991) emphasized that our specimen surely belongs to *Lophozia decolorans* and not to *Lophozia pumicicola* Berggr., known from New Zealand (and therefore more likely to occur in southern South America).

Lophozia patagonica Herz. & Grolle (Fig. 2).

Santa Catarina: Serra do Rio do Rastro, Urubici, small sloping fen near Morro da Igreja, single plants between *Sphagnum aciphyllum* C. Müll., c. per., 1750 m alt., ca. 28° 24' S, 49° 24' W, 31 Dec. 1990, *SV & V 13575*, det. Grolle (JE, Z).

Distr.: Southern South America (southern Patagonian Channels and the Valdivian region) (ENGEL, 1978: 121); a doubtful record from Colombia (GRADSTEIN & HEKKING, 1979: 120).

The leaves of the Brazilian plants and those from Brunswick Peninsula (ENGEL, l.c.) are occasionally three-lobed (very rarely four-lobed) instead of constantly bilobed as in the type collection (GROLLE, 1959). Furthermore, our specimen has hyaline and rounded one-celled gemmae which were unknown in the type. The collection from Colombia has gemmae, too (GRADSTEIN & HEKKING, l.c.). Our study of living plants revealed the presence of 8-15(-20) roundish-oval, segmented (!) oil bodies, about 3-6 µm × 3-8 µm, in each leaf cell. GROLLE (l.c.) reported 30-50 homogenous oil bodies per cell, measuring 2-3 µm; possibly his observations were from degenerated oil bodies. The one-celled, round gemmae, the green stem and the compound oil body structure support a closer relationship to *Lophozia capitata* (Hook.) Macoun subsp. *capitata* of the northern hemisphere than to *Lophozia grandiretis* (Lindb. ex Kaal.) Schiffn. which has angular and mostly two-celled gemmae and red pigmented stem cells. The ecology – between Sphagna – is like that of *Lophozia capitata* (Hook.) Macoun subsp. *laxa* (Lindb.) Bisang [= *Lophozia marchica* (Nees ex Limpr.) Steph.] (see also BISANG, 1991). From all species of the subgenus *Schistochilopsis* [= subgen. *Massula*] *Lophozia patagonica* can be distinguished by the combination of the above cited characters and the markedly acute leaf lobes.

Recently, Konstantinova (in KONSTANTINOVA & VASILJEV, 1994) has elevated the subgenus *Schistochilopsis* to generic rank and suggested several new combinations (not for *Lophozia patagonica*). However, in agreement with BISANG (1991) and GROLLE (in litt. 1995) *Schistochilopsis* is regarded here as a subgenus of *Lophozia*.

The occurrence of *Lophozia patagonica* in South Brazil is bryogeographically interesting because it supports the relationship between the bryofloras of southernmost South America and the mountainous region of subtropical Southeast and South Brazil. This connection is evidenced by species like *Lepicolea ochroleuca* (Spreng.) Spruce, *Heteroscyphus valdiviensis* (Mont.) Schiffn., *Pseudoleskea chilensis* (see below) and by genera like *Balantiopsis* and *Ptychomnion*.

Micropterygium campanense Spruce ex Reimers.

Minas Gerais: Santa Barbara, Serra de Caraça, trail to the summit of Morro Carapuz, shrubby vegetation between rocks, on sandy shady soil, a few plants between *Adelanthus carabayensis* (Mont.) Grolle, 1460 m alt., ca. 20° 6' S, 43° 27' W, 18 July 1989, *SV & V 11462/A*.

Distr.: Venezuela, Peru (FULFORD, 1966: 265), and Brazil, where it was known from a single collection from the Serra do Cipó, state of Minas Gerais (SCHÄFER-VERWIMP, 1989:

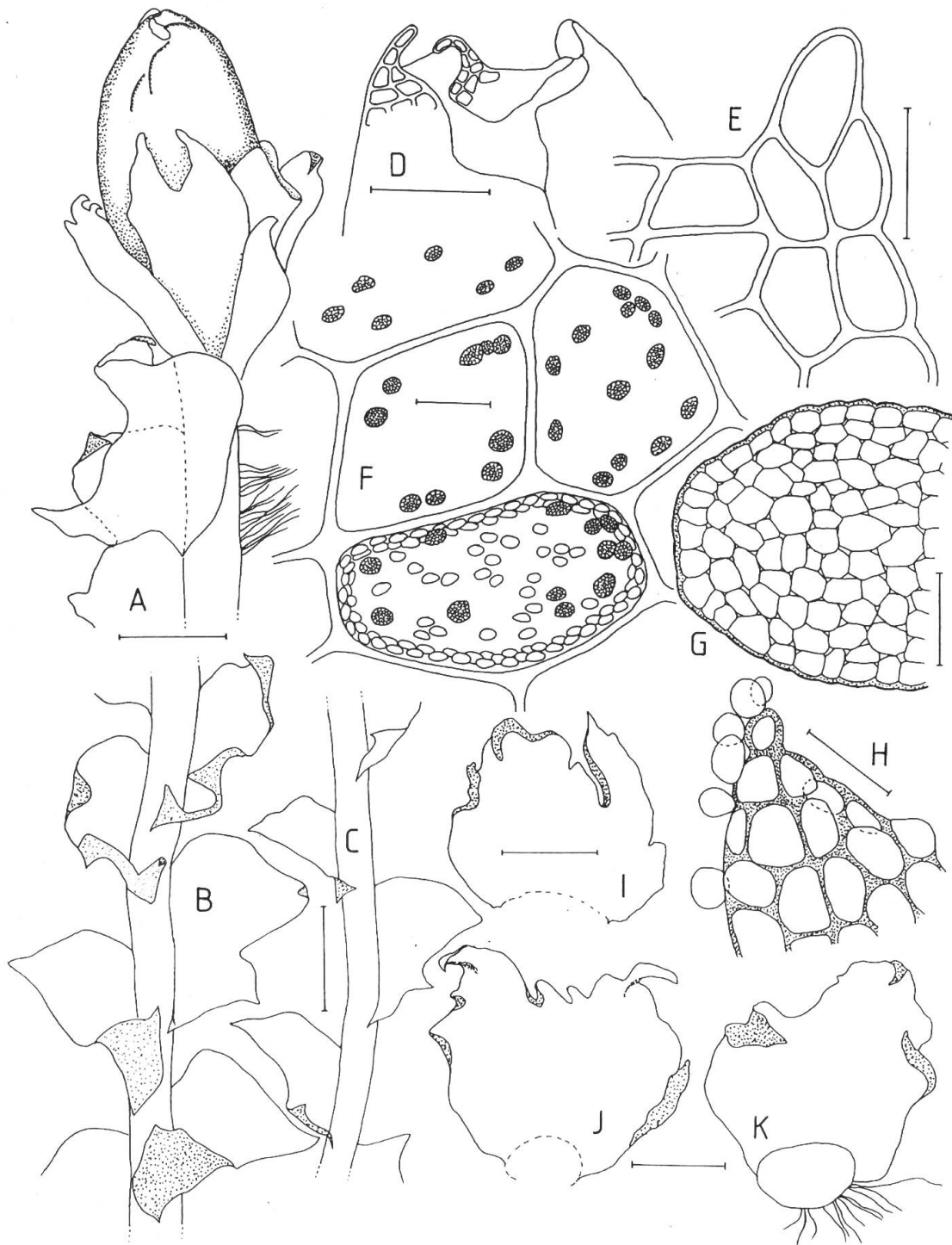


Fig. 2. – *Lophozia patagonica* Herz. & Grolle

A upper portion of plant with perianth. **B** median portion of fertile plant (the same plant as in fig. A). **C** lower portion of plant (the same plant as in fig. A). **D** perianth mouth. **E** cells of perianth mouth. **F** mid leaf cells with oil bodies and (in lower cell) chloroplasts. **G** cross section of stem in upper portion of plant. **H** leaf lobe separating hyaline brood bodies. **I-K** three leaves from plant apex. Scales: **A-C, I-K**: scale = 1 mm; **D**: scale = 0,5 mm; **E, G-H**: scale = 100 μ m; **F**: scale = 25 μ m; (all fig. from *SV & V 13575*).

315). This is now the southernmost locality of the species. The exclusively Neotropical genus *Micropterygium* containing about 18-19 species is largely confined to the Amazon basin, the Guyana Highlands, northern South America, Costa Rica, Panama, and the West Indies. Only a very few species have outlying stations in SE-Brazil.

Neesioscyphus bicuspidatus (Steph.) Grolle.

Minas Gerais: Serra da Mantiqueira, Camanducaia, Monte Verde, semideciduous rain forest on trail to Pico Selado, on shady earth slope, 1750 m alt., c. spor., ca. 22° 49' S, 45° 58' W, 11 May 1990, *SV & V 12687*, det. Grolle.

Distr.: Hitherto known only from a few collections from the Caribbean Islands of Guadeloupe, Martinique, Puerto Rico (GROLLE, 1966, with key, description and figures), Dominica (FULFORD, 1987: 268), and Cuba (GROLLE, 1975); reported also from Mexico (FULFORD & SHARP, 1990). First record for South America. The occurrence of this species in SE-Brazil demonstrates the enormous importance of this region as evolution center of this exclusively Neotropical genus. Four of the five species attached to *Neesioscyphus* are now known to occur in SE-Brazil.

Syzygiella liberata Inoue.

Rio de Janeiro: Serra de Itatiaia, along entry road near border with Minas Gerais, between Brejo da Lapa and Hotel Alsene, on exposed periodically wet rock at roadside, 2280 m alt., ca. 22° 23' S, 44° 41' W, 6 Sept. 1986, *SV & V 7571* (G, PRC, herb. Schwab), det. Vána.

Distr.: *Syzygiella liberata* was described and illustrated by INOUE (1974) from a single collection from Colombia; further collections from Colombia are reported by GRADSTEIN & HEKKING (1979). Earlier collected by Schiffner in Itatiaia, Brazil, but confounded with *Syzygiella anomala* (Lindenb. & Gott.) Steph. (VÁNA, in litt. 1992). First record for Brazil.

Aloina spec.

São Paulo: São Paulo city, Zona Sul, Alto da Boa Vista, small park on the Rua São Benedito/Rua Fraternidade, on open soil beside path; 780 m alt., 20-31 Dec. 1991, *SV 15308*, ver. Sollman (herb. Sollman).

Unfortunately, the specimen is sterile and therefore determination at the species level was not possible. Nevertheless, the specimen is worth mentioning because it is the first record of the genus for Brazil.

Blindia magellanica Schimp. ex C. Müll.

Rio de Janeiro: Itatiaia National Park, along entry road near border with Minas Gerais between km 9 and km 10, 2200-2240 m, ca. 22° 22' S, 44° 45' W; humid roadside near upper limit of continuous forest; 6 July 1991, *Vital & Buck 19761* (NY, SP).

Distr.: *Blindia magellanica* is an austral pan-temperate species widely distributed in southern South America, New Zealand, Australia and Tasmania as well as on all sub-Antarctic islands with occasional extensions northward into the tropics to the Northern Andes, Tristan da Cunha, southern Africa, Réunion, and New Guinea (OCHYRA, 1992: 221; see also distribution map in BARTLETT & VITT, 1986: 221). First mentioned from Brazil by BARTLETT & VITT (1986: 218), without citing a specimen, probably collected near Rio de Janeiro according to the distribution map.

Cladastomum ulei C. Müll., Bull. Herb. Boissier 6: 21. 1898 (Fig. 3).

TYPE: BRAZIL. Serra do Itatiaia, 2000 m., in terra. Martio 1894. leg. E. Ule. (*Ule, Bryotheca brasiliensis* 201, ["Acquis et intercalé dans la collection générale de l'Herbier Delessert en 1900"] G! lectotype nov.). The identity of an isotype (G!) is uncertain.

= *Cladastomum ulei* C. Müll. var. *elatior* Broth., Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr. 83: 255, 1926. syn. nov.

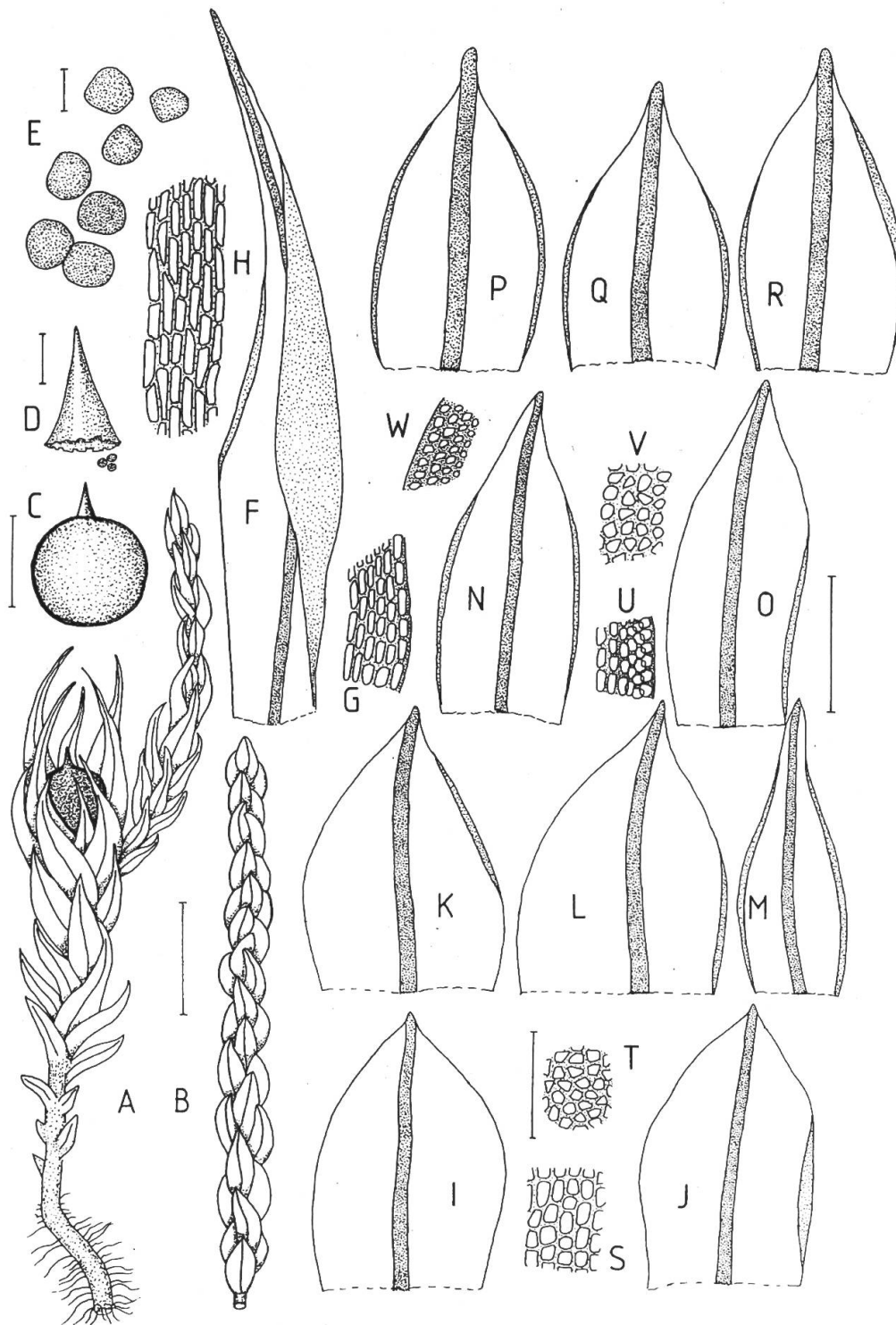
TYPE: BRAZIL. Ad confines Rio de Janeiro et Minas Geraes. In paludosis partis superioris montis Itatiaia, 2500 m, 17. Sept. 1901 legit V. Schiffner. (Schiffner, *Musci Brasilienses* n. 464, Herb. Schäfer-Verwimp (lectotype nov.); Isotype: Bauer, *Musci Eur. Amer. Exsicc. n. 2151*, G!)

Espírito Santo: Serra de Caparaó National Park, páramo-like vegetation above "Terreirão", on exposed earth slope, admixed with *Aongstroemia orientalis* Mitt., 2380 m alt., 20° 25' S, 41° 49' W, 20 July 1989, *SV & V 11487* p.p. **Minas Gerais:** Serra de Caparaó National Park, páramo-like vegetation above tree line between "Terreirão" and Pico da Bandeira, on exposed soil along trail, a few plants between *Aongstroemia orientalis* Mitt. and associated with *Gongylanthus liebmanianus* (Lindenb. & Gott.) Steph., c. spor., 2580 m alt., 27 July 1987, *SV & V 8961* p.p. **Paraná:** Mountainous region of North Paraná between Castro and Tibagi, on open humid in humid pasture, 1220 m alt., ca. 24° 43' S, 50° 09' W, 16 Dec. 1991, *SV & V 15148*. **Rio de Janeiro:** Serra de Itatiaia, páramo-like vegetation near Abrigo Rebouças, on humus along the trail to the Agulhas Negras, in large quantity, 2400 m, 22° 23' S, 44° 41' W, 3 June 1989, *SV & V 11169* (BA, CANB, FLAS, G, KRAM-B, NY, Z, herb. Arts, herb. Schwab, herb. van Zanten), conf. Buck; at sometimes wet rock at roadside near Abrigo Rebouças, 2430 m elev., 6 July 1991, *SV & V 14630* (G, KRAM-B, Z); subalpine vegetation near Hotel Alsene, on soil and under shrubs along road, c. spor., 2370 m alt., 14 Oct. 1991, *SV & V 15014* (SP), *15018* (G, Z); páramo-like vegetation between Abrigo Rebouças and the Prateleiras, along trail on open humid humus, rather frequent, c. spor., 2460 m, 15 Oct. 1991, *SV & V 15051*, *15052*. **Santa Catarina:** Serra do Rio do Rastro near Bom Jardim da Serra, campos-vegetation, on open humid humus, associated with *Pleuridium subnervosum* (C. Müll.) Jaeg., 1400 m, 28°20'S, 49°37'W, 14 Oct. 1987, *SV & V 9193/A*.

Distr.: *Cladastomum ulei* was hitherto known only from a very few old collections from the Serra de Itatiaia. BUCK & SNIDER (1992) mention the occurrence of the genus *Cladastomum* also from Pico da Bandeira of Caparaó National Park. Our collections show that the species is rather frequent in the Serra de Itatiaia, probably less abundant (or undercollected) in the Serra de Caparaó, in Santa Catarina, and in northern Paraná.

The species is easily overlooked even when fruiting due to the hidden capsules which are rapidly detached when ripe (and then sometimes found on the ground between the plants). The size of the plants varies from 1,5-3 mm in *SV & V 15148* (juvenile form?) from Paraná to slightly more than 4 cm in the saxicolous specimen *SV & V 14630* from Itatiaia. *Cladastomum ulei* is closely related to the recently described, sympatric *Crumuscus vitalis* Buck & Snider. Both have very minute (250-300 µm), smooth, mitrate calyptrae, spherical to ovoid, stoutly apiculate and easily detached capsules without stomata, stems with a well developed central strand, and leaf costae in cross-section showing guide cells surrounded above and below by stereid bands (BUCK & SNIDER, 1992). However, *Cladastomum ulei* is easily distinguished from *Crumuscus vitalis* by the julaceous sterile shoots, and the broadly ovate to ovate leaves with the costae always ending as an apiculus or shortly excurrent (see Fig. 3).

I have studied authentic material from *Cladastomum ulei* var. *elatior* Broth. and could not find any significant difference justifying even varietal level. Our studies on the type of *Cladastomum robustum* Broth. (**TYPE: BRAZIL.** Ad confines Rio de Janeiro-Minas Geraes. In paludosis partis superioris montis Itatiaia ad saxa. 2000-2500 m. s. m. 18. IX. 1901. leg. V. Schiffner 1923. H-BR, 1018004! lectotype nov.) revealed a very close relationship to *Cladastomum ulei*, and probably it may fall within the morphological range of the latter. Our specimen 14630 (see fig. 3 P-R) is very close, if not identical to *C. robustum*. Both specimens are

Fig. 3. – *Cladastomum ulei* C. Müll.

A habit of fruiting plant (in wet condition). B habit of sterile plant (in dry condition). C detached capsule with calyptra. D calyptra. E spores. F perichaetial leaf. G basal leaf cells of perichaetial leaf. H median leaf cells of perichaetial leaf (at "shoulder"). I-R leaves from different specimens but each horizontal series from the same plant. S central basal leaf cells. T median leaf cells. U marginal basal leaf cells. V median leaf cells. W leaf cells near leaf apex. Scales: A-B: scale = 1 mm; C: scale = 0,5 mm; D: scale = 100 µm; E: scale = 20 µm; F, I-R: scale (for all leaves at O) = 0,5 mm; G, H, S-W: scale (for all cell structures at T) = 100 µm; (fig. A, C-H from *SV & V 15051*; B, K-M from *SV & V 11169*; I, J, S-T from *Schiffner 464* (isotype of *Cladastomum ulei* var. *elatior* Broth.); N, O, U-W from *SV & V 15018*; P-R from *SV & V 14630*).

from rocks and may be considered as ecological expressions of *C. ulei*. However, further study is needed when more material will be available.

Didymodon australasiae (Hook. & Grev.) Zand.

Paraná: Lapa (ca. 70 km SW of Curitiba), city centre, ruderal at base of wall and on sidewalk, 900 m alt., ca. 25° 46' S, 49° 43' W, 17 Dec. 1991, *SV & V 15183* (herb. Sollman). **São Paulo:** São Paulo city, Alto da Boa Vista (Zona Sul), Rua Irineu Marinho No 804, on sidewalk, associated with *Chenia leptophylla* (C. Müll.) Zand., 780 m alt., 21-31 Dec 1992, *SV & V 15297* (KRAM, herb. Sollman), both det. Sollman.

Distr.: North America (U.S.A.), Mexico, Guatemala, Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile, Australia, Tasmania, New Zealand, South Africa (ROBINSON, 1970: 189, as *Trichostomopsis australasiae* (Hook. & Grev.) Robinson). New to Brazil where it may have been introduced by human activity.

Eucladium verticillatum (Brid.) B., S. & G.

Minas Gerais: Cordisburgo, Gruta de Maquiné, on shady calcareous rock near the entrance of the cave, ca. 860 m alt., admixed with *Neohyophila sprengelii* (Schwaegr.) Crum, 19° 6' S, 44° 22' W, 28 Sept. 1987, *V 9071/Z*, det. Sollman (only herb. Sollman).

Distr.: Europe, Macaronesia, Africa, Asia Minor, Caucasus, Kashmir, North and Central America, Mexico, West Indies (Haiti, Dominican Republic). Apparently new to South America. The natural habitat and the associated *Neohyophila sprengelii*, a species known only from the Americas and surely indigenous to Brazil, indicate that *Eucladium verticillatum* may not have been introduced to the area.

Homalia defoliata (C. Müll.) Jaeg.

São Paulo: Serra do Mar near Paraitinga between Taubate and Ubatuba, epiphytic in rain forest (Mata atlântica), 910 m alt., 4 Oct. 1986, *SV & V 7649*; Litoral Sul, Peruibe, Mata atlântica on Morro Guaraú, on shady rock, 20 m alt., 15 Nov. 1986, *SV & V 7771*; Serra de Paranapiacaba between Apiai and Iporanga, Mata atlântica primaria near Caverna de Santana, on shady limestone, 280 m alt., 1 May 1987, *SV & V 8431*; Serra de Paranapiacaba, Eldorado, Caverna do Diabo, on humid limestone in rain forest, 500 m alt., 29 April 1989, *SV & V 11102* (STU, herb. Enroth), det. Enroth; Serra do Mar between Mogi das Cruzes and Bertioga, primary rain forest on Rio Itapanhaú, on granitic rock at riverside, 180 m alt., 23° 43' S, 46° 03' W, 27 June 1989, *SV & V 11228 (Z)*; epiphytic, 170 m, *SV & V 11251*; Litoral Norte, Ilha de São Sebastião, Mata atlântica primaria on Ribeirão da Laje (southern slope of the island), on rock at riverside, 100 m alt., ca. 23° 56' S, 45° 24' W, 6 Sept. 1989, *SV & V 11676 (BA, G)*; western slope, epiphytic, 440 m, 7 Oct. 1990, *SV & V 13189*; Serra do Mar near Parelheiros, epiphytic in humid secondary vegetation between the railway stations Evangelista de Souza and Engenheiro Ferraz, 630 m alt., 24 Febr. 1990, *SV & V 12515*.

Distr.: Reported from the coastal range of Venezuela by ROBINSON (1986). From Brazil previously known only from the type and a second collection, both from the state of Rio de Janeiro. New state record for São Paulo. *Homalia defoliata* is not a common species in Brazil and seems to be confined to the humid coastal forest (Mata atlântica) between sea level and about 1000 m alt.

Leptodontium flexifolium (With.) Hampe ex Lindb.

Rio de Janeiro Serra de Itatiaia, páramo-like vegetation on southern slope of Agulhas Negras, on thin layer of humus over exposed rock, 2460 m alt., ca. 22° 22' S, 44° 41' W, 8 July 1991, *SV & V 14659* (herb. Sollman), det. Sollman.

Distr.: Found throughout the New and Old World tropics and subtropics; also in Europe northwards to Great Britain (ZANDER, 1972, with distribution map, fig. 21, page 222). First record for Brazil.

Leptodontium luteum (Tayl.) Mitt.

Minas Gerais: Serra de Itatiaia, near Brejo da Lapa between grass at the margin of a pasture, 2130 m alt., ca. 22° 23' S, 44° 41' W, 4 June 1989, *SV & V 11188* (BA, CANB, G, KRAM, STU, Z, herb. Arts, herb. Schwab, herb. Sollman), det. Sollman.

Distr.: Colombia, Ecuador, Bolivia, Peru, Tanzania (ZANDER, 1972: 265); Venezuela, Dominican Republic (DELGADILLO & al., 1995). New to Brazil; in South America the first record outside the Andes.

Neckera urnigera C. Müll.

São Paulo: Serra da Mantiqueira, Campos do Jordão, humid secondary forest on the road to Minalba, epiphytic, c. spor., 1350 m alt., ca. 22° 38' S, 45° 30' W, 9 April 1989, *SV & V 11029*, det. Enroth (herb. Enroth); São Bento do Sapucaí, western slope of Pedra do Baú, epiphytic in rain forest, c. spor., 1630 m alt, ca. 22° 43' S, 45° 40' W, 30 Sept. 1989, *SV & V 11826* (Z).

Distr.: Mexico, Guatemala, Costa Rica, Panama, Dominican Republic (SHARP & al., 1994); El Salvador (DELGADILLO & al., 1995); CHURCHILL (1989) reported it from Colombia. New to Brazil.

Pinnatella minuta (Mitt.) Broth.

Santa Catarina: Serra do Rio do Rastro, Urubici, epiphytic in humid forest near waterfall east of the village (“gruta de Lourdes”), ca. 960 m elev., 22 Dec. 1988, *SV & V 10516*.

Distr.: Widespread from Mexico to South America, Caribbean Islands, Central to South Africa, East African Islands, India (ENROTH, 1994, with detailed distribution map and figures; well figured also in SHARP & al., 1994). Recently reported as new to Argentina by DREHWALD (1995: 173). From Brazil previously known from a few collections from the states of Goiás and São Paulo (ENROTH, 1994: 37, 62), possibly also from Santa Catarina as the type of *Porotrichum globiglossum* C. Müll. (fide ENROTH, 1994: 62).

Pseudoleskea chilensis (Lor.) Ochyra [= **Hygroamblystegium chilense** (Lor.) Reimers].

Santa Catarina: Serra do Rio do Rastro, Urubici, on wet rocks at the “gruta de Lourdes”, 960 m elev., 20 Dec. 1988, *SV & V 10513* (KRAM-B), det. Ochyra.

Distr.: According to OCHYRA (1989: 234) “This species is one of the most confusing of antipodal mosses. Owing to its great variability it was described for over twenty-five times as a separate species or a variety in South America, South Africa, Antarctica and sub-Antarctica”. Known only from a few collections from Northern North America as *Cratoneuron arcticum* Steere (OCHYRA, 1989). The genus *Pseudoleskea* is new to Brazil.

The species was illustrated by OCHYRA (1987) from the type of *Sciaromium gracile* Dusén. The above cited collection represents “a very tiny phenotype which has been described several times as a separate taxon, e.g. as *Amblystegium tenellum*. The plants has more distinctly serrulate leaves but the correspondence in other characters is good.” (OCHYRA, in litt. 1995).

Pseudosymblespharis schimperiana (Par.) Crum.

Minas Gerais: Serra da Mantiqueira, Delfim Moreira, Fazenda Alegria, humid forest dominated by *Araucaria angustifolia* and *Podocarpus lambertii*, on rotting log; 1330 m alt., 22° 33' S, 45° 15' W, 8 Sept. 1991, *SV & V 14939*; Serra de Caparaó, canyon forest on "Vale Verde", on large granitic rock, associated with *Eustichia longirostris*; 1380 m alt., 19 July 1989, *SV & V 11480*; 1430 m, 28 July 1987, *SV & V 8993* (G, herb. Sollman), det. Sollman; Serra de Itatiaia, Brejo da Lapa, on exposed stone wall; 2120 m alt., 5 July 1991, *SV & V 14610*, det. Sollman (Z, herb. Sollman); Serra da Mantiqueira, Camanducaia, Monte Verde, path to Pedra Partida, on earth slope; 1720 m alt., 26 Oct. 1990, *SV & V 13303* (KRAM, herb. Sollman), det. Sollman. **Rio de Janeiro:** Serra de Itatiaia, entry road between Brejo da Lapa and Abrigo Rebouças, on wet rocks at roadside, 2340 m alt., 3 June 1990, *SV & V 12797* (BA, CANB, FLAS, G, KRAM-B, STU, Z, herb. Arts, herb. Schwab, herb. Sollman), det. Sollman. **São Paulo:** Serra da Bocaina near Cunha, on granitic rock in pasture above Sitio da Grama, 1450 m alt., 23° 9' S, 44° 50' W, 28 Oct. 1989, *SV & V 11957* (KRAM-B). **Santa Catarina:** Serra do Corvo Branco, pass road between Urubici and Grão Pará, rocky slope at road side, 1100 m alt., 28° 00' S, 49° 21' W, 30 Dec. 1990, *SV & V 13512*.

Distr.: Mexico, Guatemala, El Salvador, Honduras, Costa Rica, Venezuela, Cuba, Jamaica, Puerto Rico, Haiti (SHARP & al., 1994: 235); Peru (SCHULTZE-MOTEL & MENZEL, 1987: 20); Belize, Dominican Republic (DELGADILLO & al., 1995); Colombia (FRAHM, 1994: 98). The distribution is given by FRAHM (1994) as "pantropical", however, I know of no record from the Palaeotropics. The genus and species seem to be new to Brazil, but perhaps it was reported earlier as a species of *Tortella* or *Trichostomum*.

Richardsiopsis lacustris (Herz. & Richards) Ochyra.

Rio de Janeiro: Serra de Itatiaia, Brejo da Lapa, submerged in small spring at the margin of the fen, 2140 m alt., ca. 22° 23' S, 44° 39' W, 14 Oct. 1991, *SV & V 15010* (KRAM-B, NY, SP, Z), det. Ochyra.

Distr.: *Richardsiopsis lacustris* was originally described as *Sciaromium lacustre* (RICHARDS, 1984) from Lake Titicaca, 3815 m, Peru (type), and Lagunilla Saracocha, 4150 m alt., a small lake to the west of Lake Titicaca. OCHYRA (1986) described the new genus *Richardsiopsis* to accommodate this distinctive aquatic moss and placed it in the family *Donrichardsiaceae*. In Brazil the species grows under somewhat different ecological conditions than discussed in RICHARDS (1984). In the two localities in Peru the moss reaches its greatest abundance at a depth of 11-29 m, and no other bryophyte is growing with it. In the Brazilian locality, it is growing in running water of a small spring, near the surface, and associated with other hygrophilous mosses. Moreover, the Brazilian specimen is from considerably lower altitude.

Sematophyllum tereticaulos (C. Müll.) Par.

Rio de Janeiro: Serra de Itatiaia, southfacing steep slope of Agulhas Negras, under rocks partially submerged in running water, 2500 m alt., ca. 22° 23' S, 44° 41' W, 8 July 1991, *SV & V 14662* (G, STU, Z, herb. Arts), det. Buck.

Distr.: Previously known only from the type collection, made in 1894 at the same locality (MUELLER, 1898: 120, as *Trismegistia tereticaulos*).

Syntrichia amphidiacea (C. Müll.) Zand. [= **Tortula amphidiacea** (C. Müll.) Broth.] (Fig. 4).

Espírito Santo: Vargem Alta, on rotten log at the edge of humid forest, 700 m alt., 20° 42' S, 41° 01' W, 13 Oct. 1988, *SV & V 10314/a*; Domingos Martins, Reserva Florestal Pedra Azul, on shady rock in pasture, 1180 m elev., 20° 25' S, 41° 01' W, 2 July 1990, *SV & V 12856*. **Minas Gerais:** Serra da Mantiqueira, Camanducaia, Monte Verde, epiphytic on *Araucaria angustifolia* in humid forest on the trail to Pico Selado, 1500 m alt., 11 May 1990, *SV & V 12683*; Itajubá,



Fig. 4. – Distribution of *Syntrichia amphidiacea* in Brazil.

Praça in the center of the town, epiphytic, associated with *Rhachithecium perpusillum*, *Aulacopilum glaucum*, *Erpodium pringlei*, *Erpodium beccarii*; 850 m alt., 22° 25' S, 45° 27' W, 6 Sept. 1991, *SV & V 14905*; Delfim Moreira, Praça in the center of the village, epiphytic, 1230 m alt., 22° 30' S, 45° 17' W, 7 Sept. 1991, *SV & V 14925*; Caxambú, Praça in the center of the town, epiphytic, associated with *Rhachithecium perpusillum*, *Erpodium glazioui*, 900 m alt., 17 Oct. 1991, *SV & V 15055*; Poços de Caldas, Praça in the center of the town, epiphytic, 1200 m alt., 21° 47' S, 46° 33' W, 19 April 1991, *SV & V 14411*, det. Sollman (herb. Sollman). **Paraná:** Palmeira between Ponta Grossa and Curitiba, Praça in the center of the town, epiphytic, associated with *Aulacopilum glaucum*, *Frullania platycalyx*, 850 m alt., 25° 25' S, 50° 00' W, 17 Dec. 1991, *SV & V 15175*. **Rio de Janeiro:** Teresopolis, park in the center of the town, epiphytic, 900 m alt., 24 July 1990, *SV & V 13114* (Z). **Santa Catarina:** São Joaquim, epiphytic on tree in private garden, associated with *Syntrichia papillosa* and *Syntrichia pagorum*, 1420 m alt., 28° 18' S, 49° 57' W, 23 Dec. 1988, *SV & V 10569/B*. **São Paulo:** Serra da Mantiqueira, São Bento do Sapucaí, on trees along roads in the village, 900 m alt., 29 Sept. 1989, *SV 11815*; western slope of Pedra do Baú, epiphytic on tree in pasture, 1650 m alt., 1 Oct. 1989, *SV & V 11851*; Monteiro Lobato, on trees in the town, 650 m alt., 1 Oct. 1989, *SV & V 11856*, det. Sollman (herb. Sollman); Campos do Jordão, Capivari, epiphytic on *Platanus* at road side, 1640 m alt., 11 May 1991, *SV & V 14482*; Serra Negra, Hotel Fazenda Vale do Sol, epiphytic on trees in the park, 1050 m alt., 22° 35' S, 46° 42' W, *SV 11220*; Serra da Bocaina East of Cunha, in pasture near Sitio da Grama, at base of large *Araucaria angustifolia*, 1400 m alt., 23° 09' S, 44° 50' W, 28 Oct. 1989, *SV & V 11941*.

Syntrichia amphidiacea is well characterized by the multicellular, cylindric gemmae on ventral and often on dorsal leaf surfaces. The species is well figured in SHARP & al. (1994: 335). In Brazil it grows commonly as an epiphyte, more rarely on rocks or rotting logs, often as single plants mixed with other bryophytes and therefore easily overlooked. In view of the cited specimens, *Syntrichia amphidiacea* seems to be rather widespread and frequent in SE- and S-Brazil.

Distr.: Southeastern United States, Mexico, Central America, Ecuador, Peru (SHARP & al., 1994: 336); Colombia (DELGADILLO & al., 1995); firstly reported from Brazil by SCHÄFER-VERWIMP (1991) from the state of Espírito Santo. New state records for Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, and São Paulo (see fig. 4).

There seems to be no literature report of the species from VENEZUELA though we have three collections from there, made in January 1990: Caracas, Los Guayabitos, epiphytic in private garden, 1340 m, *SV & V 12395*; Estado Araguá, Colonia Tovar, epiphytic in secondary vegetation, ca. 1800 m, *SV & V 12354*; Estado Mérida, Mérida, Plaza Bolívar, epiphytic on *Thuja*, 1600 m, *SV & V 12338*.

***Syntrichia pagorum* (Milde) Amann [= *Tortula pagorum* (Milde) De Not.] (Fig. 5).**

Paraná: Rio Negro, epiphytic on park trees in the center of the town, 780 m elev., 20 Dec. 1988, *SV & V 10448*, det. Zander (1989); Lapa, epiphytic on trees along roads in the town, 900 m, ca. 25° 46' S, 49° 43' W, 17 Dec. 1991, *SV & V 15190*. **Rio Grande do Sul:** Bento Gonçalves, epiphytic on trees in the center of the town, 650 m alt., 27 Dec. 1988, *SV & V 10690* (Z); Marau, epiphytic on park trees in the center of the town, 520 m alt., 29 Dec. 1988, *SV & V 10718*; Ijuí, Praça in the center of the town, epiphytic, associated with *Uleastrum palmicola*, 320 m alt., 30 Dec. 1988, *SV & V 10723*; Santo Angelo, Praça in the center of the town, epiphytic (in great quantity), associated with *Uleastrum palmicola*, *Aulacopilum glaucum*, 320 m alt., 30 Dec. 1988, *SV & V 10729*; Uruguaiana, city-center, epiphytic on trees along roads, 70 m alt., 1 Jan. 1989, *SV 10741*; **Santa Catarina:** São Joaquim, epiphytic on *Araucaria angustifolia* near Banco do Brasil, 1420 m, 28° 18' S, 49° 57' W, 23 Dec. 1988, *SV & V 10565*; on tree in private garden, *SV & V 10569/A*; Lages, on trees along roads in the center of the town, 910 m alt., 20 Dec. 1988, *SV & V 10472* (KRAM).

Distr.: Widely but scattered distributed in North America, Mexico, Chile, Australia, New Zealand, Japan, southern Africa, Europe (SHARP & al., 1994: 336; see also distribution map in

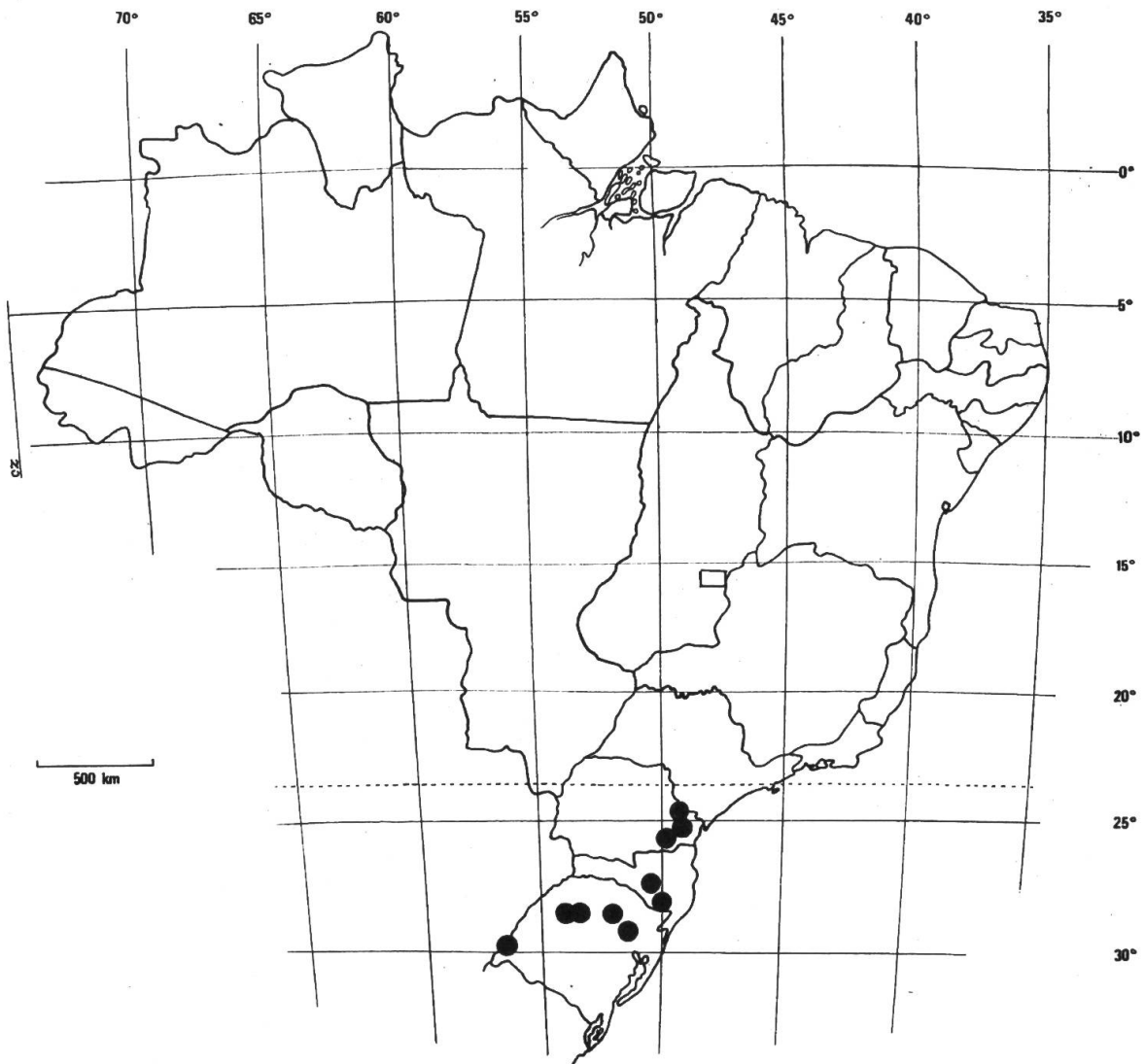


Fig. 5. – Distribution of *Syntrichia pagorum* in Brazil.

SCHUSTER, 1983: 613), Asia, Africa (MAGILL, 1981: 218). Recently reported as new to Brazil by SCHÄFER-VERWIMP & VITAL (1989: 260), based on a single collection from Curitiba, Paraná. New state records for Rio Grande do Sul and Santa Catarina (see fig. 5). All cited collections are from localities with human habitation. The species may be expected to occur in many other towns in South Brazil.

Syntrichia pagorum seems also to be new to VENEZUELA: Estado Mérida, Mérida, Plaza Bolívar, epiphytic on *Thuja*, 1600 m alt., 20 Jan. 1990, SV & V 12339.

Trichostomum brachydontium Bruch in F. Müll.

Espírito Santo: Domingos Martins, Pedra Azul, on half exposed granitic rock in pasture, 1200 m alt., 20° 25' S, 41° 1' W, 9 Oct. 1988, SV & V 10097 (herb. Sollman), det. Sollman (1993).

Distr.: Widely distributed and nearly cosmopolitan; Europe, Caucasus, Syria, China, Japan, North and South Africa, Macaronesia, Juan Fernandez, New Zealand (SMITH, 1978: 291), Guatemala, Mexico (BARTRAM, 1949: 96), Peru (MENZEL, 1992: 235); Costa Rica, Colombia, Ecuador, Haiti, Dominican Republic, Juan Fernandez Islands (DELGADILLO & al., 1995); Guyana (FLORSCHÜTZ-DE WAARD, 1990); Venezuela, Hawaii (SOLLMAN, 1984). New to Brazil.

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