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CATALOG OF AMAZONIAN MOSSES

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ABSTRACT. Moss diversity for the Amazon region is estimated at 39 families, 101 genera, and 311 species. A primarily specimen-based catalog provides documentation for the five countries (Bolivia, Brazil, Colombia, Ecuador and Perú) that constitute the Amazon region as defined here. Amazonia represents the largest floristic region in the Neotropics, yet with regard to the moss flora represented there, it is less diverse than all other neotropical regions with the possible exceptions of the Planalto of Brazil and the smaller sized Guayana Highlands.

INTRODUCTION

The Amazon region is the single largest phytogeographical unit recognized in the Neotropics. The dimensions of the Amazon Basin, equated in size to the contiguous United States, is no less difficult to comprehend than is the biological diversity found there. Our knowledge of Amazonian diversity is, however, limited to a few select groups of organisms such as birds and mammals. Flowering plant diversity is acknowledged to be exceptionally high, Brazilian Amazonia alone is estimated at 18,000 species (Davis et al., 1997).

The objective of this present effort is to document moss diversity at the regional level for Amazonia (Fig. 1). It is presumed that most of the diversity to be found in Amazonia with regard to mosses is now known. Some of the species recognized in this catalog will likely prove to be synonyms, conversely it is probable that an equal number of species will be newly recorded for the region in the future, particularly at its periphery.

This catalog serves as the foundation toward future endeavors that include databasing moss collections from Amazonia, permitting a better understanding of the ecology and distribution. It now seems feasible, furthermore, that a first generation moss flora can be produced for Amazonia. Such a floristic treatment would serve to encourage further collecting in extensive areas of Amazonia that remain unexplored, further inventory efforts related to site or plot studies, and shift the focus of research toward other aspects of the comparative biology of mosses in the region.

The following two briefly outlined sections, physical and vegetational features of Amazonia, are taken from the informative overviews by Daly and Prance (1989) and an edited volume providing more detail information by Prance and Lovejoy (1985). Readers wanting further references should consult these articles. An exceptionally useful map for Amazonia is that produced by Healey (1993–1995).

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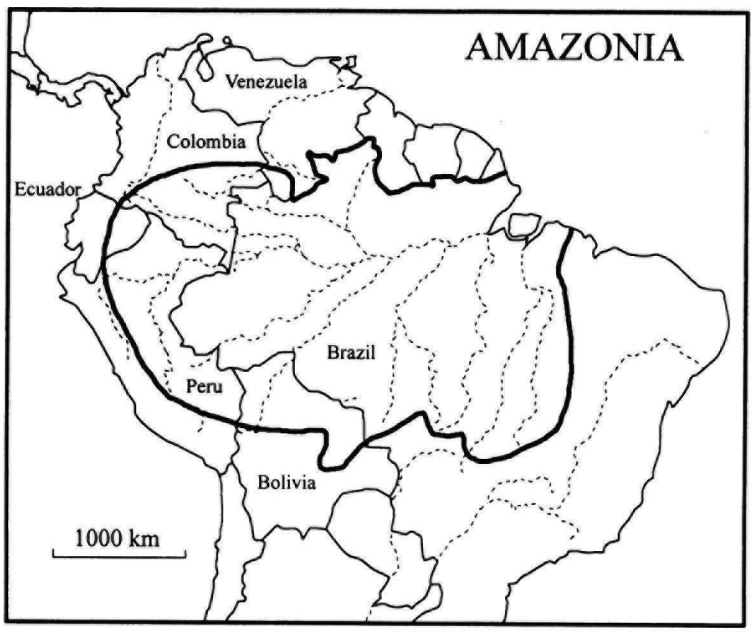

Fig. 1. Boundary of Amazonia.

Physical Setting

The Amazon region is estimated to cover ca. 5 to 6 million sq. km. The largest portion occurs within the present boundary of Brazil (60–75%). The Amazon region is bound in the east by the Atlantic coast and extends nearly 4000 km westward to the base of the Andean cordillera (Colombia to Bolivia). The northern boundary extends to, and in part, around the Guayana Highlands, and includes portions of the gallery forested llanos or savannas of Colombia and Venezuela. The Guianas, at least the lowlands, are often included within or a subset of Amazonia based on phytogeographical data, but physically drain to the Atlantic. The southern boundary extends to the dry Planalto of Brazil, and in the west curves downward to the Pantanal of Bolivia.

While the Amazon River is second in length to the Nile River, it is first in the volume of water discharged; ca. a sixth of all that enters the oceans of the world passes through the Amazon to the Atlantic. As with other tropical climatic systems, daily temperature fluctuations are greater than seasonal variations. The average temperature in the Amazon during the rainy season is 25.8°C, and in the dry season 27.9°C, with humidity recorded at 88% and 77% respectively. Precipitation is largely derived from two major sources, approximately half is carried westward from the Atlantic ocean, the other half is generated within the basin itself by evapotranspiration. Seasonal rainfall is more pronounced in portions of the eastern and southern basin (lower Amazonia); yearly rainfall ranges from as low as 1.5 m to as high as 6.0 m, the average

ranges between 2–3 m.

VEGETATION

Amazonian vegetation is surprisingly diverse. About ten vegetation types are recognized (Pires & Prance, 1985). Primary distinction is made between open and forested formations. Open formations include: 1) savannas, recognizing terra firme and várzea, both characterized by relatively low biomass, and 2) nutrient-poor white sand caatinga and campina. Forest formations are highly variable and transitional in Amazonia, but are characterized by relatively high biomass. Forest types include those occupying terra firme, and both várzea (on clay soils) and igapós (on white sand). The dense terra firme forest formation is what has come to symbolize so-called "tropical forests," however there are also open forests divided into those characterized by 1) forests lacking lianas and palms, 2) forests with palms, 3) forests with lianas, 4) dry forests, and 5) montane or possibly more appropriate, base montane (= sub- or premontane) forests. The latter forest type, montane, is primarily associated with the Guayana Highlands and eastern slopes of the Andes; neither is considered as part of the definition of Amazonia as treated here.

Tropical rain forests were previously thought to be a realm of undisturbed vegetation, a static environment, where plants slowly evolved, and remained largely unaffected by climatic changes experienced in temperate regions of the globe, particularly during the Pleistocene (Federov, 1966). This view or theory experienced a quiet demise with the resurgence of continental drift theory, and paleoecological studies that demonstrated that the tropics vegetation, initially in the highlands, had been significantly altered during glacial times.

In recent times two alternative hypotheses have been advanced to account for the patterns of biological diversity and distribution observed in Amazonia based on Pleistocene events, 1) a drier and warmer time at full glacial, and 2) moist and moderately cooler time at full glacial. The important aspect of the immediate geological events related to the Pleistocene as noted by Colinvaux, (1996), is that the greater portion of this time was glacial and punctuated by very short interglacial time periods. In other words organisms were more likely glacial adapted or constrained.

Evidence for a glacial aridity was provided largely from distribution patterns initially observed for birds (Haffer, 1969) and later for plant groups (Prance, 1973). It was thought that during full glacial, large portions of Amazonia were thought to be characterized by expanding grass or open woody savannas, with forests contracting into isolated refugia. Advanced initially by Haffer, and later by Prance, among others, the refuge theory culminated in a mis-titled volume, *Biological Diversification in the Tropics* (Prance, 1982) which sought to provide supporting evidence for the theory. The refugium theory continues to draw support (Hammen & Absy, 1994; Haffer, 1997), despite criticisms based on theoretical constructs (Bush, 1994) as well as biological data from ecology and biogeography (cf. Gentry, 1989; Tuomisto & Ruokolainen, 1997).

The alternative hypothesis of a cool, moist glacial time has been advocated by

Colinvaux and collaborators (see summary and references in Colinvaux, 1996). Although not excluding local pockets of drier vegetation, most of the Amazon region is thought to have remained forested. Montane plants, particularly those of the low montane and premontane, expanded downward and onto the lowlands. One would predict dispersion of montane or premontane mosses onto the surrounding adjacent lowlands under a full glacial with cooler temperature model, and that does appear to be the case at least in westernmost Amazonia.

Diversity

What is most striking about Amazonia, with regard to mosses, is the relatively low diversity. The 311 Amazonian species are distributed among 101 genera and 39 families (Table 1). Average taxon ratio is low at all levels, 2.6 genera/family, 3 species/genus, and 8 species/family. The ten largest families, accounting for 74% of the total diversity, are: Pilotrichaceae, Calymperaceae, Fissidentaceae, Sematophyllaceae, Macromitriaceae, Hypnaceae, Leucobryaceae, Dicranaceae, Bryaceae, and Sphagnaceae. The ten largest genera, totaling 45% of the total diversity, are: *Fissidens*, *Syrrhopodon*, *Calymperes*, *Callicostella*, *Macromitrium*, *Lepidopilum* (coequal with the following two genera), *Octoblepharum*, *Sphagnum*, *Sematophyllum*, and *Bryum*.

It is appropriate to discuss briefly the Guianas, which are often treated as a subset of Amazonia or as a distinct region. Moss diversity recorded for the Guianas (French Guiana, Guyana, Surinam) is estimated at 238 species distributed among 90 genera and 31 families (cf. Florschütz-de Waard, 1990). Approximately half of the species recorded for the Guianas are shared with Amazonia as treated here. The remaining half of the Guiana mosses are somewhat equally divided between two phytogeographical regions, the Guayana Highlands and coastal or lowland Caribbean.

Any attempt at assessing taxonomic diversity must necessarily address the level of understanding or knowledge of the basic element of biodiversity, the species. Fortunately a number of revisions completed or in preparation cover several of the larger genera found in Amazonia. Two of the more important families are well resolved, Calymperaceae completed by Reese (1993), and Fissidentaceae nearing completion by Pursell. Nearly half of the families recorded for Amazonia are composed of 1-2 species (Table 1), most of which are well known and rather widespread throughout the Neotropics. Critical genera that do require further study, and will likely result in a partial reduction in the number of recognized species include *Callicostella*, *Cyrtohypnum*, *Macromitrium*, *Philonotis*, *Sematophyllum*, and *Trichosteleum*.

Our understanding of the levels of taxonomic diversity with regard to mosses is not well documented, neither in the tropics or, for that matter, temperate regions of the world. Alpha or site diversity in Amazonia is probably low for dry and gallery forests, and relatively high for wet forests. It has been suggested that for any particular wet lowland forest site, moss diversity may be nearly equivalent to that found in a montane forest (Churchill et al., 1995). Species richness for any particular site in Amazonia probably rarely exceeds 50 species, a figure that may be equally stated for an upper montane forest site in the Andes. The critical difference, however, is in the

Table 1. Number of genera and species for the 39 families of Amazonian mosses.

Family	No. of genera	No. of species	Family	No. of genera	No. of species
Bartramiaceae	1	7	Meteoriaceae	5	8
Brachytheciaceae	1	1	Neckeraceae	2	3
Bruchiaceae	1	1	Phyllodrepaniaceae	2	2
Bryaceae	3	11	Phyllogoniaceae	1	1
Calymperaceae	2	37	Pilotrichaceae	10	41
Cryphaeaceae	1	1	Polytrichaceae	1	1
Daltoniaceae	2	4	Pottiaceae	5	7
Dicranaceae	7	13	Pterigynandraceae	1	1
Diphysciaceae	1	1	Pterobryaceae	6	8
Entodontaceae	2	2	Racopilaceae	1	1
Ephemeraceae	2	3	Rhachitheciaceae	1	1
Erpodiaceae	1	1	Rhizogoniaceae	1	1
Fabroniaceae	1	1	Sematophyllaceae	9	28
Fissidentaceae	1	32	Sphagnaceae	1	10
Hydropogonaceae	2	2	Splachnobryaceae	1	1
Hypnaceae	8	19	Stereophyllaceae	4	6
Leptodontaceae	1	1	Thamnobryaceae	2	6
Leucobryaceae	3	17	Thuidiaceae	2	8
Leucomiaceae	2	2			
Leucophanaceae	1	1	total	101	311
Macromitriaceae	3	20			

rate of species turn-over between sites, thus in Amazonia the number of additional species encountered from one site to another of similar forest composition or structure is minimal, whereas in montane forests a significant increase may be anticipated. This probably applies equally well to the differences between sites sampled in different zonations or vegetation types (beta diversity). There is a significant difference in regional (gamma) diversity. Moss diversity for the northern Andean region, for example, is about four times greater than Amazonia, although the former is roughly 20 times smaller than the latter.

Elevational distribution is critical in defining species diversity for Amazonia. About 40 species are only found peripherally to the region, often as elements that are more common at higher elevations as in the foothills of the Planalto, Guayana Highlands and eastern slopes of the Andes. Comparisons can be made with Andean mosses (Churchill et al., 1995; Churchill & Griffin, unpubl. data) to gain insight to species amplitude with regard to Amazonia. About 37% of Amazonian mosses are actually restricted to elevations below 500 m elevation. Approximately 63% of the 311 Amazonian mosses are known to extend their elevational range above 500 m, and 37% of those occur above 2000 m. This suggests that a considerable number of mosses

exhibit a broad ecological tolerance.

Another point of interest is the absence of what is often referred to as "weedy" or "cosmopolitan" species. A distributional concept often employed by some authors of cosmopolitan species is readily dispelled by the lack or rarity of such species in the Amazon Basin. *Ceratodon purpureus* (Hedw.) Brid. and *Funaria hygrometrica* Hedw. or even their tropical counterparts, *C. stenocarpus* Bruch & Schimp. and *F. calvescens* Schwägr. respectively, are very rare or absent throughout much of the tropical lowlands. Other examples include *Weissia controversa* Hedw. which is probably not present in the Amazon region and apparently rare throughout the tropics. Even *Bryum argenteum* Hedw. while frequent in the tropical highlands, such as in the Andes, is exceedingly rare in Amazonia.

Historical Background

The two most notable figures of the 19th century with regard to the collection of Amazonian mosses were Karl F. P. von Martius and Richard Spruce. From 1818 to 1820 Martius explored and collected plants along the Amazon River and its northern tributaries, extending briefly into the margins of present day Colombia. In 1840 the Martius moss collections were enumerated and described by C. F. Hornschuch in the first volume devoted to cryptogams of *Flora Brasiliensis*.

One of the foremost collectors of Amazonian plants, including mosses, in the 19th century was Richard Spruce. Between the years 1849 to 1855 Spruce collected extensively along the Amazon and many of its tributaries, extending beyond Brazil to Venezuela, Ecuador and Perú. It may be said that our present understanding of Amazonian moss diversity is largely characterized as a result of Spruce's efforts. "Catalogus Muscorum fere omnium quos in terris Amazonicis et Andinis, per annos 1849–1860 legit Ricardus Spruceus" published in 1867 contains approximately 70% of the species enumerated in the list given below. A total of 1555 collections were listed by Spruce, of which 401 were from the regions designated by him as Flumen Amazonum, Flumen Negro and Flumen Orinoco. Mitten's Musci austro-americani, published in 1869, described numerous new species based on Spruce's collections from Amazonia as well as the Andes.

The first notable collector of the 20th century was Ernst Ule, primarily in western Amazonian Brazil and Perú. Following Ule only a few notable collections were made in Amazonia. Of particular note are those made by Robert S. Williams in Bolivia, 1901-1902, the team of Ellsworth P. Killip and Albert C. Smith in Perú, 1929, Ynés Mexia in Ecuador and Perú in the 1930's, and Richard Schultes in the 1940's and early 1950's in Colombia.

Collaborative efforts, in recent times, between north temperate and Latin American institutions resulted in significant advances in neotropical floristics. Scandinavian countries of Denmark (AAU) and Sweden (GB) collaborating with Ecuadorians (QCA) made extensive inventories, including the eastern lowlands, beginning in the 1960's as part of the Flora of Ecuador project (cf. Churchill, 1994). A significant advancement was made in the number of available plant collections from Brazilian Amazonia with

the cooperative "Projeto Flora Amazônica" between Brazilian and United States institutions funded in part by grants from the National Science Foundation. Beginning in 1977 the first of 14 expeditions were carried out with the last field inventory terminating in 1984 (Prance et al., 1984). Bryologists accompanied five of the expeditions, these included William R. Buck, Allen J. Fife, Kenneth McFarland, William D. Reese and Olga Yano. It should be pointed out that in both the Flora of Ecuador and Projeto Flora projects vascular plant specialists collected mosses in considerable numbers. This contributed significantly in terms of new, well labeled collections, made within Amazonia.

Finally, the 1970s were also characterized by an ever increasing involvement by Latin American bryologists, most notably from Brazil, and the significant contributions made by them in the form of collections, establishment of well supported institutional herbaria, and publications.

A surprising number of floristic treatments has been produced within the last twenty years. These various illustrated florulas were partially based on the authors field experiences and collections. The production of such floristic studies were due to a manageable number of moss taxa to be treated, and the fact that a significant portion represented common, well known species that were also often widespread in the Neotropics. In 1979 Griffin published a bryophyte florula for the Manaus region. Timme (1985) inventoried portions of the department of Loreto, Perú and likewise provided a treatment of all bryophytes. The acrocarpous mosses, excluding the Leucobryaceae, were treated by Lisboa in 1993 for Rondônia, providing detailed descriptions and comments. Ecuadorian Amazonia was treated by Churchill in 1994 which provided descriptions of families and genera, and keys to all taxa. Churchill and Linares C. (1995) covered Amazonia in their treatment of the Colombian mosses. To this list can be added the treatments of Surinam (really the Guianas) by Florschütz (vol. 1, 1964), Florschütz-de Waard (vol. 2, 1986), and the last volume by Florschütz-de Waard and collaborators in Görts-van Rijn (1996) which covers about half of the mosses recorded in this catalog.

FORMAT

All taxonomic categories and countries, including their political subdivisions, are listed alphabetically. Documentation of a species presence within a country's political subdivision is limited to a single specimen citation, occasionally two. Where no specimen has been found in the herbaria studied, or where particular groups were on loan to specialists, reference is given to a literature citation, collection (collector & collection number), and herbarium if given in that original literature source. No claim is made here that all the collections cited in this catalog are correctly identified; however, it is appropriate that specimens be referenced rather than simply be based on a literature citation except where necessary. Limited synonymy is given, particularly to names based on Amazonian collections or names in recent use. References are given to taxonomic studies that pertain to a particular family or genus. The elevational boundary employed in this treatment extends from near sea level to 500 meters (Fig. 1). Setting

such limits is arbitrary but reasonable within the framework of this work. It also has the practical advantage in that most topographic maps depict this elevational boundary (500 m). Substrate data is derived from label information when given.

The primary source for collections cited here are from the herbaria of MO and NY; a limited number of collections have been examined by the author previously at AAU, US, and elsewhere as noted. While for the sake of convenience mainly United States herbaria were consulted in the preparation of this catalog, it should be noted that original or duplicate collections, particularly after 1970, can be found in a number of Latin American institutions. South American herbaria containing Amazonia mosses include: Bolivia: LPB; Brazil: INPA, MG, SP; Colombia: COL, HUA; Ecuador: QCA; and Venezuela: VEN.

Collections made in the 19th century naturally lacked precise locality information, but today there is simply no justification for not to providing basic label information (latitude and longitude, elevation, even in the lowlands this is still important data, and substrate), and that has not always been the case as noted in examining recent Amazonian collections, even those made by bryologists.

Countries

The following six countries and their major political subdivisions (department/province/state) employed in the catalog are given below along with notes and references to Amazonian mosses. The number following the country and political subdivision are the number of species estimated based on this checklist (see summary in Table 2).

Bolivia: 69 species. Beni (46 spp.), La Paz (26 spp.), Pando (1 sp.), Santa Cruz (7 spp.). The first notable reports from Amazonian Bolivia were made by Williams (1903, 1909); see Dorr (1991) for site localities visited by R. S. Williams, in particular Río Mapiri and Tumupasa. Reese (1979) provided several additional records for the Bolivian lowlands.

Brazil: 264 species. Acre (60 spp.), Amapá (24 spp.), Amazonas (205 spp.), Maranhão (11 spp.), Pará (134 spp.), Rondônia (107 spp.), Roraima (59 spp.), and portions of Goiás, the northwest (6 spp.), and Mato Grosso (51 spp.). Prance (1971) enumerated the vascular plants collectors of the Brazilian Amazon, which includes such individuals as Ernest Ule who made general plant collections. Lisboa (1991) provided a historical overview of Brazilian Amazonia bryology. Bryological works on Brazilian Amazonia include the following: Brotherus 1906; Lisboa 1976, 1984, 1993, 1994; Lisboa & Lisboa 1978; Lisboa & Maciel 1994; Lisboa & Yano 1987; Yano 1982; Yano & da Costa, 1992; Yano & de Mello, 1992. Yano (1981a, 1989, 1992, 1995, 1996) summarizes much of the bryological literature for Brazil; unfortunately synonyms that have been long recognized continue to be recorded and perpetuated as valid taxa in these various checklists.

Colombia: 116 species. Amazonas (60 spp.), Arauca (4 spp.), Boyacá (9 spp.), Caquetá (36 spp.), Guaviare (1 sp.), Guainia (28 spp.), Meta (23 spp.), Putumayo (31 spp.), Vaupés (38 spp.), Vichada (7 spp.). All known individuals collecting mosses, and departments visited by them, are listed by Churchill and Linares C. (1995). A

Table 2. Number of Amazonian taxa for each of the six countries and their political subdivisions.

Country & Subdivision	No. taxa/ country	No. taxa/ political subdivision	Country & Subdivision	No. taxa/ country	No. taxa/ political subdivision
Bolivia	69		Caquetá		36
Beni		46	Guaviare		1
La Paz		26	Guainía		28
Pando		1	Meta		23
Santa Cruz		6	Putumayo		31
			Vaupés		38
Brazil	264		Vichada		7
Acre		60	Ecuador	126	
Amapá		24	Morona-Santiago		13
Amazonas		205	Napo		87
Goiás		6	Pastaza		62
Maranhão		11	Sucumbíos		40
Mato Grosso		51	Perú	81	
Pará		133	Amazonas		2
Rondônia		108	Junín		7
Roraima		59	Loreto		72
			Madre de Dios		12
Colombia:	116		Ucayali		0
Amazonas		60	Venezuela	82	
Arauca		4	Amazonas		61
Boyacá		9	Bolivar		29

cautionary note is needed with regard to the Richard Schultes collections from Colombia (cf. Churchill & Linares C., 1995). The first significant collections from the Colombian Amazonia were made by Schultes, often with Cabrera, however a number of distributed duplicates were mislabeled, thus Amazonia labeled packets contain, for example, Andean taxa such as *Thuidium peruvianum* and *Rhodobryum grandifolium*, and likewise Andean labeled packets contain lowland species, e.g., *Pilotrichum bipinnatum* from the páramo!

Ecuador: 126 species. Morona-Santiago (13 spp.), Napo (87 spp.), Pastaza (62 spp.), Sucumbíos (40 spp.). General Amazonian collectors and sites visited by them have been enumerated by Renner (1993), and specifically by Churchill (1994) for bryologists. Several lowland species were recorded by Bartram (1934, 1964), however both titles are misleading, the former contains mosses of the "River Napo" lowlands, but also contains mostly highland species. Just the opposite is true of the "Cerro Antisana" article which implies highlands, but contains lowland species also. Churchill et al. (1992) inventoried the mosses in the environs of Añangu in Napo.

Perú: 81 species. Amazonas (2 spp.), Junín (7 spp.), Loreto (72 spp.), Madre de Dios (12), Ucayali (0 sp.). A useful historical overview is provided by Menzel (1992); this is the first such catalog to includes elevational ranges where known for mosses.

Venezuela: 82 species. Amazonas (61 spp.), Bolívar (29 spp.). Bartram (1957), Pursell and Curry (1969), and Reese and Bermúdez R. (1980) have recorded Amazonian mosses for Venezuela. Huber and Wurdack (1984) provide detailed information on plant collectors of the Venezuelan Amazonas.

Catalog

Bartramiaceae

Philonotis Brid. [Ref.: Dismier 1910]

P. elongata (Dism.) H. A. Crum & Steere Brazil. **Amazonas**: *Buck 2273* (NY). On soil covered rocks, also sites associated with human occupation.

P. glaucescens (Hornsch.) Broth. Bolivia. **La Paz**: *Williams 1917* (NY). Brazil. **Acre**: *Maas et al. P13135* (NY); **Amazonas**: *Buck 2620* (MO, NY); **Pará**: *Reese 16481* (MO, NY); **Rondônia:** *Fife et al. 4203* (MO). Colombia. **Amazonas:** *Churchill et al. 16149* (COL, NY); **Caquetá**: *Churchill & Betancur 16960* (NY); **Putumayo**: *Giraldo-C. et al. 2157* (COL, NY). On soil (clay) and rocks, common in moist or wet areas, particularly banks; not infrequent in areas of human occupation.

P. gracillima Ångstr. Colombia. **Amazonas**: *Churchill et al. 16149 p.p.* (COL). Ecuador. **Napo**: *Churchill & Sastre-D. J. 13843* (NY). On soil, including clay, and soil covered rocks.

P. hastata (Dub.) Wijk & Margad. Brazil. **Rondônia**: *Reese 13399* (Lisboa, 1993). On soil and rocks.

P. humilis Brid. [*Bartramia tenella* Müll. Hal.] Brazil. **Amazonas**: *Spruce 438* (NY); **Pará**: *Spruce 426* (NY). On soil.

P. sphaerocarpa (Hedw.) Brid. Brazil. **Amazonas**: *Spruce 437* (Dismier, 1910). Ecuador. **Napo**: *Balázs 69-14-B* (NY). On soil.

P. uncinata (Schwägr.) Brid. Bolivia. **Beni**: *Reese 12837* (NY). Brazil. **Amazonas**: *Reese 12690* (NY); **Mato Grosso**: *Lisboa et al. 303* (INPA; Lisboa & Lisboa, 1978); **Rondônia**: *McFarland 208* (NY). Colombia. **Amazonas**: *Churchill et al. 16204* (COL, NY). Ecuador. **Napo**: *Holm-Nielsen & Jeppesen 1058* (AAU, MO); **Pastaza**: *Løjtnant & Molau 13449* (AAU, MO). On soil, river and stream banks.

Brachytheciaceae

Eurhynchium Schimp

E. remotifolium (Grev.) A. Jaeger [*Oxyrrhynchium remotifolium* (Grev.) Broth.] Ecuador. **Pastaza**: *Spruce 1416* (NY).

Bruchiaceae

Trematodon Michx.

T. longicollis Michx. [*T. humilis* Mitt., *T. reflexus* Müll. Hal.] Bolivia. **La Paz**: *Williams 2855* (NY). Brazil. **Amazonas**: Oct 1900, *Ule s.n.* [E. Ule, Bryotheca brasiliensis 243] (NY). Ecuador. **Pastaza**: *Spruce 44-B* (NY). Peru. **Madre de Dios**: *Foster 11389* (MO). On exposed soil, river and stream banks. A note by R. S. Williams at NY, accompanying the type collection of *T. humilis*, states that it is essentially identical to *T. reflexus*. There is little notable difference between populations when comparing Brazilian collections to the Ecuadorian collection (*Spruce 44-B*). Amazonian collections of *Trematodon* appear to be only a smaller version of *T. longicollis* Michx., and thus treated here as a single species.

Bryaceae [Ref.: Ochi 1980, 1981]

Brachymenium Schwägr.

B. coarctatum Bosch. & Lac. Bolivia. **Beni**: *Reese 13000* (NY). Brazil. **Amazonas**: *Reese 12698* (NY); **Rondônia**: *Reese 13721* (NY). On soil and charred log, in part associated with human disturbance. The report of *B. peraristatum* (Müll. Hal.) Paris by Yano (1989: 379) is *B. coarctatum* (cf. Ochi, 1980: 60).

Bryum Hedw. [Ref.: Mohamed 1979]

B. andicola Hook. in Kunth [*Bryum billardieri* Schwägr., *B. truncorum* (Brid.) Brid., both of reports] BRAZIL. **Amazonas**: *Buck 2434* (MO); **Maranhão**: *Schatz et al. 840-A* (NY); **Pará**: *Reese 16147* (MO); **Rondônia**: *Fife et al. 4192* (NY); also Mato Grosso at 720 m (*Prance et al. 19414, NY*). On rock, including sandstone, in wet or moist areas, often associated with waterfalls.

B. apiculatum Schwägr. [*Pohlia apiculata* (Schwägr.) H. A. Crum & L. E. Anderson, *P. cruegeri* (Hampe ex Müll. Hal.) A. L. Andrews] BOLIVIA. **Beni**: *Reese 12904* (NY). BRAZIL. **Amazonas**: *Wasum 4326* (NY), *Reese 12691* (NY); **Maranhão**: *Fróes 26772* (SP; Yano, 1992); **Pará**: *Reese 16184* (NY). ECUADOR. **Pastaza**: *Løjtnant & Molau 13449* (AAU). On moist or wet soil, sandy soil over sandstone rock, rather frequent in disturbed areas including road banks

B. argenteum Hedw. BRAZIL. **Amazonas**: *Spruce 263* (NY); also known from Roraima at 1000 m (*Buck et al. 1940*, MO, NY). COLOMBIA. **Guainía**: *Churchill et al. 17633* (COL, NY). VENEZUELA. **Bolívar**: *Steyermark 88953* (MO, NY). On soil and soil covered rocks.

B. capillare Hedw. BRAZIL. **Rondônia**: *Lisboa 3600* (Lisboa, 1993). On sandy soils.

B. coronatum Schwägr. BRAZIL. **Acre**: *Prance et al. 12406* (NY); **Amazonas**: *Prance 11720* (NY); **Goiás**: *Plowman et al. 8388* (NY); **Maranhão**: *Swallen 3628* (NY); **Pará**: *Reese 16689* (NY); **Rondônia**: *McFarland et al. 220* (MO). COLOMBIA. **Caquetá**: *Churchill & Betancur 16946* (HUA, MO, NY); **Meta**: *Schultes 11080* (MO). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13842* (NY). On soil, including sandy soil, charred wood or tree bark, frequent in disturbed areas, on concrete, road banks, pastures, etc.

B. limbatum Müll. Hal. COLOMBIA. **Caquetá**: *Churchill & Betancur 16968* (HUA, NY). ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 1022* (AAU); **Pastaza**: *Spruce 304* (NY). On soil, soil covered rocks, frequently along streams.

B. lisae De Not. var. *cuspidatum* (Bruch & Schimp. in Bruch, Schimp. & W. Gümbsl) Margad. BRAZIL. **Pará**: *Lleras & Kirkbride 1175* (INPA; Lisboa & Yano, 1987). The identity of this species was questioned by Lisboa and Yano (1987).

B. mattogrossense Broth. BRAZIL. **Mato Grosso**: *Lindman 352* (H-BR; Ochi, 1980). On rocks along river. This species, only known from the type, appears to be marginal to Amazonia.

B. subapiculatum Hampe BRAZIL. **Roraima**: *Prance et al. 21369* (NY; Ochi, 1980).

Rhodobryum Hampe

R. subverticillatum Broth. [*Bryum subverticillatum* (Broth.) Ochi] BRAZIL. **Pará**: *Ramos & Rosario 635* (MG; Lisboa, 1994). On soil.

CALYMPERACEAE [Ref.: Reese 1993]

Note. The majority of collections cited below were verified or determined by W. D. Reese.

Calymperes Sw. in F. Weber [Ref.: Reese 1961, 1987a]

C. afzelii Sw. [*C. donnellii* Austin, *C. huallagense* Broth., *C. lindmanii* Broth.] BOLIVIA. **Beni**: *Reese 12822* (LAF, MO, NY). BRAZIL. **Acre**: *Reese & McPherson 13237* (LAF, MO, NY); **Amazonas**: *Buck 2202* (NY); **Mato Grosso**: *Prance et al. 18342* (NY); **Pará**: *Reese 16652* (LAF, NY); **Rondônia**: *Reese 13739* (NY); **Roraima**: *Buck et al. 1913* (NY). ECUADOR. **Sucumbíos**: *Heikkinen RH-1990–181* (NY). PERU. **Loreto**: *Timme 4769* (LAF; Reese, 1993). VENEZUELA. **Bolívar**: *Boom & Grillo 6526* (NY). On trunk of trees and treelets, also on lianas, logs, sandstone rocks and boulders.

C. bartramii W. D. Reese BRAZIL. **Amazonas**: *Griffin et al. 765* (LAF; Reese, 1993). COLOMBIA. **Vaupés**: *Schultes & Cabrera 13199* (CAN; Reese, 1993). On trunk of trees.

C. erosum Müll. Hal. [*C. sprucei* Besch.] BOLIVIA. **Beni**: *Reese 12855, 12918* (LAF, NY). BRAZIL. **Acre**: *Reese 13285* (NY); **Amapá**: *Mori & Souza 17323* (NY); **Amazonas**: *Buck 3112* (MO, NY); **Mato Grosso**: *Lisboa et al. 644* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16841* (MO, NY); **Rondônia**: *Reese 13422* (MO, NY); **Roraima**: *Buck et al. 1799* (MO, NY). COLOMBIA. **Putumayo**: *Giraldo C. et al. 2160* (COL, NY). ECUADOR. **Napo**: *Fransén 47* (GB). PERU. **Madre de Dios**: *Matthews B-86613* (MO). On base and trunk of trees and treelets, occasionally on rocks, logs or tree stumps.

C. guildingii Hook. & Grev. BRAZIL. **Amazonas**: *Buck 2504* (NY). VENEZUELA. **Amazonas**: *Buck 11336* (NY). On trunk of trees.

C. levyanum Besch. BRAZIL. **Amazonas**: 16 Nov 1975, *Ramos s.n.* (LAF; Reese, 1993); **Pará**: *Reese 16080* (LAF, MO). On trunk of trees and logs.

C. lonchophyllum Schwägr. BRAZIL. **Acre**: *Reese & McPherson 13188* (LAF, NY); **Amapá**: *Mori et al. 17533* (NY). **Amazonas**: *Buck 2668* (MO, NY); **Mato Grosso**: *Lisboa et al. 367* (LAF; Reese, 1993), *Prance et al. 18346* (NY); **Pará**: *Reese 16517* (LAF, MO, NY); **Rondônia**: *Reese 13708* (MO); **Roraima**: *Buck et al. 2024* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16164* (COL, NY); **Guainía**: *Churchill et al. 17714* (COL, MO, NY); **Putumayo**: *King & Guevara C-1076* (US); **Vaupés**: *Schultes 12859* (MO, NY, US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13877* (AAU, NY); **Pastaza**: *Andersson 882* (AAU, GB). PERU. **Loreto**: *Timme 12935-A* (MO). VENEZUELA. **Amazonas**: *Buck 12867* (NY); **Bolívar**: *Maguire et al. 46770* (NY). Common on trunk of trees, treelets and lianas, occasionally on prop roots of palms, standing dead trees or logs.

C. mitrafugax Florsch. BRAZIL. **Amazonas**: *Buck 2446* (NY); **Mato Grosso**: *Lleras & Lima P18265* (NY); **Pará**: *Reese 16289* (MO, NY), *16538* (NY). On trunks and branches of palms, trees and treelets, occasional on logs.

C. nicaraguense Renauld & Cardot [*C. bolivianum* R. S. Williams] BOLIVIA. **La Paz**: *Williams 1804* (MO, NY). BRAZIL. **Amazonas**: *Griffin et al. 021297* (NY), *Prance 20987* (NY); **Rondônia**: *McFarland et al. 203* (NY); also reported for Pará by Lisboa and Maciel (1994). On trunk of trees and logs. The report of this species from Brazilian Rondônia (*Reese 13491*, NY) is *C. afzelii*, verif. W. D. Reese.

C. othmeri Herzog BRAZIL. **Amazonas**: *Buck 2429* (NY); **Pará**: *Reese 16146* (NY); **Rondônia**: *Reese 13680* (NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 17037* (COL, NY); **Guainía**: *Churchill et al. 17648* (COL, NY). On rocks and trunk of trees.

C. palisotii Schwägr. [*C. richardii* Müll. Hal.] BRAZIL. **Amapá**: *Mori 17413* (NY); **Amazonas**: *Griffin 021316* (LAF; *Reese, 1993*), *Buck 2247* (MO, NY); **Pará**: *Reese 16752* (NY); **Rondônia**: *Reese 12711* (NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 17073* (COL, NY). PERU. **Loreto**: *Hegewald & Hegewald 6332* (LAF; Reese, 1993). VENEZUELA. **Bolívar**: *Liesner & González 11480* (MO). On tree trunks, logs and rocks.

C. pallidum Mitt. [*C. piovanoi Bizot*, *C. uleanum Broth.*] BRAZIL. **Acre**: *Reese & McPherson 13169* (MO, NY); **Amazonas**: *Buck 2202-B* (NY); **Rondônia**: *Reese 13712* (NY). COLOMBIA. **Amazonas**: *Piovano s.n.* (PC; Reese, 1993). PERU. **Loreto**: *Hegewald & Hegewald 6313 9* (MO). On rocks and trunk of palms.

C. platyloma Mitt. BRAZIL. **Amapá**: *Mori & Cardoso 17293* (NY); **Amazonas**: *Fife et al. 4282* (NY), *Buck et al. 1753* (NY). On trunk of trees.

C. rubiginosum (Mitt.) W. D. Reese [*C. rufum* Herzog] BRAZIL. **Amazonas**: *Fife et al. 4286* (NY); **Pará**: *Reese 16372, 16507* (MO, NY); **Rondônia**: *Fife et al. 4252* (NY). COLOMBIA. **Guainía**: *Churchill et al. 17642* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 13304* (NY). PERU. **Loreto**: *Timme 4841* (LAF; *Reese, 1993*). On base, trunk, and branches of trees and treelets, rarely on humus.

Syrrhopodon Schwägr. [Ref.: Reese 1977, 1978, 1987b, 1994, 1995]

S. africanus (Mitt.) Paris subsp. *graminicola* (R. S. Williams) W. D. Reese [*Calymperes disciforme* Müll. Hal.; *Syrrhopodon graminicola* R. S. Williams, *S. parasiticus* var. *disciformis* (Müll. Hal.) Florsch.] BRAZIL. **Amazonas**: *Buck 2791* (NY); **Pará**: *Reese 16437* (NY). COLOMBIA. **Amazonas**: *Sipman & Duivenvoorden 28153* (B, NY); **Boyacá**: *Churchill et al. 18920* (MO). ECUADOR. **Napo**: *Steere E-77* (NY). On trunk and branches of shrubs, treelets and trees, also on lianas.

S. annotinus W. D. Reese & D. G. Griffin BRAZIL. **Amazonas**: *Buck 2149* (MO, NY), *Berg et al. P19521* (NY); **Pará**: *Reese 16200* (MO, NY); **Roraima**: *Buck et al. 1872* (NY). On base and trunk of treelets, trees and plams, also on sandy soil, humus, and rocks.

S. circinatus (Brid.) Mitt. BRAZIL. **Pará**: *Reese 16578* (MO, NY). COLOMBIA. **Vaupés**: *Schultes & Cabrera 12742* (NY). PERU. **Loreto**: *Timme 4837* (LAF; Reese, 1993). VENEZUELA. **Amazonas**: *Bermúdez PA-00178* (NY), *PA-00578* (MO). On tree trunks, lianas, and logs.

S. cryptocarpos Dozy & Molk. [*S. spruceanus* Mitt.] BOLIVIA. **Beni**: *Reese 13105* (MO, NY). BRAZIL. **Acre**: *Reese & McPherson 13261* (MO, NY); **Amazonas**: *Reese 12668* (MO, NY); **Pará**: *Reese 16040* (MO); **Rondônia**: *Buck et al. 1821* (NY); **Roraima**: *Buck et al. 1958* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16046* (COL, MO, NY); **Putumayo**: *King & Guevara C-1078* (US); **Vaupés**: (Reese, 1993). ECUADOR.

Napo: *Churchill & Sastre-D. J. 13790* (NY); **Pastaza**: *Øllgaard et al. 35512* (AAU, MO); **Sucumbíos**: *Balslev 84915* (AAU). PERU. **Loreto**: *Timme 13690* (MO); **Madre de Dios**: *Matthews B-8659* (MO). VENEZUELA. **Amazonas**: *Guariglia et al. 1730* (NY). On trunk and base of palms, treelets and trees, also logs, tree stumps and termite nests.

S. cymbifolius Müll. Hal. [*S. ramicola* Broth.] BRAZIL. **Amazonas**: *Buck 2752, 2759* (NY); **Pará**: *Reese 16700* (NY). PERU. **San Martín**: *Simpson Br-441-A* (MO). On trunk and branches of treelets.

S. disciformis Dusén BRAZIL. **Amazonas**: *Buck 2151* (LAF, NY); **Mato Grosso**: *Vital 9957* (LAF); **Pará**: *Reese 16774 p.p.* (NY). ECUADOR. **Napo**: *Steere E-77 p.p.* (NY). On trunk and twigs of trees, occasionally epiphyllous, rarely on old thatch roofs (Reese, pers. comm.).

S. elatus Mont. [*S. incompletus* var. *elatus* (Mont.) Florsch.] BRAZIL. **Pará**: *Reese 16820* (NY). On trunk of trees.

S. fimbriatus Mitt. BRAZIL. **Amazonas**: *Prance et al. 22869* (NY), *Buck 2528* (NY). COLOMBIA. **Amazonas**: *Churchill 16079* (COL, NY); **Guainía**: *Churchill et al. 17691* (COL, NY). PERU. **Loreto**: *Timme 4684* (LAF; Reese, 1993). On base, trunk and branches of treelets and trees, also on logs.

S. flexifolius Mitt. [*S. parasiticus* var. *flexifolius* (Mitt.) W. D. Reese] BRAZIL. **Amazonas**: *Buck 2636* (NY). VENEZUELA. **Amazonas**: *Buck 12958* (NY). On trunk and branches of treelets and trees, also on logs.

S. gardneri (Hook.) Schwägr. [*S. quintasii* Broth.] BRAZIL. **Amazonas**: (Reese, 1993); **Mato Grosso**: *Prance et al. 19157* (NY). COLOMBIA. **Meta**: *Schultes 111287* (NY); **Vaupés**: *Schultes 11287* (NY), *11794* (LAF, MO). Commonly found on rocks.

S. gaudichaudii Mont. BRAZIL. **Amazonas**: *Buck 2605* (MO, NY); **Maranhão**: *Schatz et al. 840-B* (NY); **Mato Grosso**: *Reese 16050* (MO, NY); **Pará**: *Reese 16337* (MO, NY). Base of trees and treelets, also on logs.

S. helicophyllus Mitt. BRAZIL. **Amazonas**: *Griffin et al. 542* (MO, NY), *Buck 2520* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16082* (COL, MO, NY), *Sipman & Duivenvoorden 27848* (NY); **Vaupés**: *Schultes & Cabrera 17552* (LAF; Reese, 1993). VENEZUELA. **Amazonas**: *Buck 11054* (NY). On base, trunk and branches of treelets and trees, also on standing dead trees

S. hornschuchii C. Mart. [*S. rufus* Hornsch., nom. nud. in syn.] BOLIVIA. **La Paz**: *Williams 1921* (NY). BRAZIL. **Amazonas**: *Buck et al. 1783* (NY); **Mato Grosso**: *Damião 2448* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16400* (MO, NY); **Rondônia**: *McFarland et al. 319* (MO, NY). COLOMBIA. **Amazonas** (Reese, 1993); **Caquetá**: *Woronow 335* (JE; Reese, 1993); **Guainía**: *Churchill et al. 17707* (COL, MO, NY); **Vaupés**: *Schultes 12292* (LAF; Reese, 1993). ECUADOR. **Pastaza**: *Holm-Nielsen et al. 22420* (NY); **Sucumbíos**: *Heikkinen RH-1990-64* (NY), *Laegaard 51167* (NY). PERU. **Loreto**: *Timme 12924* (MO); **Madre de Dios**: *Matthews B-86615* (MO). VENEZUELA. **Amazonas**: *Sastre-D. J. 325* (NY). On base and trunk of trees and treelets, rarely on logs and soil.

S. incompletus Schwägr. var. *incompletus* [*S. juruensis* Broth., *S. subdecolorans* Broth.] BOLIVIA. **Beni**: *Reese 12984* (MO, NY). BRAZIL. **Acre**: *Reese & McPherson 13161* (MO, NY); **Amazonas**: *Prance et al. P26378* (MO, NY); **Mato Grosso**: *Prance et al. 19154* (NY); **Pará**: *Reese 16814* (NY); **Rondônia**: *Fife et al. 4193* (NY); **Roraima**: *Buck et al. 1856* (NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 16980* (HUA, NY); **Meta**: *Schultes 12007* (LAF; Reese, 1993); **Putumayo**: *King & Guevara C-1055* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13801* (NY); **Sucumbíos**: *Heikkinen RH-1990-165-B* (NY). PERU. **Loreto**: *Timme 12908-F* (MO); **Madre de Dios**: *Matthews B-85863* (MO). VENEZUELA. **Bolívar**: *Wurdack & Guppy 164* (NY). On exposed roots, base and trunk of palms, treelets and trees, also lianas and occasionally logs or rocks.

var. *berteroanus* (Brid.) W. D. Reese [*S. berteroanus* (Brid.) Müll. Hal.] BRAZIL. **Amapá**: *Mori & Cardoso 17124* (NY). ECUADOR. **Pastaza**: *Øllgaard et al. 35289* (NY). PERU. **Loreto**: *Timme 4770* (LAF; Reese, 1993). VENEZUELA. **Bolívar**: *Steyermark 90424* (MO). On trunk of trees.

var. *luridus* (Paris & Broth.) Florsch. BRAZIL. **Amazonas**: *Lleras et al. P16990* (NY); **Roraima**: *Buck et al. 1867* (NY); also reported for Pará by Lisboa and Maciel (1994). COLOMBIA. **Amazonas**: *Churchill et al. 16180* (COL, MO, NY). On trunk of trees.

S. lanceolatus (Hampe) W. D. Reese [*Calymperes lanceolatum* Hampe; *S. incompletus* Schwägr. var. *lanceolatus* (Hampe) W. D. Reese] BRAZIL. **Amazonas**: *Griffin et al. 021307* (FLAS; Reese & Griffin,

1977); **Pará**: *Prance et al. 024357* (FLAS, Reese & Griffin, 1977). COLOMBIA. **Amazonas**: *Churchill et al. 16103* (COL, MO, NY). On branches of treelets.

S. leprieurii Mont.BRAZIL. **Acre**: *Prance et al. 12646* (NY); **Amazonas**: *Stevenson et al. 756* (NY); **Rondônia**: *Reese 13634* (MO, NY); **Roraima**: *Buck et al. 1851* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16102* (COL, NY); **Vaupés**: *Schultes & Cabrera 17269* (NY). ECUADOR. **Napo**: *Holm-Nielsen et al. 20099* (AAU, MO, NY); **Pastaza**: *Jaramillo et al. 31175* (AAU, MO). PERU. **Loreto**: *Timme 4851* (LAF; Reese, 1993). VENEZUELA. **Amazonas**: *Buck 11332* (NY). On exposed roots, base and trunk of trees and palms, also on rocks and stream banks.

S. ligulatus Mont. BRAZIL. **Amapá**: *Egler & Irwin 46428-B* (NY); **Amazonas**: *Reese 12683* (NY); **Pará**: *Reese 16763* (MO); **Rondônia**: *Reese 13589* (MO, NY); **Roraima**: *Buck et al. 2017* (NY). ECUADOR. **Sucumbíos**: *Heikkinen RH-1990-137 p.p.* (NY). VENEZUELA. **Amazonas**: *Buck 12959* (NY). On trunk of trees and treelets, equally common on logs, also on termite mounds.

S. parasiticus (Brid.) Besch. BOLIVIA. **Beni**: *Reese 12728-B* (NY). BRAZIL. **Amazonas**: *Buck 2151* (NY); **Pará**: *Reese 16291* (MO, NY); **Rondônia**: *Buck et al. 1848* (NY); **Roraima**: *Buck et al. 1848* (NY). ECUADOR. **Napo**: *Steere E-69* (NY); **Sucumbíos**: *Heikkinen RH-1990-28* (NY). PERU. **Loreto**: *Timme 13750* (MO). VENEZUELA. **Amazonas**: *Buck 12777* (NY). On trunk and branches of shrubs, trees and treelets, also on lianas and epiphyllous (including leaves of *Heliconia*).

S. prolifer Schwägr. var. *prolifer* BRAZIL. **Amazonas**: *Fife et al. 4317* (NY), *Buck 2482* (NY); **Mato Grosso**: *Prance et al. 19091* (NY); **Pará**: *Reese 16852* (MO); **Rondônia**: *Reese 13594* (MO). COLOMBIA. **Caquetá**: *Churchill & Betancur 17024* (NY). VENEZUELA. **Bolívar**: *Liesner & Holst 20352* (MO). On trunk and branches of palms and shrubs, also on logs, tree stumps, and rocks.

var. *acanthoneuros* (Müll. Hal.) Müll. Hal. BRAZIL. **Pará**: *Reese 16032* (NY); **Rondônia**: *Reese 13559* (MO, NY). VENEZUELA. **Bolívar**: *Maguire et al. 53616* (MO, NY). On soil, rocks, and base of trees.

var. *cincinnatus* (Hampe) W. D. Reese BRAZIL. **Amazonas**: *Buck 2465-A* (NY, mixed collection with *S. leprieurii*). On wet, dripping cliff.

var. *scaber* (Mitt.) W. D. Reese [*S. prolifer* var. *papillosus* (Müll. Hal.) W. D. Reese] BRAZIL. **Acre**: *Reese 16799* (NY); **Amazonas**: *Lleras et al. P19598* (NY); **Pará**: *Reese 16852* (MO); **Rondônia**: *Reese 13726* (NY). On base and trunk of treelets and trees, also lianas.

S. rigidus Hook. Grev. BRAZIL. **Amapá**: *Mori et al 17230* NY); **Amazonas**: *Prance et al. 17548* (NY); **Pará**: *Reese 16573* (MO, NY). COLOMBIA. **Caquetá**: *Wolf 1488* (U); **Vaupés**: *Schultes 12292* (NY). ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 698* (AAU); **Pastaza**: *Holm-Nielsen et al. 22420* (AAU). VENEZUELA. **Amazonas**: *Sastre-D. J. 321* (NY). On buttress base and trunk of trees, occasionally on rocks.

S. rupestris Mitt. BRAZIL. **Amazonas**: *Buck 2449* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16061* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 16933* (MO, NY). VENEZUELA. **Amazonas**: *Davidse & Miller 27118* (MO, NY). On rocks, occasionally on sandy soil.

S. simmondsii Steere [*S. griffinii* H. Rob.] BOLIVIA. **Beni**: *Reese 12772* (MO, NY). BRAZIL. **Amazonas**: *Buck 2932* (NY); **Pará**: *Reese 16308* (MO, NY); **Rondônia**: *Reese 13609* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16075, 16168* (COL, MO, NY); **Guainía**: *Churchill et al. 17732* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 17269* (CAN; Reese, 1993). PERU. **Loreto**: *Hegewald & Hegewald 6365* (MO). VENEZUELA. **Amazonas**: *Buck 10857* (NY). On soil, sandy soil, termite mounds, exposed tree roots and logs or standing dead trees.

S. steyermarkii H. Rob. COLOMBIA. **Vaupés**: *Schultes & Cabrera 13298* (NY). Reported from Venezuelan Amazonas and Bolívar at higher elevations (cf. Reese, 1993). On trees and rocks.

S. xanthophyllus Mitt. BOLIVIA. **Beni**: *Reese 12900, 13067* (MO, NY). BRAZIL. **Amazonas**: *Buck 2368* (MO, NY); **Pará**: *Reese 16565, 16862* (MO, NY); **Rondônia**: *Reese 13687* (MO, NY). COLOMBIA. **Guainía**: *Churchill et al. 17725-B* (COL, MO, NY). VENEZUELA. **Amazonas**: *Sastre-D. J. 324* (NY). On base and trunk of trees, logs and tree stumps, also rocks, soil banks, and termite mounds.

CRYPHAEACEAE

Schoenobryum Dozy & Molk.

S. concavifolium (Griff.) Gangulee [*Acrocryphaea leiboldii* (Müll. Hal.) Wijk & Margad. of reports; *S.*

gardneri (Mitt.) Manuel] BOLIVIA. **La Paz**: *Williams 1987* (NY). BRAZIL. **Acre**: *Pires & Martin 10073* (NY); **Amazonas**: (Hornschuch, 1840); **Rondônia**: *Lisboa et al. 2777* (MG; Lisboa & Yano, 1987). On trunk of treelets and trees (including *Theobroma*).

DALTONIACEAE

Calyptrochaeta Desv.

C. setigera (Mitt.) W. R. Buck BRAZIL. **Acre**: *Vital 14954* (SP; Vital & Visnadi, 1994). On exposed prop roots and base trunk of palms.

Leskeodon Broth. Note: Many of the collections determined or verified by J. R. Rohrer at MO and NY.

L. andicola (Mitt.) Broth. COLOMBIA. **Putumayo**: *King & Guevara C-1082* (US). ECUADOR. **Napo**: *Grubb et al. 2942* (Bartram, 1964); **Pastaza**: *Løjtnant & Molau 13551* (AAU); **Sucumbíos**: *Balslev 84919* (AAU). PERU. **San Martín**: *Frahm et al. 2030* (MO). On logs, base and trunk of trees, and over leaf litter.

L. auratus (Müll. Hal.) Broth. BRAZIL. **Amazonas**: *Buck 2481* (NY). On tree trunks.

L. cubensis (Mitt.) *Thér.* PERU. **Loreto**: *Timme 12938-A* (MO). On logs and trunk of trees.

DICRANACEAE

Bryohumbertia P. de la Varde & Thér. [Ref.: Frahm 1991]

B. filifolia (Hornsch.) J.-P. Frahm var. *humilis* (Mont.) J.-P. Frahm BRAZIL. **Amazonas**: *Frahm 1563* (herbarium of J.-P. Frahm, n.v.), also known from Amazonas at 1250 m on the plateau of Serra Araca (*Samuels et al. 0334*, NY), and from Roraima at 800 m (*Prance et al. 20040*, NY). On soil, humus or rocks, also tree trunks (Roraima).

Campylopus Brid. [Ref.: Frahm 1991]

C. carolinae Grout [*C. cerradensis* Vital] BRAZIL. **Pará**: *Reese 16339* (MO); also reported at higher elevations from Mato Grosso and Roraima (Vital, 1984). On soil, along roadside and campina forests.

C. occultus Mitt. [*C. acervatus* Mitt., *C. cacti* (Müll. Hal.) Lindb.] BRAZIL. **Pará**: *Davidse et al. 18038* (MO, NY). On soil.

C. pilifer Brid. BRAZIL. **Amazonas**: *Samuels et al. 0126* (MO, NY); **Roraima**: *Prance et al. 2158* (NY); also at higher elevations, to ca. 1000 m (*Buck et al. 1931*, MO, NY). On exposed soil and granitic rock.

C. savannarum (Müll. Hal.) Mitt. [*C. sprucei* Mitt.] BOLIVIA. **La Paz**: *Mamani 677* (MO). BRAZIL. **Amazonas**: *Buck 2221* (MO, NY); **Goiás**: *Plowman et al. 8230* (MO, NY); **Pará**: *Reese 16126, 16235* (MO, NY); **Roraima**: *Black 51-113608* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16083* (COL, MO, NY); **Caquetá**: *Churchill & Betancur 17036* (HUA., MO, NY); **Meta**: *Schultes 11126* (MO, NY). On soil, often sandy and wet, rocks including sandstone.

C. surinamensis Müll. Hal. [*C. gracilicaulis* Mitt., *C. marmellensis* Broth., *C. revolvens* Herzog] BOLIVIA. **Beni**: *Reese 12817* (MO, NY). BRAZIL. **Amazonas**: *McFarland 4* (MO, NY); **Mato Grosso**: *Reese 16059* (MO); **Pará**: *Reese 16498, 16486* (MO, NY), *12990* (NY); **Rondônia**: *Reese 13610* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16090* (COL, NY); **Caquetá**: 1926, *Woronow s.n.* (JE); **Guainía**: *Churchill et al. 17731* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 15897* (NY). PERU. **Loreto**: *Hegewald & Hegewald 6366* (MO, NY); *Timme 12905* (MO). Exposed sites, on soil, particularly on sandy soils, rocks, including sandstone, logs, often on charred wood.

Dicranella (Müll. Hal.) Schimp.

D. elata Schimp. ex Mitt. BRAZIL. **Pará**: *Spruce* ? (NY).

D. hilariana (Mont.) Mitt. [*D. peruviana* Broth., *D. tenuirostris* (Schwägr.) Mitt.] BOLIVIA. **Beni**: *Reese 13011* (NY). BRAZIL. **Acre**: *Vital 14837* (SP; Vital & Visnadi, 1994); **Amazonas**: *Buck 2571* (NY); **Mato Grosso**: *Reese 16047* (MO); **Pará**: *Reese 16350* (MO, NY); **Rondônia**: *Fife et al. 4202* (MO, NY); **Roraima**: *Buck et al. 1833* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16143* (COL, MO, NY); **Guainía**: *Churchill et al. 17700* (COL, MO, NY); **Putumayo**: *Giraldo-C. et al. 2162* (COL, NY). ECUADOR. **Napo**: *Fransén 3* (AAU, GB). On soil, including sandy or clay, often found in exposed wet or moist sites, along streams, rivers and waterfalls, rather frequent in disturbed areas, e.g., trail margins, road banks.

Holomitrium Brid.

H. arboreum Mitt. BRAZIL. **Amazonas**: *Buck 2132* (MO); **Rondônia**: *Fife et al. 4171* (MO); also Roraima at 800 m (*Buck et al. 2000*, NY). Known from Ecuadorian Pastaza at 610 m (*Spruce 22-B*, NY). On trunk

and branches of trees.

Leucoloma Brid.

L. serrulatum Brid. ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 692* (AAU). On base and trunk of trees.

L. tortellum (Mitt.) A. Jaeger BRAZIL. **Pará**: *Reese 16148* (NY); **Rondônia**: *Fife et al. 4184* (INPA, NY; Lisboa, 1993); **Roraima**: *Buck et al. 2044* (INPA, NY; Lisboa & Yano, 1987); the report for Amazonas may be attributed to Spruce (*676*), however the locality is in Colombia. COLOMBIA. **Vichada**: *Spruce 676* (NY). VENEZUELA. **Bolívar**: *Liesner & González 11473-A* (MO). On rocks, including sandstone associated with falls, also on tree trunks.

Microcampylopus (Müll. Hal.) M. Fleisch. [Ref.: Frahm 1991]

M. curvisetus (Hampe) Giese & J. P. Frahm [*Campylopodium pusillum* (Schimp.) R. S. Williams] BRAZIL. **Amazonas**: *Buck et al. 1792* (NY); also known from Roraima at 1000 m (*Buck et al. 1936*, NY). On soil at the base of a boulder, also on charred wood.

Microdus Schimp. in Besch.

M. exiguus (Schwägr.) Besch. in Paris [*Dicranella exigua* (Schwägr.) Mitt.] BRAZIL. **Amazonas**: *Prance et al. 11719* (NY). ECUADOR. **Pastaza**: *Spruce 39* (NY). On sandy or clay soils, along rivers.

DIPHYSCIACEAE

Diphyscium D. Mohr [Ref.: Allen 1996]

D. peruvianum Spruce ex Mitt. [*D. ulei* Müll. Hal.] BRAZIL. **Amazonas**: *Buck 2490* (NY); **Rondônia**: *Reese 13390, 13397* (MO, NY). On rock and periodically inundated clay rock.

ENTODONTACEAE

Entodon Müll. Hal.

E. beyrichii (Schwägr.) Müll. Hal. BOLIVIA. **Santa Cruz**: *Nee 34316* (NY), *Mamani 785* (MO). BRAZIL. **Pará**: *Plowman et al. 8547* (MO, NY). On moist or wet soil or rocks, also trunk of trees.

Erythrodontium Hampe

E. squarrosum (Müll. Hal.) Broth. BOLIVIA. **Beni**: *Lewis 89-037-d3* (MO). BRAZIL. **Pará**: *Reese 16129* (MO, NY); also known from Mato Grosso at 720 m (*Prance et al. 19377*, NY). On trunk of trees and rocks, including sandstone.

EPHEMERACEAE

Ephemerum Hampe

E. aequinoctiale Spruce in Mitt. BRAZIL. **Amazonas**: *Spruce 443* (NY; Mitten, 1869).

Micromitrium Austin

M. subaequinoctiale (Broth.) Crosby BRAZIL. **Amazonas**: *Ule 1953* [E. Ule, Bryotheca brasiliensis 261] (Brotherus, 1906).

M. thelephorothecum (Florsch.) Crosby COLOMBIA. **Amazonas**: *Churchill et al. 16060* (COL, NY). On sandy soil of river terrace.

ERPODIACEAE

Erpodium (Brid.) Brid.

E. glazioui Hampe BRAZIL. **Amazonas**: *Vital 4435* (SP; Vital, 1980). On rocks and trees, often associated with human occupation.

FABRONIACEAE

Fabronia Raddi [Ref. Buck 1983]

F. jamesonii Taylor [*F. attaleae* Herzog] BOLIVIA. **Beni**: Apr *1907, Herzog* (JE); **Santa Cruz**: Jun 1907, *Herzog* (JE). On trees.

FISSIDENTACEAE

Fissidens Hedw. [Ref.: Pursell 1979, 1984, 1988, 1990, 1994a, b, 1997, Pursell & Allen 1991, Pursell & Reese 1980; Pursell & Vital 1986, Pursell et al. 1988, 1992, 1993] Note. The majority of collections cited below were verified or determined by R. Pursell.

F. allionii Broth. BRAZIL. **Amazonas**: *Buck 3205* (MO, NY); **Pará**: *Reese 16781* (MO, NY); **Rondônia**: *McFarland et al. 50* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16162* (COL, NY). ECUADOR. **Pastaza**: *Spruce 495* (NY, originally det. as *F. prionodes*, redet. R. Pursell). PERU. **Loreto**: *Simpson Br-152* (MO); **Madre de Dios**: *Matthews B-86599* (MO). On moist or wet soil, including clay, termite mounds and road banks.

F. amazonicus Pursell BRAZIL. **Amazonas**: *Yano 1990* (PAC, SP; Pursell 1988), *Buck 2578* (NY); also from Roraima at 700 and 800 m (*Buck et al. 2036* and *Buck et al. 1982* respectively, NY, PAC). COLOMBIA. **Vaupés**: *Schultes & Cabrera 14307* (NY). On soil above floodlines and along river banks.

F. anguste-limbatus Mitt. var. *anguste-limbatus* [*F. bryoides* Hedw. of reports, *F. mattogrossensis* Broth., *F. pennula* Broth.] BRAZIL. **Amazonas**: *Maguire et al. 60168* (MO, NY); **Mato Grosso**: *Lindman 351* (H-BR; Brotherus 1900); **Pará**: (Bruggeman-Nannenga, 1973); **Rondônia**: *Fife et al. 4128* (NY); **Roraima**: *Buck et al. 1920* (MO, NY). COLOMBIA. **Caquetá**: *Woronow s.n.* (PC; Bruggeman-Nannenga, 1973). On soil covered granite ledges at edge of stream, rocks in streams and rivers, also on tree trunks associated with river banks.

var. *colombiensis* Pursell COLOMBIA. **Vaupés**: *Schultes & Cabrera 14307* (FH; Pursell, 1994b). Damp banks.

F. angustifolius Sull. [*F. ensifolius* Broth.] BOLIVIA. **Beni**: *Reese 12829* (NY). BRAZIL. **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 249] (FH; Pursell, 1979); **Pará**: *Swallen 3173* (NY); **Rondônia**: *Reese 13394* (NY). PERU. **Loreto**: *Hegewald & Hegewald 8234* (MO). On soil, including clay-loam, also rocks and base of boulders along river.

F. brachypus Mitt. [*F. townsendii* Bizot, *nom. inval.*] BRAZIL. **Amazonas**: *Buck et al. 1788* (NY). COLOMBIA. **Guainía**: *Churchill et al. 17744-B* (MO). VENEZUELA. **Amazonas**: *Liesner 8760* (MO). On exposed fresh-water sponges attached to branches of shrubs and spiny trunk of palms (*Astrocarpum*) in seasonally flooded areas (cf. Buck & Pursell, 1980).

F. crispus Mont. BOLIVIA. **Beni**: *Reese 12831, 12835* (NY). On rocks along river.

F. densiretis Sull. BRAZIL. **Rondônia**: *Fife et al. 4177* (INPA; Lisboa & Yano, 1987).

F. diplodus Mitt. var. *diplodus* [*F. muriculatus* Mitt.] BRAZIL. **Amazonas**: *Spruce 473* (NY); **Pará**: *Lisboa 1439-A* (NY). COLOMBIA. **Amazonas**: *Sipman & Duivenvoorden 28086* (MO); **Caquetá**: *Churchill & Betancur 17006* (HUA, MO, NY). ECUADOR. **Pastaza**: *Spruce 474* (NY). PERU. **Madre de Dios**: *Matthews B-86577* (MO), *Timme 13712* (MO). On trunk of trees and logs.

var. *richardsii* (R. S. Williams) Pursell BRAZIL. **Rondônia**: *Reese 13476* (NY). On trunk of treelets and saplings.

F. elegans Brid. [*F. flavinervis* Mitt., *F. fratris* Paris, *F. tejoensis* Broth.] BOLIVIA. **Beni**: *Reese 12744, 13080* (NY). BRAZIL. **Acre**: *Reese 13232* (NY); **Amazonas**: *Buck 3152* (NY); **Mato Grosso**: *Prance et al. 19094* (NY); **Pará**: *Reese 16597* (NY); **Rondônia**: *Reese 13435* (NY); **Roraima**: *Buck et al. 1893* (NY). ECUADOR. **Sucumbíos**: *Balslev 84925* (AAU, NY). On rocks, including sandstone, soil, base (including buttress) and trunk of trees, logs and tree stumps, also on termite tunnels on trees.

F. flaccidus Mitt. [*F. macrophyllus* Mitt., *F. mollis* Mitt.] BRAZIL. **Acre**: *Reese & McPherson 13186* (NY); **Rondônia**: *Reese 13478* (NY); also reported for Pará by Lisboa (1994). COLOMBIA. **Caquetá**: *Churchill & Betancur 16962* (HUA, MO, NY); **Meta**: *Schultes 11088* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13813-A* (NY); **Pastaza**: *Spruce 532* (NY). PERU. **Loreto**: *Lewis et al. 10277* (MO), *Timme 12353* (MO). On soil bank (clay) and rocks, often along or in rather shallow streams.

F. gardneri Mitt. BRAZIL. **Pará**: *Plowman et al. 9479* (MG; Lisboa & Yano, 1987); the report from Amazonas (*Fife et al. 4285*) by Lisboa & Yano (1987) is *F. guianensis*.

F. guianensis Mont. var. *guianensis* BRAZIL. **Amazonas**: *Fife et al. 4285* (NY); **Pará**: *Reese 16633, 16713* (NY); **Roraima**: *Buck et al. 1910* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16159* (COL, NY). ECUADOR. **Napo**: *Steere E-97* (NY). VENEZUELA. **Amazonas**: *Buck 12769* (NY). Exposed roots, base, trunk and branches of palms, treelets and trees, rarely on rocks.

var. *pacaas-novosensis* Pursell & Reese BRAZIL. **Amazonas**: *Buck 3139* [S. R. Gradstein, Bryophyta Neotropica Exsiccata 2, 263] (NY), *Buck 2890, 3062, 3210* (NY); **Rondônia**: *Reese 13437* (MO, NY). Base and trunk of treelets; periodically inundated area (varzea).

F. hornschuchii Mont. BRAZIL. **Amazonas**: *Buck 2476* (NY). PERU. **Loreto**: *Solomon 3501* (MO). On trunk of trees, also on soil and termite nests in trees.

F. hydropogon Spruce in Mitt. ECUADOR. **Pastaza**: *Spruce 507* (NY; cf. Pursell et al. 1988). On submersed branches.

F. hyalinus Hook.f. & Wilson PERU. **Loreto**: *Hegewald & Hegewald 6408* (MO). On soil.

F. inaequalis Mitt. [*F. perminutus* Broth.] BOLIVIA. **Beni**: *Reese 12752, 12767* (NY). BRAZIL. **Acre**: *Reese & McPherson 13242* (NY); **Amazonas**: *Ule 2258* (H-BR), *Buck 3061, 3226* (NY); **Pará**: *Reese 16380, 16662* (NY); **Rondônia**: *Reese 13585* (NY); **Roraima**: *Buck 1837 p.p.* (NY, with *F. pellucidus*). COLOMBIA. **Amazonas**: *Churchill et al. 16159 p.p.* (COL, NY; with *F. guianensis*). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13858-A* (NY), *Steere E-96* (NY). VENEZUELA. **Amazonas**: *Buck 12946* (NY). On soil (clay), trail and river banks, exposed roots, base and trunk of trees, treelets and palms, also tree stumps and termite nests.

F. intramarginatus (Hampe) Mitt. [*F. pabstii* A. Jaeger] BRAZIL. **Rondônia**: *McFarland et al. 229* (NY); **Pará**: *Reese 16484, 16599* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13872* (NY). On soil and rocks, including sandstone.

F. leptophyllus Mont. [*F. micropyxis* Broth., *F. reesei* H. A. Crum & L. E. Anderson, *F. subflexinervis* Broth.] BRAZIL. **Acre**: *Vital 14993* (PAC; Vital & Pursell, 1992); **Amazonas**: *Ule 2223* (H-BR); also Roraima at 800 m (*Buck et al. 2027*, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16148* (COL, NY). PERU. **Loreto**: *Timme 4842* (PAC; cf. Pursell & Vital, 1986). On exposed roots and base of trees and treelets.

F. minutus Thwaites & Mitt. [*F. garberi* Lesq. & James] BRAZIL. **Pará**: *Plowman et al. 9479* (NY); also known from Roraima at 800 m (*Buck et al. 1992-A*, NY). VENEZUELA. **Amazonas**: *Wurdack & Adderley 43423* (NY). On rocks, trunk of lianas and palm stump.

F. ornatus Herzog BRAZIL. **Acre**: *Reese 13280* (NY); **Amazonas**: *Buck 2585, 3214* (NY); **Rondônia**: *Reese 13536* (NY); **Roraima**: *Buck et al. 1990 p.p.* (NY; with *F. amazonicus*). On soil, including clay, termite mounds, and moist stream banks (at 800 m).

F. pellucidus Hornsch. var. *pellucidus* [*F. flexinervis* Mitt., *F. laxus* Sull. & Lesq., *F. prionodes* fo. *hornschuchii*, *F. prionodes* fo. *puiggarii*] BOLIVIA. **Beni**: *Reese 12883, 13056* (NY). BRAZIL. **Amazonas**: *Buck 2128* (NY), *Buck 2185* [S. R. Gradstein, Bryophyta Neotropica Exsiccata 6, 264] (NY); **Rondônia**: *McFarland et al. 70* (NY); **Roraima**: *Buck et al. 1839* (NY); also reported from Pará (Lisboa, 1984). COLOMBIA. **Amazonas**: *Churchill et al. 16052, 16074* (COL, NY); **Guainía**: *Churchill et al. 17729* (COL, MO, NY). PERU. **Loreto**: *Timme 13708* (MO). VENEZUELA. **Amazonas**: *Buck 12948* (NY). On soil (clay, sand), submersed and exposed rocks (sandstone), exposed roots and base of trees and palms, logs, tree stumps, and termite nests.

var. *papilliferus* (Broth.) Pursell [*F. papilliferus* Broth.] BOLIVIA. **Beni**: *Reese 12782, 13117* (NY). BRAZIL. **Amazonas**: *Buck 2354* (NY), *Prance et al. 16510-A* (NY); **Pará**: *Mexia 5986-A* (NY); **Rondônia**: *McFarland et al. 25, 26* (NY). COLOMBIA. **Guainía**: *Churchill et al. 17726* (COL, MO, NY). VENEZUELA. **Amazonas**: *Buck 12937* (NY), *Wurdack & Adderley 43422* (NY). On soil, rocks, base and trunk of treelets and trees, also logs, tree stumps, and termite mounds.

F. perfalcatus Broth. [*F. sharpii* Pursell] PERU. **Madre de Dios**: *Matthews B-85860* (MO). On clay soil covered roots of fallen tree.

F. prionodes Mont. [*F. marmellensis* Broth.] BRAZIL. **Amazonas**: *Fife et al. 4263* (NY), *Ule 2334* (Brotherus, 1906); **Rondônia**: *McFarland et al. 108* (NY); **Roraima**: *Buck et al. 1907* (NY). ECUADOR. **Napo**: *Curchill & Sastre-D. J. 13810* (NY); **Pastaza**: *Spruce 495* (NY). VENEZUELA. **Amazonas**: *Buck 11414* (NY): On soil, including clay, also termite nests, exposed soil covered roots, and base of trees.

F. radicans Mont. BRAZIL. **Pará**: *Reese 16680* (NY). PERU. **Loreto**: *Timme 13715* (MO). On trunk of treelets, trees and lianas.

F. ramicola Broth. BRAZIL. **Amazonas**: *Ule 2263, 2259, 2279* (Brotherus, 1906). On branches of treelets.

F. scariosus Mitt. BRAZIL. **Pará**: *Reese 16631* (NY); **Rondônia**: *Reese 13631* (MO, NY); also Roraima at 700 m (*Buck et al. 2036*, MO, NY). VENEZUELA. **Amazonas**: *Buck 11358* (NY). On soil and termite mounds.

F. steerei Grout ECUADOR. **Napo**: *Churchill & Sastre-D. J. 138813-B* (NY). On soil bank.

F. submarginatus Bruch in C. Krauss [*F. intermedius* Müll. Hal., *F. splitgerberianus* Dozy & Molk., *F.*

submicropyxis Broth.] BOLIVIA. **Beni**: *Reese 13033, 13090* (NY); **La Paz**: *Williams 1685* (NY). BRAZIL. **Acre**: *Reese & McPherson 13192* (NY); **Amazonas**: *Buck 2209* (NY); **Rondônia**: *Reese 13527, 13608* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16200* (COL, NY); **Arauca**: *Churchill et al. 18935* (MO); **Caquetá**: *Churchill & Betancur 16992* (HUA, MO, NY); **Meta**: *Schultes 11108* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13858-B* (NY). PERU. **Loreto**: *Timme 12276* (MO); **Madre de Dios**: *Matthews B-86627* (MO). VENEZUELA. **Amazonas**: *Sastre-D. J. 277* (NY). On soil and soil covered rocks, particularly along trails, stream and river banks, also base of trees and termite nests.

F. subradicans Broth. [*F. rubiginosulus* Broth.] BRAZIL. **Amazonas**: *Ule 2256* (H-BR; Pursell 1994a). VENEZUELA. **Amazonas**: *Buck 12562* (NY). On soil and termite nests.

F. subramicola Broth. [*F. austro-americanus* Pursell & Reese] BRAZIL. **Amazonas**: *Ule 2275* (Brotherus, 1906); *Yano 1992* (SP; Pursell & Vital, 1986); **Pará**: *Reese 16847* (NY). On trunk, and more commonly branches of treelets, also on spines of palm.

F. subulatus Mitt. BRAZIL. **Acre**: *Reese & McPherson 13154 p.p.* (NY, with *F. submarginatus*); **Amazonas**: *Buck 3201* (NY); **Pará**: *Reese 16717* (NY); **Rondônia**: *Reese 13365 p.p.* (NY, with *F. submarginatus*), *13528* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16120* (COL, MO, NY). On soil, including clay, river banks, and termite mounds, rarely on rocks.

F. zollingeri Mont. [*F. juruensis* Broth., *F. kegelianus* Müll. Hal., *F. mararyensis* Broth.] BOLIVIA. **Beni**: *Reese 12821, 13086* (NY). BRAZIL. **Acre**: *Reese & McPherson 13151* (NY); **Amazonas**: *Ule 2224* (H-BR; Pursell, 1994a), *Buck 2274* (NY); **Pará**: *Reese 16660* (MO, NY); **Rondônia**: *Reese 13710* (MO, NY); **Roraima**: *Buck 2057* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13815* (NY). PERU. **Loreto**: *Hegewald & Hegewald 8253* (MO). On soil, including sand, along stream or river banks and trails, termite mounds, base of trees, logs, tree stumps, and boulders.

HYDROPOGONACEAE [Ref.: Welch 1943]

Hydropogon Brid. [Ref.: Churchill 1991a]

H. fontinaloides (Hook.) Brid. BOLIVIA. **Beni**: *Reese 12888, 13038* (MO, NY); **Pando**: *Solomon s.n.* [B. H. Allen, Fontinalaceae Exsiccate, 2: 54] (MO, NY). BRAZIL. **Amazonas**: *Spruce 1310-B* (NY); **Mato Grosso**: *Lisboa et al. 682* (INPA; Lisboa & Lisboa, 1978); **Pará**: sin. loc. & leg. (NY); **Rondônia**: *Pires 9969* (NY). COLOMBIA. **Amazonas**: *Ruiz et al 440* (COL, NY), *Schultes & Cabrera 17727* (NY). ECUADOR. **Napo**: *Holm-Nielsen et al. 19840* (AAU, MO, NY); **Sucumbíos**: *Balslev 84920* (AAU, NY). VENEZUELA. **Amazonas**: *Buck s.n.* [B. H. Allen, Fontinalaceae Exsiccate, 2: 55] (MO, NY); **Bolívar**: *Steyermark et al. 112977* (MO). On branches of shrubs and trees, in inundated areas and along rivers.

Hydropogonella Cardot

H. gymnostoma (Schimp.) Cardot BOLIVIA. Sin. loc., viii. 1907, *Herzog ?121* (NY). BRAZIL. **Amazonas**: *Pires et al. 16788* (NY); **Mato Grosso**: *Lindman B403* (NY); **Rondônia**: *Reese 13295* (MO, NY). On branches in and along streams and rivers (probably on exposed roots), apparently submersed or slightly emergent.

HYPNACEAE

Chryso-hypnum Hampe *Microthamnium* p. p., *Stereohypnum* p. p.

C. diminutivum (Hampe) W. R. Buck [*Mittenothamnium diminutivum* (Hampe) E. Britton] BRAZIL. **Amazonas**: *Spruce 1089* (NY; Mitten, 1869); **Pará**: *Spruce 1095* (NY; Mitten, 1869); also Roraima at 800 m (*Buck et al. 2914*, NY). ECUADOR. **Napo**: *Benoist 4679* (Thériot, 1936); **Pastaza**: *Spruce 1087* (NY). PERU. **Amazonas**: *Hegewald & Hegewald 6693* (MO). On exposed roots, lower trunk of trees, logs, and rocks.

C. elegantulum (Hook.) Hampe [*Mittenothamnium elegantulum* (Hook.) Cardot] BRAZIL. **Amazonas**: *Sellow s.n.* (NY; Mitten, 1869).

Ectropothecium Mitt.

E. aeruginosum (Müll. Hal.) Mitt. BRAZIL. **Amazonas**: *Spruce ?* (cf. Yano, 1981a); **Pará**: *Plowman et al. 8538* (MG; Lisboa & Yano, 1987). ECUADOR. **Pastaza**: *Spruce 1124* (NY; Mitten, 1869); also Morona-Santiago at 600 m (*Harling 2261*, S). On logs.

E. leptochaeton (Schwägr.) W. R. Buck [*E. apiculatum* (Hornsch.) Mitt., *E. globitheca* (Müll. Hal.) Mitt.

BRAZIL. **Amazonas**: *Buck 3220* (NY); **Pará**: *Reese 16655* (MO). COLOMBIA. **Putumayo**: *King & Guevara C-1057* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13857* (AAU, NY); **Pastaza**: *Andersson 901-B* (GB). On logs, leaf litter and trunk of trees.

E. minutum Broth. BRAZIL. **Acre**: *Vital 14939* (SP; Vital & Visnadi, 1994); **Amazonas**: *Ule 2310* (Brotherus, 1906). On logs.

Isopterygium Mitt. [Ref.: Ireland 1991, 1992]

I. acutifolium Ireland BRAZIL. **Rondônia**: *Vital 14052* (SP; Schäfer-Verwimp & Giancotti, 1993). VENEZUELA. **Bolívar**: *Steyermark 97784* (US). On rocks in rivers and streams.

I. affusum Mitt. BRAZIL. **Amazonas**: *Griffin 283-A* (MO, NY); **Pará**: *Reese 16169* (NY, US). On sandstone rocks, in stream and waterfall; wet sandy soil, and base of sedges along stream.

I. byssobolax (Müll. Hal.) Paris BRAZIL. **Rondônia**: *Reese 13550* (NY).

I. subbrevisetum (Hampe) Broth. BRAZIL. **Amazonas**: *Nelson 105* (NY). PERU. **Loreto**: *Morrow 9584* (FH; Ireland, 1992). On base and trunk of trees and palms, also on rocks.

I. tenerifolium Mitt. [*I. manaosense* Broth.] BRAZIL. **Amazonas**: *Spruce 1060* (NY); **Pará**: *Swallen 6936* (US); **Rondônia**: *Reese 13294* (NY). On logs.

I. tenerum (Sw.) Mitt. [*I. brachyneuron* (Müll. Hal.) Mitt.] BOLIVIA. **Beni**: *Reese 12739, 12753, 12833, 12970* (NY). BRAZIL. **Acre**: *Reese & McPherson 13195* (MO, NY); **Amazonas**: *Lisboa 70* (MO); **Mato Grosso**: *Prance et al. 18359* (NY); **Pará**: *Reese 16209* (MO); **Rondônia**: *Reese 13533, 13565* (NY); **Roraima**: *Prance et al. 19954* (NY). COLOMBIA. **Meta**: *Schultes 11110* (MO, NY); **Putumayo**: *King & Guevara C-1122* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13862-A* (AAU); **Pastaza**: *Spruce 1064* (NY); **Sucumbíos**: *Heikkinen RH-1990-333* (NY). PERU. **Loreto**: *Killip & Smith 26942* (NY). VENEZUELA. **Amazonas**: *Buck 11227* (NY). On exposed roots, base, trunk, and branches of treelets, trees, lianas, twigs of bamboo, logs, tree stumps, sandy soil, soil banks along streams, and rocks.

Mittenothamnium Henn. [*Microthamnium* p. p., *Stereohypnum* p. p.]

M. langsdorffii (Hook.) Cardot BRAZIL. **Pará**: (Vattimo-Gil & Vattimo, 1980). COLOMBIA. **Vichada**: *Swainson s.n.* (NY; Mitten, 1869).

M. reptans (Hedw.) Cardot ECUADOR. **Pastaza**: *Spruce 1117* (NY).

Phyllodon Bruch, Schimp. & W. Gümbel

P. truncatulus (Müll. Hal.) W. R. Buck [*Glossadelphus truncatulus* (Müll. Hal.) M. Fleisch.] BRAZIL. **Amazonas**: *Buck 2502* (NY). COLOMBIA. **Putumayo**: *King & Guevara C-1039* (COL). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13820* (AAU, NY); **Pastaza**: *Spruce s.n.* (NY). On logs and rocks.

Rhacopilopsis Renauld & Cardot

R. trinitensis (Müll. Hal.) E. Britton & Dixon BRAZIL. **Amapá**: *Mori & Cardoso 17108* (NY); **Mato Grosso**: *Schäfer-Verwimp & Verwimp 8619, 8629* (SP; Schäfer-Verwimp, 1989), also at 720 m (*Prance et al. 19399*, NY); **Pará**: *Reese 16677, 16826* (MO, NY); also Roraima at 800 m (*Buck et al. 1859*, NY). COLOMBIA. **Arauca**: *Churchill et al. 18941* (COL, NY); **Boyacá**: *Churchill et al. 18933* (COL, NY); **Meta**: *Alston 7581* (US); **Putumayo**: *King & Guevara C-1136* (US). ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 702 p.p.* (AAU, with *Octoblephrum cocuiense*); **Pastaza**: *Holm-Nielsen et al. 22281* (AAU, MO, NY); **Sucumbíos**: *Heikkinen RH-1990-155* (NY). VENEZUELA. **Amazonas**: *Buck 12933* (NY). On base and trunk of trees, soil, rocks, occasionally on logs or leaf litter.

Taxiphyllum M. Fleisch.

T. taxirameum (Mitt.) M. Fleisch. ECUADOR. **Pastaza**: *Spruce 1061* (NY).

Vesicularia (Müll. Hal.) Müll. Hal.

V. glaucopinnata Müll. Hal. BRAZIL. **Amazonas**: *Ule 2310* (Brotherus, 1906). On logs. Probably this and the following species are synonyms of *V. vesicularis*.

V. perpinnata (Broth.) Broth. BRAZIL. **Amazonas**: *Ule 1975* [E. Ule, Bryotheca brasiliensis 279] (Brotherus, 1906). On logs.

V. vesicularis (Schwägr.) Broth. s. l. [*V. amphibola* (Mitt.) Broth., *V. subdenticulata* (Müll. Hal.) Broth.] BOLIVIA. **Beni**: *Reese 12942, 12955* (NY); **La Paz**: *Williams 2029* (NY). BRAZIL. **Acre**: *Daly et al. 7701* (NY), *Reese & McPherson 13168* (NY); **Amazonas**: *Buck 2737* (NY); **Mato Grosso**: *Lisboa et al. 283* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16490* (NY); **Rondônia**: *Reese 13533, 13565* (NY); **Roraima**:

Buck et al. 1922 (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16158* (COL, MO, NY); **Caquetá**: *Betancur & Velasquez 1582* (HUA, NY); **Guainía**: *Churchill et al. 17637* (COL, NY); **Meta**: *Schultes 11107* (MO, NY); **Putumayo**: *King & Guevara C-1038* (US). ECUADOR. **Morona-Santiago**: *Harling 2276* (S); **Napo**: *Churchill & Sastre-D. J. 13778* (MO, NY); **Pastaza**: *Andersson 867* (AAU, GB); **Sucumbíos**: *Balslev 84922* (AAU). PERU. **Loreto**: *Killip & Smith 29789* (NY), *Timme 12272-A* (MO). VENEZUELA. **Amazonas**: *Buck 12759* (NY). Common, mostly in shaded or partially shaded moist sites, on soil (including sand), leaf litter, logs, base and trunk of trees, and rocks (including limestone and sandstone).

LEPTODONTACEAE

Pseudocryphaea Brid. ex Broth.

P. domingensis (Spreng.) W. R. Buck [*P. flagellifera* (Brid.) E. Britton] BRAZIL. **Acre**: *Reese & McPherson 13173* (US); **Amazonas**: *Ule 2343* (Brotherus, 1906); **Pará**: *Fróes 27039* (SP; Yano, 1992); **Rondônia**: *Lisboa et al. 3405* (MG; Lisboa & Yano, 1987). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13865* (NY). On trunk of treelets and trees.

LEUCOBRYACEAE [Ref.: Williams 1913; Yano 1982]

Leucobryum Hampe

L. albidum (Brid. ex P. Beauv.) Lindb. BOLIVIA. **Beni**: *Reese 12766, 12884* (MO, NY). BRAZIL. **Pará**: *Lleras & Kirkbride 1172* (INPA; Yano, 1982); **Rondônia**: *Maas & Maas 389* (INPA; Yano, 1982); also known from Mato Grosso at 720 m (*Prance et al. 19249*, NY). On logs and trees.

L. crispum Müll. Hal. COLOMBIA. **Vaupés**: *Schultes & Cabrera 17563* (NY). BRAZIL. **Amazonas**: *Griffin et al. 421* (MO); also recorded for Roraima at 1000 m (*Buck et al. 1945*, NY). On base and trunk of trees, also logs and rocks.

L. juniperoideum (Brid.) Müll. Hal. BRAZIL. **Acre**: *Monteiro & Damião 387, 550* (INPA, SP; Yano, 1982); **Amazonas**: *Buck 2760* (MO, NY); also at 800 m from Roraima (*Buck et al. 1952*, NY). On tree trunks and rocks.

L. martianum (Hornsch.) Hampe BOLIVIA. **La Paz**: *Williams 1870* (NY). BRAZIL. **Acre**: *Prance et al. 11928* (NY); **Amapá**: *Mori & Cardoso 17438* (NY); **Amazonas**: *Buck 2403* (NY); **Mato Grosso**: *Reese 16054* (NY); **Pará**: *Reese 16049* (NY); **Rondônia**: *Reese 13507* (MO, NY); **Roraima**: *Buck et al. 1905* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16055* (COL, MO, NY); **Guainía**: *Churchill et al. 17673* (COL, MO, NY); **Meta**: *Callejas & Marulanda 7143* (HUA, NY); **Vaupés**: *Schultes 13118* (MO). ECUADOR. **Pastaza**: *Øllgaard et al. 34942* (AAU); **Sucumbíos**: *Heikkinen RH-1990-160* (NY). PERU. **Loreto**: *Killip & Smith 29990* (NY), *Timme 12897* (MO); **San Martin**: *Frahm et al. 1427* (NY). VENEZUELA. **Amazonas**: *Liesner 3326-A* (MO), *Buck 11087* (NY); **Bolívar**: *Steyermark et al. 12939* (NY). On exposed roots, base and trunk of trees, common on logs, less frequent on rocks, soil, and wet sandy soil.

L. subobtusifolium (Broth.) B. H. Allen [*Ochrobryum parvulum* Besch.] BOLIVIA. **Beni**: *Reese 12908* (MO, NY). BRAZIL. **Amazonas**: *Spruce 73 p.p.* (BR; Allen, 1992); **Rondônia**: *McFarland 329* (MO). COLOMBIA. **Arauca**: *Churchill et al. 18945* (COL, MO, NY); **Caquetá**: *Betancur & Velásquez 1748* (HUA, MO). On logs, base of trees and soil.

Ochrobryum Mitt. [Ref.: Allen 1992]

O. gardneri (Müll. Hal.) Lindb. [*O. obtusifolium* (Müll. Hal.) Mitt.] BOLIVIA. **Santa Cruz**: *Lewis 85-1036* (MO). BRAZIL. **Rondônia**: *Vieira et al. 505* (MO). On trunk of trees, also charred wood.

O. subulatum Hampe in Besch. [*O. stenophyllum* Besch.] BOLIVIA. **Beni**: *Reese 12910, 13130* (MO, NY). BRAZIL. **Acre**: *Reese & McPherson 13263* (MO, NY); **Amazonas**: *Buck 3081* (MO); **Mato Grosso**: *Prance et al. 19149* (NY), *Prance & Ramos 6910* (NY); **Rondônia**: *Reese 13488* (MO, NY), *McFarland et al. 138* (MO, NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 17026* (HUA, MO, NY). Also Venezuelan Bolívar at 920 m (*Steyermark et al. 112253*, MO). Common on logs, less frequent on trunk of trees, and rocks.

Octoblepharum Hedw. [Ref.: Florschütz 1955; Salazar Allen 1991, 1992]

O. africanum (Broth.) Cardot BRAZIL. **Amazonas**: *Griffin et al. 368* (SP; Yano, 1982); **Roraima**: *Nelson P21483* (SP; Yano, 1982). On sandy soil and trunk of trees.

O. albidum Hedw. BOLIVIA. **Beni**: *Reese 13045* (MO); **La Paz**: *Williams 1863* (NY); **Santa Cruz**: *Lewis 85-978* (MO, NY). BRAZIL. **Acre**: *Reese & McPherson 13162* (NY), *Daly et al. 7700* (NY); **Amazonas**: *Reese 12678* (NY); **Mato Grosso**: *Lisboa et al. 382* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Plowman et al. 8544* (MO, NY); **Rondônia**: *Reese 13678* (NY); **Roraima**: *Hopkins et al. 857* (MO). COLOMBIA. **Amazonas**: *Churchill et al. 16174* (COL, MO, NY); **Guainía**: *Churchill et al. 17627* (COL, NY); **Putumayo**: *King & Guevara C-1071* (US); **Vaupés**: *Schultes & Cabrera 14195* (MO). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13815* (NY); **Pastaza**: *Holm-Nielsen et al. 22053* (AAU, MO); **Sucumbíos**: *Balslev 84925* (AAU). PERU. **Loreto**: *Solomon 3502* (MO); **Madre de Dios**: *Matthews B-86582* (MO). VENEZUELA. **Amazonas**: *Liesner 3525* (MO). On logs, base, trunk and branches of palms, trees and treelets, infrequent on soil and soil over rocks.

O. ampullaceum Mitt. BRAZIL. **Amazonas**: *Buck 2147* (MO); **Pará**: *Lleras & Kirkbride 1173* (INPA; Yano, 1982); **Rondônia**: *McFarland 307* (MO); also Roraima at 800 m (*Prance et al. 21483*; INPA, Yano, 1982). On trunk of trees and palms.

O. cocuiense Mitt. [*O. pellucidum* Müll. Hal.] BOLIVIA. **Beni**: *Reese 13055* (MO). BRAZIL. **Acre**: *Prance et al. 12457* (INPA; Yano, 1982); **Amazonas**: *Buck 2415* (MO); **Pará**: *Ledoux 151* (IAN; Yano, 1982); **Rondônia**: *Reese 13302* (MO); **Roraima**: *Buck 1816* (INPA, SP; Yano, 1982); also Mato Grosso at 720 m (*Prance et al. 19407*, INPA; Yano, 1982). COLOMBIA. **Caquetá**: *Betancur et al. 1922* (HUA, MO). ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 702* (AAU). On trunk of trees and palms, logs, and rocks.

O. cylindricum Schimp. ex Mont. BRAZIL. **Amazonas**: *Buck 2201* (MO); **Mato Grosso**: *Damião 776* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Occhioni 38* (MO); **Rondônia**: *Reese 13678* (INPA; Yano, 1982); **Roraima**: *Prance et al. 19955* (INPA; Yano, 1982).

O. erectifolium Mitt. ex R. S. Williams BRAZIL. **Amazonas**: *Buck 2652* (MO); **Rondônia**: *Reese 13658* (INPA; Yano, 1982). COLOMBIA. **Guainía**: *Churchill et al. 17727* (COL, NY). On rocks.

O. leucobryoides O. Yano BRAZIL. **Amazonas**: *Griffin et al. 401* (FLAS, INPA; Yano, 1993); **Roraima**: *Buck et al. 1868* (INPA, NY; Yano, 1993). On soil and rocks.

O. pulvinatum (Dozy & Molk.) Mitt. BRAZIL. **Acre**: *Prance et al. 11904* (INPA; Yano, 1982); **Amazonas**: *Silva 810* (NY); **Amapá**: *Egler & Irwin 46455* (NY; Yano, 1982); **Mato Grosso**: *Lisboa et al. 262* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Sobel et al. 4914* (MO, NY); **Rondônia**: *McFarland et al. 7* (MO); **Roraima**: *Buck 2012* (SP; Yano, 1982). COLOMBIA. **Amazonas**: *Churchill et al. 16196* (COL, MO, NY); **Caquetá**: *Churchill & Betancur 17008* (NY); **Guainía**: *Churchill et al. 17672* (MO, NY); **Meta**: *Schultes 11113* (MO); **Putumayo**: *King & Guevara C-1059* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13861* (AAU, NY); **Sucumbíos**: *Heikkinen RH-1990-162* (NY). PERU. **Loreto**: *Timme 13721* (MO). VENEZUELA. **Amazonas**: *Buck 12938* (NY). On logs, exposed roots, base and trunk of trees and palms.

O. rhaphidostegium Müll. Hal. ex Broth. BRAZIL. **Mato Grosso**: *Prance et al. 18367* (INPA; Yano, 1982); **Rondônia**: *Reese 13333* (INPA; Yano, 1982); **Roraima**: *Nelson 21337* (SP; Yano, 1982). On tree trunks and rocks.

O. stramineum Mitt. BRAZIL. **Acre**: *Monteiro & Damião 386* (INPA, SP; Yano, 1982); **Amazonas**: *Buck 1763* (INPA). COLOMBIA. **Amazonas**: *Churchill et al. 16088* (COL, MO, NY). ECUADOR. **Sucumbíos**: *Brucculeri 47988* (NY). VENEZUELA. **Amazonas**: *Buck 12818-d* (NY). On trunk and fibers leaf sheaths of palms.

LEUCOMIACEAE

Leucomium Mitt. [Ref.: Allen 1987]

L. strumosum (Hornsch.) Mitt. [*L. acrophyllum* (Hampe) Mitt., *L. compressum* Mitt., *L. lignicola* Spruce] BOLIVIA. **Beni**: *Reese 13109* (NY). BRAZIL. **Acre**: *Prance et al. 12235* (NY); **Amapá**: *Mori & Cardoso 17111* (NY); **Amazonas**: *Buck 3051* (MO, NY); **Pará**: *Reese 16627* (MO, NY); **Rondônia**: *Reese 13546* (NY); **Roraima**: *Prance 19949* (NY). COLOMBIA. **Amazonas**: *Schultes & Cabrera 17783* (MO); **Putumayo**: *King & Guevara C-1041* (US); **Vaupés**: *Schultes & Cabrera 13271* (US). ECUADOR. **Morona-Santiago**: *Ortega 611* (MO); **Napo**: *Churchill & Sastre-D. J. 13776* (NY); **Sucumbíos**: *Heikkinen RH-1990-168* (NY). PERU. **Junín**: *Killip & Smith 26727* (NY); **Loreto**: *Timme 6263* (MO). VENEZUELA. **Amazonas**: *Buck 11195* (NY). On logs, tree stumps, base and lower trunk of trees, lianas, also rocks and occasionally moist sandy soil.

Philophyllum Müll. Hal. [Ref.: Buck 1992]

P. tenuifolium (Mitt.) Broth. PERU. **Loreto**: *Timme & Mockford 6357* (MO, NY). Restricted to tank bromeliads, immersed or emergent. Also known from Brazilian Minas Gerais, Río de Janeiro, Santa Catarina and São Paulo, extending in elevation to 2150 m.

LEUCOPHANACEAE

Leucophanes Brid. [Ref.: Salazar Allen 1993]

L. molleri Müll. Hal. [*L. brasiliense* Broth., *L. calymperatum* Müll. Hal., *L. mittenii* Cardot in Paris] BRAZIL. **Amazonas**: *Buck 3186* (NY), *Buck 2875* (MO); **Rondônia**: *Reese 13516* (NY); also from Roraima at 800 m (*Buck et al. 1945*, NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 16950-B* (COL, NY). ECUADOR. **Napo**: *Fransén 52-A* (AAU, GB); **Sucumbíos**: *Heikkinen RH-1990-133* (NY). On trunk of trees and lianas.

MACROMITRIACEAE

Groutiella Steere

G. apiculata (Hook.) H. A. Crum & Steere [*G. mucronifolia* (Hook. & Grev.) H. A. Crum & Steere] BRAZIL. **Pará**: (Montagne, 1835).

G. chimborazense (Mitt.) Florsch. BRAZIL. **Pará**: *Reese 16683* (MO). On tree trunks.

G. obtusa (Mitt.) Florsch. [*G. rugosa* (Grout) H. A. Crum & Steere] BRAZIL. **Pará**: *Davidse et al. 17600* (MO). COLOMBIA. **Amazonas**: *Churchill et al. 16134* (COL, NY); **Putumayo**: *Giraldo C. et al. 2163* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 14416* (NY). PERU. **Loreto**: *Simpson Br-165* (MO). On trunk and extending into the canopy of trees and palms.

G. tomentosa (Hornsch.) Wijk & Margard. [*G. fragilis* (A. Jaeger) H. A. Crum & Steere, *G. schlumbergeri* (Schimp.) Wijk & Margad.] BRAZIL. **Amazonas**: *Spruce 110-B* (NY; Mitten, 1869); **Mato Grosso**: *Lisboa et al. 252* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16161* (MO). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13860* (AAU, NY); **Sucumbíos**: *Heikkinen RH-1990-332-C* (NY). On logs.

G. wagneriana (Müll. Hal.) H. A. Crum & Steere BRAZIL. **Rondônia**: *Fife et al. 4159* (MO). On trunk of trees.

Macromitrium Brid.

M. cirrosum (Hedw.) Brid. BRAZIL. **Amapá**: *Mori et al. 17541* (NY); **Pará**: *Reese 16620* (MO, NY). On trunk and branches of trees.

M. emarginatum Broth. BRAZIL. **Amazonas**: *Ule 2320* (Brotherus, 1906). On branches.

M. guatemaliense Müll. Hal. [*M. serrulatum* Mitt.] BRAZIL. **Pará**: *Reese 16312, 16687* (MO). On trunk of trees and lianas.

M. negrense Mitt. BRAZIL. **Amazonas**: *Spruce 106* (NY). On trunk of trees.

M. pellucidum Mitt. BRAZIL. **Amazonas**: *Buck 2621* (MO, NY), *Prance et al. 11373* (NY); **Pará**: *Mexia 6038* (NY). VENEZUELA. **Amazonas**: *Delascio C. & Guánchez 10769* (MO). On logs and trunk and branches of treelets and trees.

M. podocarpi Müll. Hal. [*M. portoricense* R. S. Williams, fide B. H. Allen] BRAZIL. **Amazonas**: *Griffin et al. 30* (MO), 9–12 Jul 1979, *Buck s.n.* (NY); also Roraima at 800 m (*Buck et al. 2013*, NY). ECUADOR. **Pastaza**: *Løjtnant & Molau 13384* (AAU, MO). On trunk and branches of trees.

M. punctatum (Hook. & Grev.) Brid. [*M. pentastichum* Müll. Hal.] BRAZIL. **Amazonas**: *Buck 2143* (MO, NY), *Prance et al. 11381* (NY). COLOMBIA. **Boyacá**: *Churchill et al. 18921* (NY). On log, trunk and branches of treelets and trees.

M. richardii Schwägr. BRAZIL. **Amazonas**: (Vattimo-Gil & Vattimo, 1980). ECUADOR. **Sucumbíos**: *Brucculeri 47991* (NY). On trunk of trees.

M. stellulatum (Hornsch.) Brid. BOLIVIA. **Beni**: *Lewis 89-040-d3* (MO); **La Paz**: *Williams 1830* (NY). BRAZIL. **Acre**: *Reese 13231* (NY); **Amazonas**: *Martius s.n.*? (Hornschuch, 1840); **Pará**: *Reese 16242* (MO, NY); **Roraima**: *Prance et al. 9254* (NY). ECUADOR. **Pastaza**: *Løjtnant & Molau 13344* (AAU). PERU. **Loreto**: *Timme 12949-D* (MO). On base, trunk and branches of treelets and trees, also on rocks (sandstone).

M. subapiculatum Broth. = ? *Groutiella* BRAZIL. **Amazonas**: *Ule 2273* (Brotherus, 1906). On branches of trees.

M. sulcatum (Hook.) Brid. BRAZIL. **Amazonas**: *Martius s.n.*? (Hornschuch, 1840).

Schlotheimia Brid.

S. jamesonii (Arnott) Mitt. BRAZIL. **Maranhão**: *Santos et al. 722* (NY). On trunk of trees.

S. recurvifolia Hornsch. BRAZIL. **Amazonas**: *Martius s.n.*? (Hornschuch, 1840).

S. rugifolia (Hook.) Schwägr. BRAZIL. **Goiás**: *Plowman et al. 8153* (MO); **Pará**: *Reese 16670* (MO, NY); **Rondônia**: *Fife et al. 4234* (NY); also Amazonas at 1250 m (*Samuels et al. 0409*, MO). COLOMBIA. **Vaupés**: *Schultes & Cabrera 14416* (NY). On trunk of trees, and rocks.

S. torquata (Hedw.) Brid. BRAZIL. **Amazonas**: *Prance et al. 11378* (NY); **Roraima**: *Prance et al. 10100* (NY). ECUADOR. **Napo**: *Holm-Nielsen & Jeppesen 694* (AAU). On trunk and branches of treelets and trees.

METEORIACEAE [Ref.: Buck 1994a]

Floribundaria M. Fleisch.

F. usneoides (Broth.) Broth. COLOMBIA. **Caquetá**: *Churchill & Betancur 17017-B* (NY). On branches of treelet.

Meteoridium (Müll. Hal.) Manuel [Ref.: Manuel 1977a]

M. remotifolium (Müll. Hal.) Manuel [*Meteoriopsis remotifolium* (Müll. Hal.) Broth.] COLOMBIA. **Caquetá**: *Churchill & Betancur 17017* (NY). PERU. **Loreto**: *Killip & Smith 27651* (NY). On trunk of trees and treelets, also epiphyllous. A number of Amazonia collections originally identified as this species are referable to *Zelometorium patulum*.

Orthostichella Müll. Hal. [Ref.: Buck 1994b]

O. pentasticha (Brid.) W. R. Buck [*Pilotrichella pentasticha* (Brid.) Wijk & Margad., *P. versicolor* (Müll. Hal.) A. Jaeger] BOLIVIA. **La Paz**: *Williams 1945* (NY); **Santa Cruz**: *Nee 38863* (NY). BRAZIL. **Amazonas**: (Hornschuch, 1840); **Rondônia**: *Lisboa et al. 2654* (MG; Lisboa & Yano, 1987). COLOMBIA. **Putumayo**: *King & Guevara C-1046* (US); **Vaupés**: *Schultes 11740* (NY). ECUADOR. **Morona-Santiago**: *Harling 2242-B* (Crum, 1957); **Napo**: *Holm-Nielsen & Jeppesen 760* (AAU, MO, GB); **Sucumbíos**: *Brandbyge & Asanza C. 30610* (AAU). Mostly pendent from branches, occasionally on trunk, of treelets and trees.

Squamidium (Müll. Hal.) Broth. [Ref.: Allen & Crosby 1986b]

S. leucotrichum (Taylor) Broth. BRAZIL. **Amazonas**: *Prance et al. 16130* (NY), *Buck 2452* (NY); also known from Roraima at 1400 m (*Prance et al. 9420*, NY). VENEZUELA. **Bolívar**: *Steyermark 88623* (MO, NY). Only recorded from Ecuadorian Napo down to 600 m. On exposed roots, trunk and branches of treelets, trees and palms.

S. nigricans (Hook.) Broth. ECUADOR. **Napo**: *Grubb et al. 2933* (Bartram, 1964). On trunk of trees.

Zelometeorium Manuel [Ref.: Manuel 1977b]

Z. ambigum (Hornsch.) Manuel [*Meteoriopsis ambigua* (Hornsch.) Broth.] BRAZIL. **Amazonas**: *Schultz 6924* (H-BR; Manuel 1977b). On trunk and branches of treelets and trees.

Z. patulum (Hedw.) Manuel [*Meteoriopsis patula* (Hedw.) Broth.] BOLIVIA. **Beni**: *Reese 12814* (MO, NY). BRAZIL. **Acre**: *Krukoff 5248* (NY), *Maas et al. P12882* (NY); **Amazonas**: *Buck 2719* (NY), *Griffin et al. 446* (MO); **Mato Grosso**: *Prance et al. 19257* (NY); **Pará**: *Plowman et al. 9811* (MO, NY); **Rondônia**: *Reese 13298* (MO); **Roraima**: *Buck et al. 1804* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16161* (COL, NY); **Boyacá**: *Churchill et al. 18923-B* (NY); **Caquetá**: *Betancur et al. 1478* (NY); **Guainía**: *Churchill et al. 17705* (COL, NY); **Meta**: *Callejas 7037* (HUA, NY); **Putumayo**: *King & Guevara C-1072* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13802* (MO, NY); **Pastaza**: *Holm-Nielsen et al. 21871* (AAU, MO); **Sucumbíos**: *Balslev 84918* (AAU). PERU. **Junín**: *Killip & Smith 26794* (NY); **Loreto**: *Timme 12936-A* (MO); **Madre de Dios**: *Matthews B-86616* (MO). VENEZUELA. **Amazonas**: *Buck 12761* (NY); **Bolívar**: *Steyermark et al. 112979* (MO). On trunk and branches of palms, shrubs, treelets and trees, also lianas, occasionally on humus and logs; used by birds for construction of nests. Many collections (particularly of Projeto Flora) determined as *Z. recurvifolium* have been redetermined by S. Visnadi as this species. Reports of *Z. patens* Hook. are likely *Z. patulum* or *Z. recurvifolium*.

Z. recurvifolium (Hornsch.) Manuel [*Meteoriopsis onusta* (Spruce ex Mitt.) Broth., *M. recurvifolia* (Hornsch.) Broth.] BRAZIL. **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 276] (NY), *Buck 2249* (NY); **Pará**: *Reese 16076* (NY); **Rondônia**: *McFarland et al. 161* (NY). COLOMBIA. **Amazonas**: *Churchill et al.* (COL, NY); **Putumayo**: *Cuatrecasas 11471-B* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13821* (AAU,

MO, NY); **Pastaza**: *Øllgaard et al. 35238* (AAU). PERU. **Loreto**: *Killip & Smith 27858* (NY). On trunk, branches and leaves of treelets and trees.

NECKERACEAE [Ref.: Sastre-D. J. 1987]

Isodrepanium (Mitt.) E. Britton

I. lentulum (Wilson) E. Britton BRAZIL. **Rondônia**: *McFarland 163* (MO). VENEZUELA. **Bolívar**: *Steyermark 88578* (NY). On base and trunk of trees.

Neckeropsis Reichardt

N. disticha (Hedw.) Kindb. [*N. inundata* Broth., *N. microtheca* (Herzog) Broth., *N. pabstiana* (Müll. Hal.) Broth.] BOLIVIA. **Beni**: *Reese 12880* (MO, NY); **La Paz**: *Williams 1999* (NY). BRAZIL. **Acre**: *Maas et al. P12881* (NY); **Amazonas**: *Lisboa 818* (NY); **Pará**: *Pires 9929* (NY); also Roraima at 800 m (*Buck et al. 2028*, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16146* (COL, MO, NY); **Boyacá**: *Churchill et al. 18931* (COL, NY); **Caquetá**: *Churchill & Betancur 16983* (HUA, NY); **Meta**: *Schultes 11135* (NY); **Vaupés**: *Schultes 11755* (NY); **Vichada**: *Churchill et al. 17755* (COL, NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13657* (AAU, MO, NY); **Sucumbios**: *Heikkinen RH-1990-88* (NY). PERU. **Loreto**: *Hegewald & Hegewald 8230* (MO). VENEZUELA. **Bolívar**: *Steyermark et al. 113025* (MO). On exposed roots, trunk and branches of treelets and trees, also lianas; infrequently on rocks or sandy soil.

N. undulata (Hedw.) Reichardt [*N. amazonica* Mitt.] BOLIVIA. **Beni**: *Reese 13111* (MO, NY). BRAZIL. **Acre**: *Reese 13208* (NY); **Amapá**: *Irwin et al. 47962* (NY); **Amazonas**: *Buck 2470* (MO, NY); **Maranhão**: *Vital 2946* (SP; Yano, 1992); **Mato Grosso**: *Prance et al. 19255* (NY); **Pará**: *Reese 16423* (MO, NY); **Rondônia**: *McFarland et al. 148* (NY); also Roraima at to 800 m (*Buck et al. 2046*, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16160* (COL, NY); **Boyacá**: *Churchill et al. 18927* (COL, NY); **Caquetá**: *González et al. 2319* (COL, NY); **Meta**: *Callejas & Marulanda 7103* (HUA, NY); **Putumayo**: *Giraldo-C. et al. 2161* (COL, NY); **Vichada**: *Churchill et al. 17756* (COL, NY). ECUADOR. **Morona-Santiago**: *Harling 2245-B* (S; Crum, 1957); **Napo**: *Churchill & Sastre-D. J. 13785* (AAU, NY); **Pastaza**: *Løjtnant & Molau 13362* (AAU). PERU. **Loreto**: *Hegewald & Hegewald 6391* (MO), *Timme 13719* (MO); **Madre de Dios**: *Matthews B-86617* (MO). VENEZUELA. **Amazonas**: *Buck 11014* (NY); **Bolívar**: *Steyermark et al. 113033* (MO). On exposed roots, trunk, and branches of treelets, trees and palms, also on lianas, logs, tree stumps, and rocks.

PHYLLODREPANIACEAE [Ref.: Yano 1981b]

Mniomalia Müll. Hal.

M. viridis (Mitt.) Müll. Hal. BRAZIL. **Amazonas**: *Vital & Yano 562* (NY); **Mato Grosso**: *Prance et al. 19042* (NY); **Pará**: *Reese 16511* (NY); **Roraima**: *Buck et al. 1914* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16125* (COL, NY); **Vaupés**: *Schultes 12320* (COL), *Schultes & Cabrera 11942* (NY). ECUADOR. **Pastaza**: *Spruce 557* (NY). PERU. **Loreto**: *Timme 12949-C* (MO). VENEZUELA. **Amazonas**: *Buck 11475* (NY). On trunk of trees and palms, also on lianas and logs.

Phyllodrepanium Crosby

P. falcifolium (Schwägr.) Crosby BRAZIL. **Amapá**: *Rabelo & Cardoso 2981* (NY); **Amazonas**: *Prance 20988* (NY); **Mato Grosso**: *Damião 2433* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16759* (NY); **Roraima**: *Buck et al. 1840* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16185* (COL, NY); **Vaupés**: *Schultes & Cabrera 13265* (COL, NY). VENEZUELA. **Amazonas**: *Buck 11239* (NY). On base and trunk of trees, logs, rarely on rocks.

PHYLLOGONIACEAE

Phyllogonium Brid.

P. fulgens (Hedw.) Brid. ECUADOR. **Pastaza**: *Holm-Nielsen & Jeppesen 557* (MO, NY); also recorded from Napo at 600 m (*Holm-Nielsen & Jeppesen 700*, AAU). On branches of treelets and trees.

PILOTRICHACEAE [syn. Callicostaceae] [Ref.: Welch 1976]

Brymela Crosby & B. H. Allen

B. acuminata (Mitt.) W. R. Buck [*Hookeriopsis acuminata* (Mitt.) A. Jaeger] COLOMBIA. **Putumayo**: *King &*

Guevara C-1084 (COL). ECUADOR. **Pastaza**: *Spruce 684* (NY). On leaf litter and logs.

B. parkeriana (Hook. & Grev.) W. R. Buck [*Hookeriopsis parkeriana* (Hook. & Grev.) A. Jaeger] BRAZIL. **Amazonas**: *Buck 3165* (FLAS, MO, NY, US), *Griffin et al. 230* (FLAS, MO, NY), *578*, *1007* (FLAS); **Mato Grosso**: *Lisboa et al. 576* (INPA; Lisboa & Lisboa, 1978). COLOMBIA. **Vaupés**: *Schultes & Cabrera 12335* (FLAS), *12790* (NY), *13583* (US). PERU. **Loreto**: *Gentry et al. 19067* (MO). VENEZUELA. **Amazonas**: *Maguire & Politi 27944* (NY), *Cowan & Wurdack 31123* (NY), *Buck 11264* (NY). **Bolívar**: *Steyermark 74732* (MO, NY). On trunk, branches, and leaves of trees and treelets, also on lianas and termite nest on tree.

Callicostella (Müll. Hal.) Mitt.

C. depressa (Hedw.) A. Jaeger BRAZIL. **Acre**: *Prance et al. 12553* (NY); **Amazonas**: *Schäfer-Verwimp & Verwimp 7235* (MO); **Mato Grosso**: *Berg et al. P18666* (NY); **Pará**: *Reese 16222*, *16568* (NY); **Rondônia**: *Vieira et al. 454* (NY); **Roraima**: *Buck et al. 1992* (NY). PERU. **Loreto**: *Hegewald & Hegewald 6409* (MO). VENEZUELA. **Amazonas**: *Guariglia et al. 1728* (NY). Commonly found on logs, also on rocks, tree stumps, lianas and tree trunks.

C. glabrata Broth. nom. nud. BRAZIL. **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 261] (Brotherus, 1906), *Ule 2249* (Brotherus, 1906). On decaying wood.

C. juruensis Broth. BRAZIL. **Amazonas**: *Ule 2294* (Brotherus, 1906). On logs.

C. merkelii (Hornsch.) A. Jaeger [*C. vatteri* E. B. Bartram, fide Florschütz-de Waard, 1986] ECUADOR. **Pastaza**: *Spruce 634* (NY); **Sucumbíos**: *Balslev 84924* (AAU). VENEZUELA. **Amazonas**: *Buck 12762* (NY). On rocks in streams.

C. microcarpa Ångstr. BRAZIL. **Amazonas**: *Spruce 659* (NY); **Pará**: *Spruce 662* (NY). On rocks, logs and base of trees, associated with streams and rivers.

C. pallida (Hornsch.) Ångstr. [*C. aspera* (Mitt.) A. Jaeger, fide Florschütz-de Waard, 1986] BOLIVIA. **La Paz**: *Williams 1954* (NY). BRAZIL. **Acre**: *Prance et al. 12461* (NY); **Amapá**: *Mori & Cardoso 17141* (NY); **Amazonas**: *Buck 3184* (NY); **Mato Grosso**: *Lisboa et al. 342* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Mexia 5912-A1* (NY), *Cid et al. 1996* (NY); **Rondônia**: *McFarland et al. 83* (MO, NY); **Roraima**: *Buck et al. 1919* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16184* (COL, MO, NY); **Caquetá**: *Churchill & Betancur 17011* (HUA, NY); **Guainía**: *Churchill et al. 17720* (COL, NY). ECUADOR. **Morona-Santiago**: *Harling 2275* (S); **Napo**: *Churchill & Sastre-D. J. 13812* (AAU, MO, NY); **Pastaza**: *Holm-Nielsen et al. 21902* (AAU, MO, NY); **Sucumbíos**: *Balslev 84921* (AAU). PERU. **Junín**: *Killip & Smith 26509* (NY); **Loreto**: *Mexia 6439* (MO, NY), *Hegewald & Hegewald 6338* (MO). VENEZUELA. **Amazonas**: *Buck 12975* (NY). On logs, exposed roots, base and trunk of trees and palms, also on soil and rocks.

C. paludicola Broth. BRAZIL. **Amazonas**: *Ule 1974* [E. Ule, Bryotheca brasiliensis 261] (Brotherus, 1906).

C. pellucida (Mitt.) A. Jaeger BRAZIL. **Amazonas**: *Spruce 642* (NY). On logs.

C. rivularis (Mitt.) A. Jaeger BOLIVIA. **La Paz**: *Williams 2882* (NY). ECUADOR. **Pastaza**: *Spruce 668* (NY). On logs and rocks.

C. rufescens (Mitt.) A. Jaeger BRAZIL. **Amazonas**: *Ule 2293* (Brotherus, 1906); **Pará**: *Spruce 629* (NY). On logs.

C. saxatilis (Mitt.) A. Jaeger ECUADOR. **Pastaza**: *Spruce 634* (NY). PERU. **Loreto**: *Killip & Smith 28489* (NY). On soil bank

Crossomitrium Müll. Hal. [Ref.: Allen 1990]

C. acuminata E. B. Bartram COLOMBIA. **Amazonas**: *Churchill et al. 16155* (COL, NY). On leaves.

C. epiphyllum (Mitt.) Müll. Hal. [*C. orbiculatum* Müll. Hal.] ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13660* (NY). PERU. **Loreto**: *Doppelbaur p.p.* (M; Allen, 1990). On tree branches, decaying logs.

C. patrisiae (Brid.) Müll. Hal. [*C. spruceanum* Müll. Hal., *C. ulei* Müll. Hal.] BRAZIL. **Acre**: *Prance et al. 12473* (NY); **Amazonas**: *Buck 2505* (MO, NY); **Pará**: *Reese 16729* (MO, NY); **Rondônia**: *McFarland et al. 182* (MO, NY); **Roraima**: *Buck et al. 1854* (NY). COLOMBIA. **Putumayo**: *King & Guevara C-1126* (US); **Vaupés**: *Schultes 12293-A* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13863* (NY); **Pastaza**: *Spruce 790* (NY); **Sucumbíos**: *Balslev 84910* (AAU, NY). PERU. **Amazonas**: *Berlin 778* (MO); **Junín**: *Killip & Smith 26505* (NY); **Loreto**: *Timme 13707* (MO); **San Martín**: *Frahm et al. 1433* (MO). VENEZUELA. **Amazonas**: *Buck 12569* (NY); **Bolívar**: *Steyermark et al. 112929* (MO). Commonly found on leaves,

also tree and treelet branches, and fern fronds.

C. saprophilum Broth. ECUADOR. **Napo**: *Jaramillo & Coello 4397* (NY). Epiphytic.

Cyclodictyon Mitt.

C. aeruginosum (Mitt.) Kuntze ECUADOR. **Pastaza**: *Spruce 605* (NY).

C. albicans (Hedw.) Kuntze ECUADOR. **Napo**: *Andrade 33093* (AAU), *Steere E-112* (NY). PERU. **Junín**: *Killip & Smith 24823* (NY); **San Martín**: *Frahm et al. 1445* (MO). On logs.

C. bombonasicum (Mitt.) Kuntze ECUADOR. **Pastaza**: *Spruce 598* (NY).

C. roridum (Hampe) Kuntze ECUADOR. **Pastaza**: *Spruce 593* (NY).

Hypnella (Müll. Hal.) A. Jaeger [Ref.: Crosby et al. 1985]

H. pallescens (Hook.) A. Jaeger [*H. cymbifolia* (Hampe) A. Jaeger] BRAZIL. **Amazonas**: *Stevenson et al. 942* (NY); **Pará**: *Spruce 616* (NY). COLOMBIA. **Amazonas**: *Sipman & Duivenvoorden 28481* (NY); **Guainía**: *Churchill et al. 17722* (COL, MO, NY); **Vaupés**: *Schultes & Cabrera 19507* (CANM; Crosby et al., 1985). ECUADOR. **Pastaza**: *Spruce 620* (NY). VENEZUELA. **Amazonas**: *Buck 12722* (MO, NY). PERU. **Loreto**: *Revilla 932-A* (MO). On logs.

Lepidopilum (Brid.) Brid. [Ref.: Churchill 1988, 1992]

L. affine Müll. Hal. [*L. allionii* Broth., *L. ambiguum* Broth., *L. antisanense* E. B. Bartram, *L. mittenii* Müll. Hal., *L. obtusulum* Müll. Hal., *L. pumilum* Mitt., *L. subobtusulum* Broth.] BRAZIL. **Acre**: *Ule 298* (H-BR); **Amazonas**: *Spruce 748* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16135* (COL, NY); **Meta**: *Schultes & Cabrera 11165* (NY). ECUADOR. **Morona-Santiago**: *Harling 2241-B* (S); **Napo**: *Churchill & Sastre-D. J. 13786* (NY); **Pastaza**: *Holm-Nielsen et al. 22286* (AAU). PERU. **Loreto**: *Mexia 6205-A* (MO, NY), *Timme 12909-A* (MO); **San Martín**: *Spruce 747* (NY). On logs, exposed roots, base, and trunk of treelets and trees.

L. arcuatum Mitt. ECUADOR. **Pastaza**: *Spruce 733* (NY). On branches of shrubs and treelets.

L. brevipes Mitt. [*L. subfuscum* Mitt.] BRAZIL. **Amazonas**: *Spruce 737* (NY); **Rondônia**: *Fife et al. 4169* (NY); reports of *L. cuspidans* Mitt. from Brazil probably refer to *L. brevipes*. Also known from Ecuadorian Napo at 600 m (*Churchill & Sastre-D. J.* 13654, NY). On trunk and branches of shrubs and treelets.

L. curvifolium Mitt. ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13800* (NY); **Pastaza**: *Spruce 724* (NY). On branches of shrubs and treelets.

L. pallido-nitens (Müll. Hal.) Paris [*L. attenuatum* E. B. Bartram] ECUADOR. **Napo**: *Grubb 2939-A* (BM, MO). On rocks or logs in or along streams

L. polytrichoides (Hedw.) Brid. [*L. biductulosum* (P. Beauv.) Wijk & Margad.] BRAZIL. **Acre**: *Prance et al. 12551* (NY); **Amazonas**: *Buck 2472* (NY); reports for Pará and Rondônia likely refer to *L. surinamense*. COLOMBIA. **Amazonas**: *Churchill et al. 16121* (COL, MO, NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13744* (NY); **Pastaza**: *Spruce 713* (NY), *Holm-Nielsen & Jeppesen 944* (AAU, MO). PERU. **Loreto**: *Ule 2371* (FH, H-BR); **San Martín**: *Frahm et al. 1425* (MO). On exposed roots, buttresses, trunks and branches of treelets and trees, occasionally on lianas.

L. radicale Mitt. ECUADOR. **Pastaza**: *Spruce 769* (NY). Also reported from Amazonas, Brazil but not confirmed by specimens. On exposed roots and trunks of trees.

L. scabrisetum (Schwägr.) Steere [*Lepidopilum stolonaceum* Müll. Hal.] BRAZIL. **Amapá**: *Mori et al. 17208* (NY); **Amazonas**: *Buck 2487, 2587* (NY); **Roraima**: *Buck et al. 2006* (NY); reported also from Pará by Lisboa (1994). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13791-D* (NY). PERU. **Loreto**: *Killip & Smith 29788* (NY). VENEZUELA. **Bolívar**: *Bermúdez V-1213* (FLAS). On trunk and branches of treelets and trees, rarely on leaf litter or logs.

L. surinamense Müll. Hal. [*L. flexifolium* (Müll. Hal.) Mitt., *L. leptoloma* Broth., *L. subflexifolium* Müll. Hal.] BRAZIL. **Amazonas**: *Ule 265* (BM, H-BR, NY), *Buck 2761* (MO); **Pará**: *Reese 16078, 16829* (MO); **Rondônia**: *Fife et al. 4143* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16129* (COL, NY); **Caquetá**: *Churchill & Betancur 16996* (COL, NY); **Guainía**: *Churchill et al. 17719* (COL, NY); **Vaupés**: *Schultes 11754* (FH, FLAS, NY). ECUADOR. **Morona-Santiago**: *Haring 2241-B p.p.* (S, in coll. of *L. affine*); **Napo**: *Churchill & Sastre-D. J. 13787* (AAU, NY); **Pastaza**: *Spruce 721* (NY); **Sucumbíos**: *Balslev 84916* (AAU). PERU. **Junín**: *Ridoutt 11803* (FLAS, US); **Loreto**: *Killip & Smith 28463* (NY). VENEZUELA.

Amazonas: *Buck 11267* (NY). On exposed roots, trunk and branches of shrubs, treelets and trees, also on lianas, rarely on logs or leaves.

L. tortifolium Mitt. [*Cyclodictyon riparium* (Mitt.) Kuntze, *L. crispifolium* E. B. Bartram] BRAZIL. **Acre**: *Prance 12460* (NY); **Amazonas**: *Buck 2506* (NY). COLOMBIA. **Putumayo**: *King & Guevara C-1037* (US). ECUADOR. **Napo**: *Grubb et al. 2947* (BM, US); **Pastaza**: *Spruce 783* (NY). PERU. **San Martín**: *Frahm et al. 1629* (B, MO). Commonly on rocks associated with streams and waterfalls, rarely on logs.

Pilotrichidium Besch. [Ref.: Allen & Crosby 1986a]

P. callicostatum (Müll. Hal.) A. Jaeger ECUADOR. **Napo**: *Grubb et al. 2945* (MO). On logs and rocks in streams.

Pilotrichum Brid. [Ref.: Crosby 1969]

P. armatum Broth. [*Callicosta armata* (Broth.) Crosby] ECUADOR. **Napo**: *Benoist 4663* (PC; Crosby, 1969), *Steere E-106* (NY). On trees.

P. bipinnatum (Schwägr.) Mitt. [*Callicosta bipinnata* (Schwägr.) Müll. Hal.] BRAZIL. **Acre**: *Prance 12542* (NY); **Amapá**: *Pires et al. 50663* (NY); **Amazonas**: *Nelson 41* (NY); **Pará**: *Prance 22196* (NY); **Rondônia**: *McFarland et al. 288* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16194* (COL, MO, NY); **Caquetá**: *Sipman & Duivenvoorden 27934* (NY); **Vaupés**: *Schultes 12330-A* (NY). ECUADOR. **Morona-Santiago**: *Harling 2262-B* (S); **Napo**: *Churchill & Sastre-D. J. 13873* (NY); **Pastaza**: *Holm-Nielsen et al. 21834* (AAU, MO, NY); **Sucumbíos**: *Balslev 84917* (NY). PERU. **Loreto**: *Killip & Smith 29485-A* (NY). VENEZUELA. **Amazonas**: *Buck 11258* (NY, MO). On trunk and branches of trees and treelets, rarely on logs.

P. evanescens (Müll. Hal.) Crosby [*Callicosta evanescens* Müll. Hal.] BRAZIL. **Amazonas**: *Griffin et al. 577* (MO); **Pará**: *Reese 16111* (MO); **Roraima**: *Prance et al. 19962* (NY). COLOMBIA. **Vichada**: *Churchill et al. 17751* (COL, NY). On trunk and branches of treelets and trees, also on lianas.

P. fendleri Müll. Hal. [*Callicosta fendleri* (Müll. Hal.) Crosby] COLOMBIA. **Caquetá**: *Churchill & Betancur 16952* (HUA, NY); **Putumayo**: *King & Guevara 6133* (US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13836* (AAU, NY); **Sucumbíos**: *Andrade 33170* (AAU). On trunk and branches of trees and treelets.

Thamniopsis (Mitt.) Fleisch.

T. crugeriana (Müll. Hal.) W. R. Buck [*Hookeriopsis crugeriana* (Müll. Hal.) A. Jaeger] BRAZIL. **Amazonas**: *Buck 2466* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16139* (COL, MO, NY); **Boyacá**: *Churchill et al. 18929* (COL, NY); **Guainía**: *Churchill et al. 17635* (COL, MO, NY). On logs, rocks, and soil covered rocks in streams.

T. incurva (Hornsch.) W. R. Buck [*Hookeriopsis incurva* (Hornsch.) Broth.] BRAZIL. **Amazonas**: (cf. Yano, 1981). ECUADOR. **Pastaza**: *Øllgaard et al. 35510* (MO, NY). On logs.

T. killipii (R. S. Williams) E. B. Bartram [*Hookeriopsis killipii* R. S. Williams] PERU. **Loreto**: *Timme 12288* (MO). On trunk of shrubs.

Trachyxiphium W. R. Buck

T. tenue (Mitt.) W. R. Buck [*Hookeriopsis tenuis* (Mitt.) A. Jaeger] PERU. **Loreto**: *Timme 13718* (MO). On wood of footbridge.

POLYTRICHACEAE

Polytrichum Hedw.

P. commue Hedw. BRAZIL. **Amazonas**: *Fróes 2824-B* (IAN; Yano, 1992); also reported for Roraima (*Nelson P21441*, INPA, NY; Yano, 1992). On sandy soil and logs. *Polytrichum juniperinum* Hedw. is known from Roraima at 1800 m (Yano, 1992).

POTTIACEAE [Ref.: Zander 1993]

Barbula Hedw.

B. arcuata Griff. [*B. subulifolia* Sull.] ECUADOR. **Pastaza**: *Spruce 181* (NY). On soil.

B. indica (Hook.) Spreng. in Steud. [*B. cruegeri* Sond. ex Müll. Hal.] BRAZIL. **Acre**: *Maas et al. P13137* (NY); **Amazonas**: *Nelson et al. 1325* (NY). ECUADOR. **Morona-Santiago**: *Harling 2291* (S); **Napo**: *Churchill & Sastre-D. J. 13834* (AAU, NY). PERU. **Loreto**: *Mexia 6258-A* (MO, NY). On soil, mostly clay, and rocks including limestone, generally found along stream and river banks.

Dolotortula R. H. Zander

D. mniifolia (Sull.) R. H. Zander [*Tortula mniifolia* (Sull.) Mitt.] ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13845* (AAU, NY). PERU. **Loreto**: *Timme 14284* (MO). Moist or wet clay soil, along stream and river banks.

Hyophila Brid.

H. involuta (Hook.) A. Jaeger [*H. tortula* (Schwägr.) Hampe] BOLIVIA. **Beni**: *Reese 12839* (MO). BRAZIL. **Amazonas**: *Fife et al. 4332* (NY); **Pará**: *Reese 16800, 16191* (NY); **Rondônia**: *Fife et al. 4147* (NY). ECUADOR. **Napo**: *Grubb et al. 2952* (Bartram, 1964). On rocks, including sandstone, also on concrete and bricks associated with human occupation.

Hyophiladelphus R. H. Zander [Ref.: Zander 1995]

H. agrarius (Hedw.) R. H. Zander [*Barbula agraria* Hedw.] BRAZIL. **Acre**: *Maas et al. P13330* (NY), *Reese 13236* (NY); **Amazonas**: *Buck 2198* (MO, NY); also reported for Pará by Lisboa and Maciel (1994). Sites of human occupation, found on concrete and bricks.

Trichostomum Bruch

T. arboreum (Mitt.) R. H. Zander [*Hyophila arborea* (Mitt.) A. Jaeger] BRAZIL. **Pará**: *Mexia 6038-A* (MO, NY); **Roraima**: *Samuels et al. 0115* (MO, NY). On soil and soil covered rocks. Both collections cited above (those at NY) annotated by P. Sollamn (in 1993) as a state of *Pseudosymblepharis*.

T. tenuirostre (Hook. & Taylor) Lindb. [*Oxystegus tenuirostris* (Hook. & Taylor) A. J. E. Smith] BRAZIL. **Amazonas**: (?) *Prance et al. 15990* (NY); **Pará**: *Strudwick et al. 3598* (NY); **Rondônia**: *McFarland et al. 215* (NY); **Roraima**: *Buck 2050* (NY). On soil and trunk of trees.

PTERIGYNANDRACEAE

Trachyphyllum A. Gepp in Hiern

T. dusenii (Müll. Hal. ex Broth.) Broth. BRAZIL. **Goiás**: *Plowman et al. 8155* (MO). On trunk of trees.

PTEROBRYACEAE [Ref.: Buck 1991]

Calyptothecium Mitt. [Ref.: Churchill 1991a]

C. planifrons (Renauld & Paris) Argent [*Orthorrhynchidium planifrons* (Renauld & Paris) Renauld & Cardot] BRAZIL. **Pará**: *Reese 16751* (MO, NY); **Rondônia**: *Reese 13382* (NY). On trunk of shrubs, treelets and lianas.

Henicodium (Müll. Hal.) Kindb.

H. geniculatum (Mitt.) W. R. Buck [*Leucodontopsis geniculata* (Mitt.) H. A. Crum & Steere] BOLIVIA. **Beni**: *Reese 12902, 13029* (NY). BRAZIL. **Acre**: *Reese 13227* (NY); **Amapá**: *Mori & Cardoso 17556* (NY); **Amazonas**: *Buck et al. 1850* (NY); **Mato Grosso**: *Lisboa et al. 435* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16708* (MO); **Rondônia**: *McFarland et al. 217* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16126* (COL, NY); **Putumayo**: *King & Guevara C-1053* (US). ECUADOR. **Sucumbíos**: *Heikkinen RH-1990-332-A* (NY). PERU. **Loreto**: *Timme 14288* (MO). VENEZUELA. **Amazonas**: *Buck 11207* (NY). On trunk and branches of shrubs and trees, extending into canopy; also on fallen branches and trunks.

Hildebrandtiella Müll. Hal.

H. guyanense (Mont.) W. R. Buck [*Orthostichidium guyanense* (Mont.) Broth., *O. pentagonum* (Hampe & Lorentz) Müll. Hal.] BOLIVIA. **La Paz**: *Williams 1916* (NY). COLOMBIA. **Caquetá**: *Churchill & Betancur 16951* (HUA, NY). ECUADOR. **Napo**: *Grubb et al. 2934* (Bartram, 1964). On logs and branches of treelets and trees.

Jaegerina Müll. Hal.

J. scariosa (Lorentz) Arzeni BOLIVIA. **Beni**: *Reese 12860* (MO). BRAZIL. **Acre**: *Reese & McPherson 13269* (MO); **Mato Grosso**: *Prance 18363* (NY); **Pará**: *Reese 16422* (MO, NY); **Rondônia**: *Fife et al. 4101* (NY). VENEZUELA. **Bolívar**: *Boom & Grillo 6523* (NY). On trunk and branches of treelets and trees, also found on recently downed trees.

Orthostichopsis Broth.

O. praetermissa W. R. Buck [*O. auricosta* (Müll. Hal.) Broth., *O. crinita* (Sull.) Broth., both of reports of some authors] BOLIVIA. **La Paz**: *Williams 1947* (NY). BRAZIL. **Amazonas**: *Buck 2428* (MO, NY).

COLOMBIA. **Boyacá**: *Churchill et al. 18919* (COL, NY); **Putumayo**: *King & Guevara C-1058* (US). ECUADOR. **Morona-Santiago**: *Brandbyge & Asanza C. 31849* (AAU); **Napo**: *Churchill & Sastre-D. J. 13856* (NY). PERU. **Loreto**: *Killip & Smith 28531* (NY). VENEZUELA. **Bolívar**: *Steyermark 74737* (MO, NY; two collections at NY with the same collection number, one is *O. tetragona*, see below). On trunks and branches of treelets and trees.

O. tetragona (Hedw.) Broth. BRAZIL. **Amapá**: *Mori & Cardoso 17137* (NY), *Pires & Cavalcante 52490* (NY); **Pará**: *Mexia 5947-A* (NY), *de Oliveira 3857* (NY). VENEZUELA. **Bolívar**: *Steyermark 74737 p.p.* (NY). On trunk and branches of trees.

O. tortipilis (Müll. Hal.) Broth. ECUADOR. **Napo**: *Kohn 1020* (MO, NY). On branches of treelets and trees.

Pireella Cardot [Ref.: Newton 1993]

P. pohlii (Schwägr.) Cardot BOLIVIA. **La Paz**: *Williams 1982* (NY). BRAZIL. **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 258] (NY); **Mato Grosso**: *Thomas et al.* 4395 (NY), *Pirani 1288* (MO); **Pará**: *Swallen 3174* (NY), *Reese 16062* (MO, NY); **Rondônia**: *McFarland et al. 201* (MO, NY). COLOMBIA. **Meta**: *Callejas & Marulanda 7141* (NY). ECUADOR. **Morona-Santiago**: *Harling 2259-B* (Crum, 1957); **Napo**: *Churchill & Sastre-D. J. 13861* (NY), *Holm-Nielsen & Jeppesen 926* (AAU, MO). On base and trunk of treelets and trees, infrequent on logs.

RACOPILACEAE

Racopilium P. Beauv. [Ref.: Yano 1984b]

R. tomentosum (Hedw.) Brid. BRAZIL. **Acre**: *Ule 2277* (Brotherus, 1906); **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 261] (Brotherus, 1906). COLOMBIA. **Caquetá**: *Churchill & Betancur 16995* (NY); **Vaupés**: *Schultes 11736* (NY). ECUADOR. **Morona-Santiago**: *Harling 2274* (S); **Napo**: *Churchill & Sastre-D. J. 13796* (NY). On exposed roots, base and trunk of shrubs and trees, also rocks, logs, humus and soil.

RHACHITHECIACEAE

Zanderia Goffinet [Ref. Goffinet 1997]

Z. octoblephare (Spruce ex A. Jaeger) Goffinet [*Ulea octoblepharis* (Spruce ex A. Jaeger) Müll. Hal., *Uleastrum octoblephare* (Spruce ex A. Jaeger) R. H. Zander] BRAZIL. **Amazonas**: *Prance 11735* (NY); **Pará**: *Spruce 163* (NY; Mitten, 1869). On soil (including sandy soil) in disturbed areas.

RHIZOGONIACEAE

Pyrrhobryum Mitt. [Ref.: Yano 1986]

P. spiniforme (Hedw.) Mitt. [*Rhizogonium spiniforme* (Hedw.) Bruch in Krauss] BRAZIL. **Amazonas**: *Buck 2467* (MO, NY); also known from Roraima at 1200 m (*Prance et al. 9450*, NY). ECUADOR. Morona-Santiago and Napo, all at 600 m or above. On base and lower trunk of trees, also on logs.

SEMATOPHYLLACEAE

Acroporium Mitt.

A. guianense (Mitt.) Broth. BRAZIL. **Amazonas**: *Griffin et al. 757* (MO); **Pará**: *Spruce 832* (NY; Mitten 1869). ECUADOR. **Sucumbíos**: *Heikkinen RH-1990-43* (NY). On trunk and branches of treelets and trees.

A. pungens (Hedw.) Broth. BOLIVIA. **La Paz**: *Williams 2124* (NY). BRAZIL. **Amapá**: *Mori et al. 17249* (NY); **Amazonas**: *Prance et al. 15400* (NY); **Roraima**: *Buck et al. 1830* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16188* (COL, MO, NY); **Caquetá**: *Churchill & Betancur 16966* (HUA, NY); **Vaupés**: *Schultes & Cabrera 13828* (NY). ECUADOR. **Napo**: *Holm-Nielsen et al. 19310* (AAU, MO); **Pastaza**: *Holm-Nielsen et al. 22156* (AAU, MO); **Sucumbíos**: *Heikkinen RH-1990-290-A* (NY). VENEZUELA. **Amazonas**: *Buck 12861* (NY). On trunk and branches of treelets and trees, lianas, rarely on logs.

Aptychopsis (Broth.) M. Fleisch.

A. pyrrhophylla (Müll. Hal.) Wijk & Margad. [*Sematophyllum fulvum* Mitt. hom. illeg.] BRAZIL. **Amazonas**: *Martius?* (cf. Mitten, 1869). The report of this species for Amazonia requires conformation.

Colobodontium Herzog [Ref.: Florschütz-de Waard 1992]

C. vulpinum (Mont.) S. P. Churchill & W. R. Buck [*Colobodontium aciculare* Herzog, *Maguireella vulpinum* (Mont.) W. R. Buck, *Meiothecium negrense* Spruce ex Mitt., *Potamnium deceptivum* Mitt.,

Sematophyllum maguireorum W. R. Buck] BRAZIL. **Amazonas**: *Spruce 826, 827* (NY), *Buck 2276* (NY); **Rondônia**: *Reese 13577* (MO, NY); **Roraima**: *Buck et al. 1882* (NY). COLOMBIA. **Amazonas**: *Sipman & Duivenvoorden 28157* (B, NY); *Caquetá*: *Woronow 172* (JE); **Vichada**: *Spruce s.n.* (NY). On base, trunk and branches of treelets and trees, also on branches periodically submerged cf. *Buck 3079* (NY).

Meiothecium Mitt. [Ref.: Buck 1982]

M. boryanum (Müll. Hal.) Mitt. ECUADOR. **Sucumbíos**: *Brucculeri 47995* (AAU, NY). VENEZUELA. **Amazonas**: *Spruce 805* (NY; Mitten, 1869). On trunk of shrubs and trees, including *Macrolobium acaciifolium* (Solanaceae).

M. revolubile Mitt. BRAZIL. **Amazonas**: *Buck et al. 1770* (NY), *Griffin et al. 543* (MO); **Mato Grosso**: *Damião 2452* (INPA; Lisboa & Lisboa, 1978); also reported for Pará by Lisboa and Maciel (1994). On branches of treelets and trees.

Potamnium Mitt.

P. lonchophyllum (Mont.) Mitt. [*P. uleanum* Broth.] BRAZIL. **Amazonas**: *Spruce s.n.* (NY); **Pará**: *Plowman et al. 9623* (NY). COLOMBIA. **Guainía**: *Churchill et al. 17636* (COL, HUA, MO, NY). VENEZUELA. **Amazonas**: *Sastre-D. J. 285* (NY). On sandstone rocks in streams.

Pterogonidium Müll. Hal. ex Broth.

P. pulchellum (Hook.) Müll. Hal. BOLIVIA. **La Paz**: *Williams 2059* (NY). BRAZIL. **Amazonas**: *Nelson 98* (NY), *Pires et al. 16788* (NY); **Pará**: 15 Dec 1923, *Armitage s.n.* (MO); **Rondônia**: *Vital 14452* (NY). COLOMBIA. **Meta**: *Schultes 12008* (NY); **Putumayo**: *King & Guevara C-1091* (US). PERU. **Loreto**: *Croat 18784* (MO, NY). VENEZUELA. **Amazonas**: *Buck 12770* (NY). On trunk and branches of trees.

Rhaphidorrhynchium M. Fleisch. = *Sematophyllum*

R. marmellense (Broth.) Broth. BRAZIL. **Amazonas**: *Ule 2346* (Brotherus, 1906). On rocks associated with waterfalls.

Sematophyllum Mitt.

S. adnatum (Michx.) E. Britton [*S. microcarpum* Sw.] BRAZIL. **Amazonas**: *Spruce s.n.* (Mitten, 1869). COLOMBIA. **Amazonas**: *Churchill et al. 16170* (COL, MO, NY). On logs.

S. cuspidiferum Mitt. BRAZIL. **Mato Grosso**: *Lisboa et al. 272* (INPA; Lisboa & Lisboa, 1978); also from Amazonas at 670 and 1250 m (*Samuels et al. 1014*, NY, and *Samuels et al. 441*, MO, NY). No substrate information provided.

S. decurvifolium Mitt. BRAZIL. **Amazonas**: *Spruce 845* (NY). On branches.

S. galipense (Müll. Hal.) Mitt. BOLIVIA. **La Paz**: *Williams 2075* (NY). BRAZIL. **Pará**: *Reese 16474* (MO, NY); **Rondônia**: *McFarland et al. 212* (MO, NY); also Roraima at 700 m (*Buck 2056*, MO). COLOMBIA. **Meta**: *Schultes 11100* (MO); **Putumayo**: *Giraldo-C. et al. 2159* (COL, NY). ECUADOR. **Napo**: *Holm-Nielsen 19280* (NY). VENEZUELA. **Bolívar**: *Boom & Grillo 6530* (NY). On soil and soil covered rocks.

S. oedophysidium W. R. Buck BRAZIL. **Rondônia**: *McFarland et al. 59* (MO). On rocks.

S. pacimoniense (Spruce ex Mitt.) J. Florsch. [*Potamnium pacimoniense* Spruce ex Mitt.] BRAZIL. **Amazonas**: *Buck 3054* (MO, NY); **Roraima**: *Buck et al. 1881* (NY). COLOMBIA. **Vaupés**: *Schultes & Cabrera 14176* (NY). On wet rocks and logs along rivers.

S. subpinnatum (Brid.) E. Britton [*S. caespitosum* (Hedw.) Mitt.] BOLIVIA. **La Paz**: *Williams 2113* (NY). BRAZIL. **Acre**: *Nelson et al. 479* (NY); **Amazonas**: *Buck 2285* (NY); **Mato Grosso**: *Prance et al. 18340* (NY); **Pará**: *Reese 16570* (NY); **Rondônia**: *Fife et al. 4136* (NY); **Roraima**: *Buck et al. 2031* (MO, NY). COLOMBIA. **Meta**: *Schultes 11079* (MO, NY); **Putumayo**: *Giraldo-C. et al. 2156* (COL, NY). ECUADOR. **Napo**: *Holm-Nielsen 19277* (AAU, MO); **Pastaza**: *Spruce 993* (NY); **Sucumbíos**: *Brucculeri 47993* (NY). PERU. **Loreto**: *Mexia 6308-A* (MO, NY). On rocks, logs, trunk and branches of treelets and trees.

S. subsimplex (Hedw.) Mitt. BOLIVIA. **Beni**: *Boom 4320* (NY); **La Paz**: *Williams 2079* (NY). BRAZIL. **Acre**: *Maas et al P12834* (NY); **Amapá**: *Mori & Cardoso 17382* (NY); **Amazonas**: *Prance et al. 14279* (MO, NY); **Maranhão**: *Schatz et al. 937* (NY); **Mato Grosso**: *Prance et al. 18338* (NY); **Pará**: *Reese 16330, 16637* (NY); **Rondônia**: *Nee 34901* (NY); **Roraima**: *Buck 1887* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16099* (COL, MO, NY); **Caquetá**: *Churchill & Betancur 17027* (HUA, NY); **Guainía**: *Churchill et al. 17655* (COL, MO, NY); **Meta**: *Schultes 11150* (NY); **Vaupés**: *Schultes & Cabrera 17274* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13782* (NY); **Sucumbíos**: *Balslev 84913* (AAU). PERU. **Loreto**:

Killip & Smith 27491 (NY). VENEZUELA. **Amazonas**: *Guariglia et al. 1460* (NY); **Bolívar**: *Boom & Grillo 6524* (NY). On exposed roots, trunk and branches of palms and tree, also on logs, rocks (including sandstone) and boulders particularly along streams and rivers, infrequent on soil and humus.

Taxithelium Spruce ex Mitt. [Ref.: Buck 1985]

T. juruense (Broth.) Broth. BRAZIL. **Acre**: *Prance et al 12541* (NY); **Amazonas**: *Ule 2295* (Brotherus, 1906); **Mato Grosso**: *Lisboa et al. 275* (INPA; Lisboa & Lisboa, 1978).

T. planum (Brid.) Mitt. BOLIVIA. **Beni**: *Lewis 89-017-D3* (MO). BRAZIL. **Acre**: *Mass et al. P12936* (NY); **Amapá**: *Mori & Cardoso 17126* (NY); **Amazonas**: *Buck 2866* (MO, NY); **Maranhão**: *Daly et al. D-150* (NY); **Mato Grosso**: *Lisboa et al. 275* (NY); **Pará**: *Reese 16217* (NY); **Rondônia**: *Fife et al. 4187* (NY); **Roraima**: *Buck et al. 1923* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16165* (COL, NY); **Guainía**: *Churchill et al. 17619* (COL, MO, NY, US); **Putumayo**: *King & Guevara C-1086* (US); **Vaupés**: *Schultes & Cabrera 15006* (MO, US). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13743-B* (NY); **Pastaza**: *Andersson 870* (GB); **Sucumbíos**: *Brandbyge et al. 30516* (AAU). PERU. **Loreto**: *Gentry et al. 20345-A* (MO), *Timme 12272* (MO). VENEZUELA. **Amazonas**: *Maguire & Wurdack 34794* (MO). On exposed roots, base and trunks of trees and palms, very common on logs, also on soil and rocks (including sandstone and granite). Florschütz-de Waard (Görts-van Rijn, 1996) recognized *T. concavum* (Hook.) Spruce as distinct from *T. planum* although the former has been considered a synonym of the latter (cf. Buck, 1985). A reassessment of Amazonian *T. planum* is required; the type of *T. concavum* was collected by Humboldt and Bonpland on the Venezuelan side of the Río Negro at San Carlos.

T. pluripunctatum (Renauld & Cardot) W. R. Buck BRAZIL. **Amazonas**: *Buck 3148* (MO, NY); **Roraima**: *Buck et al. 1949* (NY). On branches of treelets and logs.

Trichosteleum Mitt.

T. ambiguum (Schwägr.) Paris BOLIVIA. **La Paz**: *Williams 2061* (NY). BRAZIL. **Amazonas**: *Buck 2211* (NY); **Pará**: *Mexia 5995* (MO, NY), *Reese 16182* (NY); **Rondônia**: *McFarland et al. 144* (NY); **Roraima**: *Buck et al. 1930* (NY). PERU. **Loreto**: *Killip & Smith 29676* (NY). On logs, exposed roots, base and trunk of trees.

T. arrectum (Mitt.) A. Jaeger VENEZUELA. **Amazonas**: *Spruce 907* (NY; Mitten, 1869). On logs.

T. hornschuchii (Hampe) A. Jaeger [*T. fluviale* (Mitt.) A. Jaeger, *T. subdemissum* (Besch.) A. Jaeger, cf. Florschütz-de Waard in Görts-van Rijn, 1996.] BOLIVIA. **La Paz**: *Williams 2073* (NY). BRAZIL. **Amazonas**: *Prance et al. 15003* (NY); **Mato Grosso**: *Lisboa et al. 782* (INPA; Lisboa & Lisboa, 1978); also reported for Pará by Lisboa and Maciel (1994). COLOMBIA. **Amazonas**: *Churchill et al. 16173* (MO, NY); **Guainía**: *Churchill et al. 17758* (COL, MO, NY). ECUADOR. **Napo**: *Holm-Nielsen et al. 19884* (AAU, NY); **Sucumbíos**: *Laegaard 51079* (NY). PERU. **Loreto**: *Hegewald & Hegewald 8223* (MO). On logs, exposed roots and base of trees.

T. inundatum (Mitt.) A. Jaeger BRAZIL. **Amazonas**: *Buck 2569* (MO, NY), *Schäfer-Verwimp 9805* (NY); **Maranhão**: *Silva et al. 1097* (NY); **Pará**: *Reese 16179, 16177* (NY). VENEZUELA. **Amazonas**: *Buck 12753* (MO, NY). On rocks, in or along streams and rivers, also on sandy soil and logs.

T. papillosum (Hornsch.) A. Jaeger [*T. guianae* (Müll. Hal.) Broth., cf. Florschütz-de Waard in Görts-van Rijn, 1996] BOLIVIA. **Beni**: *Boom 4115* (NY). BRAZIL. **Acre**: *Maas et al. P13327* (NY); **Amapá**: *Mori & Cardoso 17281* (NY); **Amazonas**: *Buck 3135* (MO, NY), *Griffin et al. 80* (MO, NY); **Mato Grosso**: *Damião 2473* (INPA; Lisboa & Lisboa, 1978); **Pará**: *Reese 16576* (NY); **Rondônia**: *Prance et al. 8296* (NY); **Roraima**: *Buck 2058* (MO, NY). COLOMBIA. **Amazonas**: *Churchill et al. 16109* (MO, NY); **Vaupés**: *Schultes & Cabrera 13946* (MO). ECUADOR. **Napo**: *Brako 5339* (NY); **Pastaza**: *Andersson 883 p.p.* (AAU); **Sucumbíos**: *Balslev 84914* (AAU). PERU. **Loreto**: *Timme 12946-A* (MO). VENEZUELA. **Amazonas**: *Guariglia et al. 1691* (NY). On base and trunk of shrubs, treelets, and trees, also very common on logs and tree stumps.

T. rubrisetum (Mitt.) A. Jaeger BRAZIL. **Amazonas**: *Nelson 626* (NY); **Pará**: *Reese 16069, 16277* (MO, NY). On logs, exposed roots and base of trees.

T. sentosum (Sull.) A. Jaeger BRAZIL. **Pará**: (Lisboa, 1984). VENEZUELA. **Amazonas**: *Maguire et al. 36535* (NY). On logs. The presence of this species is questionable and requires verification.

T. vincentinum (Mitt.) A. Jaeger [*T. microcarpum* (Mitt.) Broth.] BRAZIL. **Amazonas**: *Ule 1960* [E. Ule,

Bryotheca brasiliensis 283] (Brotherus, 1906). VENEZUELA. **Amazonas**: *Buck 129876* (MO, NY). On logs.

SPHAGNACEAE [Ref.: Crum & Buck 1992]

Sphagnum L.

S. amazonicum H. A. Crum & W. R. Buck BRAZIL. **Amazonas**: *Buck 2501* (NY). Growing in hummocks, summit of Serra Curicuriari.

S. curicuriariense H. A. Crum & W. R. Buck BRAZIL. **Amazonas**: *Buck 2500* (NY); also Roraima at 1200 m on the summit of Serra Parima (*Buck 21579*, NY). Pendent from dripping cliffs, also on rocks among roots of Bromeliaceae.

S. dimorphophyllum H. A. Crum & W. R. Buck BRAZIL. **Amazonas**: *Buck 2561* (NY). On soil bank of Río Curicuriari.

S. juliforme H. A. Crum VENEZUELA. **Bolívar**: *Steyermark 74664* (NY). Along stream banks.

S. magellanicum Brid. BRAZIL. **Amazonas**: *Samuels et al. 249* (NY); reports from Pará and Rondônia need to be verified. On moist or wet soil and leaf litter.

S. negrense Mitt. BRAZIL. **Amazonas**: *Spruce 1507* (NY). Along or in shallow rapids and waterfalls.

S. perichaetiale Hampe BRAZIL. **Amazonas**: *Buck 2381, 2548* (NY); **Pará**: *Davidse et al. 17599* (MO, NY), *Prance et al. P24885* (NY); **Rondônia**: *Reese 13572* (MO); also Roraima at 1400 m (*Prance et al. 9415*, NY). COLOMBIA. **Amazonas**: *Schultes & Cabrera 16425* (NY). On soil, sandy soil and humus, in seepy savanna areas, apparently more common along streams and rivers.

S. reclinatum H. A. Crum & W. R. Buck VENEZUELA. **Amazonas**: *Buck 12751* (MO, NY). On white sand along river.

S. ripense H. A. Crum & W. R. Buck BRAZIL. **Amazonas**: *Buck 2544* (NY). On seasonally submerged soil bank of Igarape Branco.

S. subsecundoides H. A. Crum & W. R. Buck BRAZIL. **Amazonas**: *Buck 2413* (NY). On soil along river bank (Río Marié).

SPLACHNOBRYACEAE

Splachnobryum Müll. Hal.

S. obtusum (Brid.) Müll. Hal. BRAZIL. **Acre**: *Vital 15020* (SP; Vital & Pursell, 1992); **Amazonas**: *Fife et al. 3967* (NY), *Reese 12669, 12695, 12705* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16203* (COL, NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13844* (NY). PERU. **Loreto**: *Timme 6402* (MO). On soil and soil covered rock, not uncommon in disturbed sites, e.g., along moist or wet road banks, on concrete blocks in villages.

STEREOPHYLLACEAE [Ref.: Ireland & Buck 1994]

Entodontopsis Broth.

E. angustiretis (Broth.) W. R. Buck & Ireland BRAZIL. **Pará**: *Plowman et al. 8548* (CANM, MG; Ireland & Buck, 1994); **Rondônia**: *Thomas et al. 5198* (NY). On exposed granite rocks.

E. leucostega (Brid.) W. R. Buck & Ireland BOLIVIA. **Beni**: *Reese 12833* (MO, NY). BRAZIL. **Amazonas**: *Ule 2327* (NY); **Maranhão**: *Vilhena et al. 991* (NY); **Pará**: *Reese 16245* (NY); **Rondônia**: *Fife et al. 4186* (NY); **Roraima**: *Hopkins et al. 715* (MO, NY). COLOMBIA. **Vichada**: *Spruce s.n.* (NY). VENEZUELA. **Bolívar**: *Killip 37262* (US; Ireland & Buck, 1994). On exposed roots and trunk of trees, also logs, sandstone and granitic rocks.

E. nitens (Mitt.) W. R. Buck & Ireland BRAZIL. **Acre**: *Reese & McPherson 13183* (NY); **Pará**: *Plowman et al. 8818* (MO, NY). VENEZUELA. **Bolívar**: *Boom & Grillo 6471* (NY). On rocks in stream, and exposed granitic rock boulders.

Eulacophyllum W. R. Buck & Ireland

E. cultelliforme (Sull.) W. R. Buck & Ireland BOLIVIA. **Beni**: *Reese 12824* (NY). BRAZIL. **Amazonas**: *Spruce 1312* (NY); **Mato Grosso**: *Schäfer-Verwimp & Verwimp 11307* (CANM; Ireland & Buck, 1994). COLOMBIA. **Meta**: *Schultes & Bell 11503* (NY). On sandstone rocks.

Pilosium (Müll. Hal.) M. Fleisch.

P. chlorophyllum (Hornsch.) Müll. Hal. BOLIVIA. **Beni**: *Reese 13120* (MO, NY); **La Paz**: *Williams 2121*

(NY). BRAZIL. **Acre**: *Reese & McPherson 13250* (NY); **Amapá**: *Mori et al. 17150* (NY); **Amazonas**: *Buck 3040* (MO, NY); **Goiás**: *Schäfer-Verwimp & Verwimp 8665* (NY); **Mato Grosso**: *Prance et al. 19152* (NY); **Pará**: *Reese 16715* (MO, NY); **Rondônia**: *Nee 34892* (NY); **Roraima**: *Buck et al. 1866* (NY). COLOMBIA. **Amazonas**: *Churchill et al. 16081* (COL, MO, NY); **Arauca**: *Churchill et al. 18940* (COL, NY); **Boyacá**: *Churchill et al. 18930* (COL, NY); **Caquetá**: *Churchill & Betancur 16947* (MO, NY); **Guainía**: *Churchill et al. 17660* (COL, MO, NY); **Guaviare**: *Schultes 11128* (NY); **Meta**: *Schultes 11128* (NY); **Putumayo**: *King & Guevara C-1061* (US); **Vaupés**: *Schultes & Cabrera 14294* (MO). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13859* (AAU, NY); **Pastaza**: *Jaramillo et al. 31391* (AAU, MO); **Sucumbíos**: *Balslev 84911* (AAU, NY). PERU. **Junín**: *Killip & Smith 26552* (NY); **Loreto**: *Timme 7910* (MO). VENEZUELA. **Amazonas**: *Steyermark & Bunting 103280-A* (MO). Typically on logs or tree stumps, exposed roots, base and trunk of trees, occasionally on rocks (including sandstone), soil, base of termite mounds, leaf litter, or on leaves.

Stereophyllum Mitt.

S. radiculosum (Hook.) Mitt. BRAZIL. **Pará**: *Maciel 2057* (MG; Lisboa & Maciel, 1994). On trees and logs.

THAMNOBRYACEAE [Ref.: Sastre-D. J. 1987]

Pinnatella M. Fleisch.

P. minuta (Mitt.) Broth. ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13880-B* (AAU, NY). On trunk of tree.

Porotrichum (Brid.) Hampe

P. filiferum Mitt. ECUADOR. **Pastaza**: *Spruce 1365* (NY). On trunk of trees.

P. lindigii (Hampe) Mitt. [*Pireella cavifolia* (Cardot & Herzog) Cardot] ECUADOR. **Napo**: *Grubb et al. 2934* (Bartram, 1964). On trunk of trees.

P. longirostre (Hook.) Mitt. ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13853* (NY). On trunk of trees.

P. mutabile Hampe. ECUADOR. **Napo**: *Benoist 4665* (PC; Thériot, 1936). On trunk of trees.

P. substriatum (Hampe) Mitt. [*P. plicatulum* Mitt.] BRAZIL. **Acre**: *Reese & McPherson 13265* (NY); **Amazonas**: *Buck 2425* (NY); **Pará**: *Reese 16061, 16107* (NY); **Rondônia**: *Fife et al. 4135* (NY); also from Mato Grosso at 720 m (*Prance et al. 19404*, NY). On trunk and branches of shrubs, treelets, and trees, extending into the canopy.

THUIDIACEAE [Ref.: Buck & Crum 1990; Gier 1980]

Cyrto-hypnum (Hampe) Hampe & Lorentz in Hampe

C. campanulatum (Mitt.) S. P. Churchill [*Thuidium campanulatum* Mitt.] ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13743* (NY). PERU. **Loreto**: *Hegewald & Hegewald 6385* (MO). On exposed roots and trunk of trees, also on logs and rocks.

C. frontinoae (Müll. Hal.) S. P. Churchill & E. Linares C. [*Thuidium frontinoae* Müll. Hal.] BRAZIL. **Amazonas**: *Traill s.n.*? (NY, n.v.); cited by Gier (1980) but collection not found in NY. The inclusion of this species would appear unlikely; only two additional collections cited by Gier (as *Thuidium*), both from the Andes of Colombia and Venezuela.

C. involvens (Hedw.) W. R. Buck & H. A. Crum [*Thuidium involvens* (Hedw.) Mitt.] BRAZIL. **Acre**: *Prance et al. 7337* (NY); **Amazonas**: *Prance et al. 14680* (NY); **Mato Grosso**: *Lleras & Lima P18323* (NY); **Rondônia**: *Vieira et al. 269* (NY). ECUADOR. **Morona-Santiago**: *Harling 2279* (Crum, 1957); **Napo**: *Holm-Nielsen & Jeppesen 902* (AAU, GB); **Sucumbíos**: *Heikkinen RH-1990-310* (NY). On logs.

C. scabrosulum (Mitt.) W. R. Buck & H. A. Crum [*Thuidium scabrosulum* Mitt.] BOLIVIA. **Beni**: *Reese 13129* (NY); **La Paz**: *Williams 2006* (NY). BRAZIL. **Acre**: *Reese & McPherson 13144* (NY); **Amazonas**: *Pires et al. 14527* (NY); **Mato Grosso**: *Prance et al. 18344* (NY); **Pará**: *Swallen 3403* (NY); **Rondônia**: *Reese 13669* (NY); **Roraima**: *Hopkins et al. 769* (NY). PERU. **Loreto**: *Killip & Smith 28099* (NY). VENEZUELA. **Amazonas**: *Buck 12779* (NY). On exposed roots, trunk and branches of treelets, trees and palms, also on logs and rocks.

C. schistocalyx (Müll. Hal.) W. R. Buck & H. A. Crum [*Thuidium schistocalyx* (Müll. Hal.) Mitt.] BOLIVIA. **Beni**: *Boom 4120* (NY). BRAZIL. **Amazonas**: *Ule s.n.* [E. Ule, Bryotheca brasiliensis 282] (NY); **Goiás**: *Plowman et al. 8155-A* (NY); **Maranhão**: *Daly et al. D503* (MO, NY); **Pará**: *Reese 16619-A* (MO, NY);

Rondônia: *Fife et al. 1424* (NY). ECUADOR. **Napo**: *Churchill & Sastre-D. J. 13792* (NY). PERU. **Loreto**: *Killip & Smith 29353* (NY), *Timme 12939-E* (MO). On base, including buttress, and trunk of trees, also lianas and logs.

Thuidium Bruch & Schimp.

T. delicatulum (Hedw.) Schimp. in Bruch, Schimp. & W. Gümbel BRAZIL. **Amazonas**: *Buck 2485, 2498* (NY); **Pará**: *Reese 16108* (MO, NY). On rocks, apparently associated with falls or streams.

T. tomentosum Besch. [*T. antillarum* Besch.] BOLIVIA. **Santa Cruz**: *Nee 34221* (MO, NY). BRAZIL. **Roraima**: *Prance et al. 21611* (NY). ECUADOR. **Napo**: *Grubb et al. 2953* (Bartram, 1964). On rocks, base and trunk of treelets, trees and tree ferns.

T. urceolatum Lorentz BRAZIL. **Amazonas**: *Prance et al. 16077* (NY); also Roraima at 800 m (*Buck et al. 2002*, INPA, NY; Yano & Lisboa, 1992). VENEZUELA. **Bolívar**: *Steyermark 88098* (MO, NY). On trunk of trees and over rocks.

EXCLUDED OR DOUBTFUL REPORTS FOR AMAZONIA

The following names were placed on the initial checklist but for reasons generally indicated, have been tentatively excluded. Taxa excluded by imposed elevational limits but possibly to be found in Amazonia below 500 m are also included.

BRYACEAE

Brachymenium klotzschii (Schwägr.) Paris (*B. dimorphum* R. S. Williams)

Reported from Brazilian Pará; a collection determined by Ochi (1980) simply states as a locality Planalto (1970, *Irwin et al. s.n.*, NY).

Bryum orthodontioides Müll. Hal.

Reported for Brazilian Amazonas (cf. Yano 1981a); the status of this taxon is apparently unknown.

Rhodobryum beyrichianum (Hornsch.) Müll. Hal. in Hampe

Reported from Brazilian Rondônia (Lisboa, 1993) appears to be *Bryum andicola* Hook. in Kunth. If the species is present in Amazonia, it will likely be found above 500 m. Another species reported from Pará (Lisboa, 1994), *R. subverticillatum* Broth., should likewise be verified.

CALYMPERACEAE

Calymperes erectus Müll. Hal. *nom. nud.*

Name unknown, reported for Brazilian Rondônia (Lisboa & Yano, 1987).

C. smithii E. B. Bartram

Recorded from Brazilian Pará at 600–800 m (*Smith 2985*; NY). Collected on the Guyana-Brazil border in the Akarai Mountains, and very likely to be found elsewhere in the elevated highlands along the northern boundary of the Amazon Basin.

CATAGONIACEAE

Catagonium nitens (Brid.) Cardot in Grandid.

Reported for Brazilian Amazonas by Hornschuch (1840) is certainly in error.

DICRANACEAE

Campylopus rufum Herzog

Reported for Brazilian Amazonas. Status unknown, not listed by Frahm (1991).

Macrodictyum proliferum (Mitt.) E. H. Hegew. (*Holomitrium proliferum* Mitt.)

Recorded for Brazilian Amazonas (Hegewald 1978, Yano, 1981a); the occurrence of this species appears unlikely.

ENTODONTACEAE

Mesonodon regnellianus (Müll. Hal.) W. R. Buck (*Campylodontium*)

Reported from Brazilian Mato Grosso (n.v.), probably from the Planalto region, also known from southeast Brazil.

FISSIDENTACEAE

Fissidens asplenioides Hedw.

Mitten (1869: 591) cites *Spruce 506 and 507* but apparently in error since these collections represent the types of *F. hydropogon* Spruce in Mitt. *Fissidens asplenioides* is known from Brazilian Mato Grosso at 720 m (*Prance 19418*, NY). This species is rarely found below 1000 m from the Andean countries.

F. semilimbatus Schliep.

Reported from Brazilian Amazonas, based on a collection by Spruce (s.n., NY), redet. as *F. guianensis* by Pursell.

The status of the following three Irmscher species of *Fissidens* are unknown, the types have not been located (fide R. Pursell, pers. comm., 1997).

F. acreanus Irmscher BRAZIL. Acre: *Ule 2494* (?).

F. georgianus Irmscher BRAZIL. Roraima: *Ule 2406, 2407* (?).

F. surumuensis Irmscher BRAZIL. Roraima: *Ule 2409* (?).

FUNARIACEAE

Funaria calvescens Schwägr. (*F. hygrometrica* Hedw. var. *hygrometrica* of reports)

Apparently all collections made from Brazil at elevations above 500 m, known from Roraima at 1000 m (*Buck et al. 1941*, MO, NY) and reported from Mato Grosso and Pará but not known if localities are within Amazonia.

HELICOPHYLLACEAE

Helicophyllum torquatum (Hook.) Brid.

Reported from Brazilian Amazonas but no recent collections or studies support the presence of this species in the Amazon Basin; it is common in the Planalto and southeast Brazil (cf. Yano, 1984a).

LEUCOBRYACEAE

Leucobryum bowringii Mitt.

Known from Brazilian Roraima at 1200 m (*Prance et al. 21595*, INPA; Yano, 1982).

L. giganteum Müll. Hal.

Recorded from Brazilian Amazonas, all above 500 m, on the summits of Serra Curicuriari, no elevation given (*Prance 16094*, NY), and Serra Pirapucu at 1250 m (*Silva & Brazão 60910*, SP; Yano, 1982).

Octoblepharum brittonii Jacq.

Reported from Brazilian Amazonas (cf. Yano, 1989). Status unknown.

METEORIACEAE

Papillaria nigrescens (Hedw.) A. Jaeger

The reported of *Trachypus appresus* by Spruce (1867) from Brazilian Amazonas may refer to *Papillaria nigrescens*, however it seems unlikely; no recent collections are presently known; it may be found at the periphery of Amazonia, where it is known from Ecuadorian Morona-Santiago at 600 m. The name *Trachypus appresus* apparently refers to *Hypnum appresus* described by Hornchuch (1840), and not equal to *Trachypus bicolor* Reinw. & Hornsch. of Yano (1981a).

NECKERACEAE

Neckeropsis crispa (Müll. Hal.) Broth.

Reported for Brazilian Amazonas; this name likely refers to either *N. disticha* (Hedw.) Kindb. or *N. undulata* (Hedw.) Reichardt

POTTIACEAE

Syntrichia fragilis (Taylor) Ochyra

Reported from Brazilian Mato Grosso, the collection is not present in NY and probably occurs outside Amazonia as defined here.

Plaubelia sprengelii (Schwägr.) R. H. Zander (*Neohyophila sprengelii* (Schwägr.) H. A. Crum)

Reported from Brazilian Roraima at 700 m (*Buck et al. 2034*, NY; Yano, 1992).

Weissia controversa Hedw.

Reported for Brazilian Amazonas by Hornschuch (1840); this species probably does not occur in the basin, or if so then only peripherally.

RHACHITHECIACEAE

Jonesiobryum cerradense Vital ex B. H. Allen & Pursell

Reports from Brazilian Mato Grosso are considered beyond the boundary of Amazonia, it is rather well known from the Planalto and southeast Brazil.

SEMATOPHYLLACEAE

Acroporum lamprophyllum Mitt.

Reported for Brazilian Pará (Lisboa, 1984), needs to be confirmed.

SPHAGNACEAE

Sphagnum capillifolium (Ehrh.) Hedw.

Reports of this species are questionable from Brazilian Amazonas, and likely refer to other species of the section.

S. ornatum H. A. Crum

Recorded from Brazilian Amazonas at 600 m (*Rosa & Lira 2332*, NY); other localities at higher elevation, cf. Buck and Crum (1993).

S. roraimense Warnst.

From Brazilian Roraima at 1200 m (*Ule 2477*) cf. Warnstorf (1916).

S. palustre L.

Reports of this species from Brazil (including the states of Amazonas, Pará, and Rondônia) are probably referable to other species, in particular *S. perichaetiale* (cf. Crum, 1990a).

S. subsecundum Nees ex Sturm

Specimens recorded from the Amazon, in particularly Brazil (Amazonas and Rondônia) are likely referable to another species in the section (cf. Crum, 1990b).

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List of Synonyms and other Names

Acrocryphaea leiboldii (Müll. Hal.) Wijk & Margad. of reports = *Schoenobryum concavifolium* (Griff.) Gangulee
Barbula agraria Hedw. = *Hyophiladelphus agrarius* (Hedw.) R. H. Zander
Barbula cruegeri Sond. ex Müll. Hal. = *B. indica* (Hook.) Spreng. in Steud.
Barbula subulifolia Sull. = *B. arcuata* Griff.
Bartramia tenella Müll. Hal. = *Philonotis humilis* Brid.
Brachymenium peraristatum (Müll. Hal.) Paris of reports = *B. coarctatum* Bosch. & Lac.
Bryum billiarderi Schwägr. of reports = *Bryum andicola* Hook. in Kunth
Bryum subverticillatum (Broth.) Ochi = *Rhodobryum subverticillatum* Broth.
Bryum truncorum (Brid.) Brid., of reports = *Bryum andicola* Hook. in Kunth

Callicosta armata (Broth.) Crosby = Pilotrichum armatum Broth.
Callicosta bipinnata (Schwägr.) Müll. Hal. = *Pilotrichum bipinnatum* (Schwägr.) Mitt.
Callicosta evanescens Müll. Hal. = *Pilotrichum evanescens* (Müll. Hal.) Crosby
Callicosta fendleri (Müll. Hal.) Crosby = *Pilotrichum fendleri* Müll. Hal.
Callicostella aspera (Mitt.) A. Jaeger = *C. pallida* (Hornsch.) Ångstr.
Callicostella vatteri E. B. Bartram = *C. merkelii* (Hornsch.) A. Jaeger
Calymperes bolivianum R. S. Williams = *C. nicaraguense* Renauld & Cardot
Calymperes disciforme Müll. Hal. = *Syrrhopodon africanus* subsp. *graminicola* (R. S. Williams) W. D. Reese
Calymperes donnellii Austin = *C. afzelii* Sw.
Calymperes huallagense Broth. = *C. afzelii* Sw.
Calymperes lanceolatum Hampe = *Syrrhopodon incompletus* var. *lanceolatus* (Hampe) W. D. Reese
Calymperes lindmanii Broth = *C. afzelii* Sw.
Calymperes piovanoi Bizot = *C. pallidum* Mitt.
Calymperes richardii Müll. Hal. = *C. palisotii* Schwägr.
Calymperes rufum Herzog = *C. rubiginosum* (Mitt.) W. D. Reese
Calymperes sprucei Besch. = *C. erosum* Müll. Hal.
Calymperes uleanum Broth. = *C. pallidum* Mitt.
Campylopodium pusillum (Schimp.) R. S. Williams = *Microcampylopus curvisetus* (Hampe) Giese & J. P. Frahm
Campylopus acervatus Mitt. = *C. occultus* Mitt.
Campylopus cacti (Müll. Hal.) Lindb. = *C. occultus* Mitt.
Campylopus cerradensis Vital = *C. carolinae* Grout
Campylopus gracilicaulis Mitt. = *C. surinamensis* Müll. Hal.
Campylopus marmellensis Broth. = *C. surinamensis* Müll. Hal.
Campylopus revolvens Herzog = *C. surinamensis* Müll. Hal.
Campylopus sprucei Mitt. = *C. savannarum* (Müll. Hal.) Mitt.
Colobodontium aciculare Herzog = *C. vulpinum* (Mont.) S. P. Churchill & W. R. Buck
Crossomitrium orbiculatum Müll. Hal. = *C. epiphyllum* (Mitt.) Müll. Hal.
Crossomitrium spruceanum Müll. Hal. = *C. patrisiae* (Brid.) Müll. Hal.
Crossomitrium ulei Müll. Hal. = *C. patrisiae* (Brid.) Müll. Hal.
Cyclodictyon riparium (Mitt.) Kuntze = *Lepidopilum tortifolium* Mitt.
Dicranella exigua (Schwägr.) Mitt. = *Microdus exiguus* (Schwägr.) Besch. in Paris
Dicranella peruviana Broth. = *D. hilariana* (Mont.) Mitt.
Dicranella tenuirostris (Schwägr.) Mitt. = *D. hilariana* (Mont.) Mitt.
Diphyscium ulei Müll. Hal. = *D. peruvianum* Spruce ex Mitt.
Ectropothecium apiculatum (Hornsch.) Mitt. = *E. leptochaeton* (Schwägr.) W. R. Buck
Ectropothecium globitheca (Müll. Hal.) Mitt. = *E. leptochaeton* (Schwägr.) W. R. Buck
Fabronia attaleae Herzog = *F. jamesonii* Taylor
Fissidens austro-americanus Pursell & Reese = *F. subramicola* Broth.
Fissidens bryoides Hedw. of reports = *F. anguste-limbatus* Mitt. var. *anguste-limbatus*
Fissidens ensifolius Broth. = *F. angustifolius* Sull.
Fissidens flavinervis Mitt. = *F. elegans* Brid.
Fissidens flexinervis Mitt. = *F. pellucidus* Hornsch. var. *pellucidus*
Fissidens fratris Paris = *F. elegans* Brid.
Fissidens garberi Lesq. & James = *F. minutus* Thwaites & Mitt.
Fissidens intermedius Müll. Hal. = *F. submarginatus* Bruch in C. Krauss
Fissidens juruensis Broth. = *F. zollingeri* Mont.
Fissidens kegelianus Müll. Hal. = *F. zollingeri* Mont.
Fissidens laxus Sull. & Lesq. = *F. pellucidus* Hornsch. var. *pellucidus*
Fissidens macrophyllus Mitt. = *F. flaccidus* Mitt.
Fissidens marmellensis Broth. = *F. prionodes* Mont.

Fissidens mararyensis Broth. = *F. zollingeri* Mont.
Fissidens mattogrossensis Broth. = *F. anguste-limbatus* Mitt. var. *anguste-limbatus*
Fissidens micropyxis Broth. = *F. leptophyllus* Mont.
Fissidens mollis Mitt. = *F. flaccidus* Mitt.
Fissidens muriculatus Mitt. = *F. diplodus* Mitt. var. *diplodus*
Fissidens pabstii A. Jaeger = *F. intramarginatus* (Hampe) Mitt.
Fissidens papilliferus Broth. = *F. pellucidus* Hornsch. var. *papilliferus* (Broth.) Pursell
Fissidens pennula Broth. = *F. anguste-limbatus* Mitt. var. *anguste-limbatus*
Fissidens perminutus Broth. = *F. inaequalis* Mitt.
Fissidens prionodes fo. *hornschuchii* = *F. pellucidus* Hornsch. var. *pellucidus*
Fissidens prionodes fo. *puiggarii* = *F. pellucidus* Hornsch. var. *pellucidus*
Fissidens reesei H. A. Crum & L. E. Anderson = *F. leptophyllus* Mont.
Fissidens rubiginosulus Broth. = *F. subradicans* Broth.
Fissidens sharpii Pursell = *F. perfalcatus* Broth.
Fissidens splitgerberianus Dozy & Molk. = *F. submarginatus* Bruch in C. Krauss
Fissidens subflexinervis Broth. = *F. leptophyllus* Mont.
Fissidens submicropyxis Broth. = *F. submarginatus* Bruch in C. Krauss
Fissidens tejoensis Broth. = *F. elegans* Brid.
Fissidens townsendii Bizot = *F. brachypus* Mitt.
Glossadelphus truncatulus (Müll. Hal.) M. Fleisch. = *Phyllodon truncatulus* (Müll. Hal.) W. R. Buck
Groutiella fragilis (A. Jaeger) H. A. Crum & Steere = *G. tomentosa* (Hornsch.) Wijk & Margard.
Groutiella mucronifolia (Hook. & Grev.) H. A. Crum & Steere = *G. apiculata* (Hook.) H. A. Crum & Steere
Groutiella rugosa (Grout) H. A. Crum & Steere = *G. obtusa* (Mitt.) Florsch.
Groutiella schlumbergeri (Schimp.) Wijk & Margad. = *G. tomentosa* (Hornsch.) Wijk & Margard.
Hookeriopsis acuminata (Mitt.) A. Jaeger = *Brymela acuminata* (Mitt.) W. R. Buck
Hookeriopsis crugeriana (Müll. Hal.) A. Jaeger = *Thamniopsis crugeriana* (Müll. Hal.) W. R. Buck.
Hookeriopsis incurva (Hornsch.) Broth. = *Thamniopsis incurva* (Hornsch.) W. R. Buck
Hookeriopsis killipii R. S. Williams = *Thamniopsis killipii* (R. S. Williams) E. B. Bartram
Hookeriopsis parkeriana (Hook. & Grev.) A. Jaeger = *Brymela parkeriana* (Hook. & Grev.) W. R. Buck
Hookeriopsis tenuis (Mitt.) A. Jaeger = *Trachyxiphium tenue* (Mitt.) W. R. Buck
Hyophila arborea (Mitt.) A. Jaeger = *Trichostomum arboreum* (Mitt.) R. H. Zander
Hyophila tortula (Schwägr.) Hampe = *H. involuta* (Hook.) A. Jaeger
Hypnella cymbifolia (Hampe) A. Jaeger = *H. pallescens* (Hook.) A. Jaeger
Isopterygium brachyneuron (Müll. Hal.) Mitt. = *I. tenerum* (Sw.) Mitt.
Isopterygium manaosense Broth. = *I. tenerifolium* Mitt.
Lepidopilum allionii Broth. = *L. affine* Müll. Hal.
Lepidopilum ambiguum Broth. = *L. affine* Müll. Hal.
Lepidopilum antisanense E. B. Bartram = *L. affine* Müll. Hal.
Lepidopilum attenuatum E. B. Bartram = *L. pallido-nitens* (Müll. Hal.) Paris
Lepidopilum biductulosum (P. Beavu.) Wijk & Margad. = *L. polytrichoides* (Hedw.) Brid.
Lepidopilum crispifolium E. B. Bartram = *L. tortifolium* Mitt.
Lepidopilum flexifolium (Müll. Hal.) Mitt. = *L. surinamense* Müll. Hal.
Lepidopilum leptoloma Broth. = *L. surinamense* Müll. Hal.
Lepidopilum mittenii Müll. Hal. = *L. affine* Müll. Hal.
Lepidopilum obtusulum Müll. Hal. = *L. affine* Müll. Hal.
Lepidopilum pumilum Mitt. = *L. affine* Müll. Hal.
Lepidopilum stolonaceum Müll. Hal. = *L. scabrisetum* (Schwägr.) Steere
Lepidopilum subflexifolium Müll. Hal. = *L. surinamense* Müll. Hal.
Lepidopilum subfuscum Mitt. = *L. brevipes* Mitt.
Lepidopilum subobtusulum Broth. = *L. affine* Müll. Hal.
Leucodontopsis geniculatum H. A. Crum & Steere = *Henicodium geniculatum* (Mitt.) W. R. Buck

Leucomium acrophyllum (Hampe) Mitt. = *L. strumosum* (Hornsch.) Mitt.
Leucomium compressum Mitt. = *L. strumosum* (Hornsch.) Mitt.
Leucomium lignicola Spruce = *L. strumosum* (Hornsch.) Mitt.
Leucophanes brasiliense Broth. = *L. molleri* Müll. Hal.
Leucophanes calymperatum Müll. Hal. = *L. molleri* Müll. Hal.
Leucophanes mittenii Cardot in Paris = *L. molleri* Müll. Hal.
Macromitrium pentastichum Müll. Hal. = *M. punctatum* (Hook. & Grev.) Brid.
Macromitrium portoricense R. S. Williams = *M. podocarpi* Müll. Hal.
Macromitrium serrulatum Mitt. = *M. guatemaliense* Müll. Hal.
Maguireella vulpinum (Mont.) W. R. Buck = *Colobodontium vulpinum* (Mont.) S. P. Churchill & W. R. Buck
Meiothecium negrense Spruce ex Mitt. = *Colobodontium vulpinum* (Mont.) S. P. Churchill & W. R. Buck
Meteoriopsis ambigua (Hornsch.) Broth. = *Zelometeorium ambiguum* (Hornsch.) Manuel
Meteoriopsis onusta (Spruce ex Mitt.) Broth. = *Zelometeorium recurvifolium* (Hornsch.) Manuel
Meteoriopsis patula (Hedw.) Broth. = *Zelometeorium patulum* (Hedw.) Manuel
Meteoriopsis recurvifolia (Hornsch.) Broth. = *Zelometeorium recurvifolium* (Hornsch.) Manuel
Meteoriopsis remotifolia (Müll. Hal.) Broth. = *Meteoridium remotifolium* (Müll. Hal.) Manuel.
Mittenothamnium diminutivum (Hampe) E. Britton = *Chryso-hypnum diminutivum* (Hampe) W. R. Buck
Neckeropsis amazônica Mitt. = *N. undulata* (Hedw.) Reichardt
Neckeropsis inundata Broth. = *N. disticha* (Hedw.) Kindb.
Neckeropsis microtheca (Herzog) Broth. = *N. disticha* (Hedw.) Kindb.
Neckeropsis pabstiana (Müll. Hal.) Broth. = *N. disticha* (Hedw.) Kindb.
Ochrobryum obtusifolium (Müll. Hal.) Mitt. = *O. gardneri* (Müll. Hal.) Lindb.
Ochrobryum parvulum Besch. = *Leucobryum subobtusifolium* (Broth.) B. H. Allen
Ochrobryum stenophyllum Besch. = *O. subulatum* Hampe in Besch.
Octoblepharum pellucidum Müll. Hal. = *O. cocuiense* Mitt.
Orthorrhynchidium planifrons (Renauld & Paris) Renauld & Cardot = *Calyptothecium planifrons* (Renauld & Paris) Argent
Orthostichidium guyanense (Mont.) Broth.. = *Hildebrandtiella guyanense* (Mont.) W. R. Buck
Orthostichidium pentagonum (Hampe & Lorentz) Müll. Hal. = *Hildebrandtiella guyanense* (Mont.) W. R. Buck
Orthostichopsis auricosta (Müll. Hal.) Broth. of reports = *O. praetermissa* W. R. Buck
Orthostichopsis crinita (Sull.) Broth. of reports = *O. praetermissa* W. R. Buck
Oxyrrhynchium remotifolium (Grev.) Broth. = *Eurhynchium remotifolium* (Grev.) A. Jaeger
Oxystegus tenuirostris (Hook. & Taylor) A. J. E. Smith = *Trichostomum tenuirostre* (Hook. & Taylor) Lindb.
Pilotrichella pentasticha (Brid.) Wijk & Margad. = *Orthostichella pentasticha* (Brid.) W. R. Buck
Pilotrichella versicolor (Müll. Hal.) A. Jaeger = *Orthostichella pentasticha* (Brid.) W. R. Buck
Pireella cavifolia (Cardot & Herzog) Cardot = *Porotrichum lindigii* (Hampe) Mitt.
Pohlia apiculata (Schwägr.) H. A. Crum & L. E. Anderson = *Bryum apiculatum* Schwägr.
Pohlia cruegeri (Hampe ex Müll. Hal.) A. L. Andrews = *Bryum apiculatum* Schwägr.
Porotrichum plicatulum Mitt. = *P. substriatum* (Hampe) Mitt.
Potamnium deceptivum Mitt. = *Colobodontium vulpinum* (Mont.) S. P. Churchill & W. R. Buck
Potamnium pacimoniense Spruce ex Mitt. = *Sematophyllum pacimoniense* (Spruce ex Mitt.) W. R. Buck
Potamnium uleanum Broth. = *P. lonchophyllum* (Mont.) Mitt.
Pseudocryphaea flagellifera (Brid.) E. Britton = *P. domingensis* (Spreng.) W. R. Buck
Rhizogonium spiniforme (Hedw.) Bruch in Krauss = *Pyrrhobryum spiniforme* (Hedw.) Mitt.
Schoenobryum gardneri (Mitt.) Manuel = *Schoenobryum concavifolium* (Griff.) Gangulee
Sematophyllum caespitosum (Hedw.) Mitt. = *S. subpinnatum* (Brid.) E. Britton
Sematophyllum fulvum Mitt. = *Aptychopsis pyrrhophylla* (Müll. Hal.) Wijk & Margad.
Sematophyllum maguireorum W. R. Buck = *Colobodontium vulpinum* (Mont.) S. P. Churchill & W. R. Buck
Sematophyllum microcarpum Sw. = *S. adnatum* (Michx.) Broth.
Syrrhopodon berteroanus (Brid.) Müll. Hal. = *S. incompletus* var. *berteroanus* (Brid.) W. D. Reese

Syrrhopodon graminicola R. S. Williams = *S. africanus* subsp. *graminicola* (R. S. Williams) W. D. Reese
Syrrhopodon griffinii H. Rob. = *S. simmondsii* Steere
Syrrhopodon incompletus var. *elatus* (Mont.) Florsch. = *S. elatus* Mont.
Syrrhopodon incompletus var. *lanceolatus* (Hampe) W. D. Reese = *S. lanceolatus* (Hampe) W. D. Reese
Syrrhopodon juruensis Broth. = *S. incompletus Schwägr.* var. *incompletus*
Syrrhopodon parasiticus var. *disciformis* (Müll. Hal.) Florsch. = *S. africanus* subsp. *graminicola* (R. S. Williams) W. D. Reese
Syrrhopodon parasiticus var. *flexifolius* (Mitt.) W. D. Reese = *S. flexifolius* Mitt.
Syrrhopodon prolifer var. *papillosus* (Müll. Hal.) W. D. Reese = *S. prolifer* var. *scaber* (Mitt.) W. D. Reese
Syrrhopodon quintasii Broth. = *S. gardneri* (Hook.) Schwägr.
Syrrhopodon ramicola Broth. = *S. cymbifolius* Müll. Hal.
Syrrhopodon rufus Hornsch. = *S. hornschuchii* C. Mart.
Syrrhopodon spruceanus Mitt. = *S. cryptocarpos* Dozy & Molk.
Syrrhopodon subdecolorans Broth. = *S. incompletus* Schwägr. var. *incompletus*
Taxithelium concavum (Hook.) Spruce, see comments under *T. planum* (Brid.) Mitt.
Thuidium antillarum Besch. = *T. tomentosum* Besch.
Thuidium campanulatum Mitt. = *Cyrto-hypnum campanulatum* (Mitt.) S. P. Churchill
Thuidium frontinoae Müll. Hal. = *Cyrto-hypnum frontinoae* (Müll. Hal.) S. P. Churchill & E. Linares C.
Thuidium involvens (Hedw.) Mitt. = *Cyrto-hypnum involvens* (Hedw.) W. R. Buck & H. A. Crum
Thuidium scabrosulum Mitt. = *Cyrto-hypnum scabrosulum* (Mitt.) W. R. Buck & H. A. Crum
Thuidium schistocalyx (Müll. Hal.) Mitt. = *Cyrto-hypnum schistocalyx* (Müll. Hal.) W. R. Buck & H. A. Crum
Tortula mniifolia (Sull.) Mitt. = *Dolotortula mniifolia* (Sull.) R. H. Zander
Trematodon humilis Mitt. = *T. longicollis* Michx.
Trematodon reflexus Müll. Hal. = *T. longicollis* Michx.
Trichosteleum fluviale (Mitt.) A. Jaeger = *T. hornschuchii* (Hampe) A. Jaeger
Trichosteleum guianae (Müll. Hal.) Broth. = *T. papillosum* (Hornsch.) A. Jaeger
Trichosteleum microcarpum (Mitt.) Broth. = *T. vincentinum* (Mitt.) A. Jaeger
Trichosteleum subdemissum (Besch.) A. Jaeger = *T. hornschuchii* (Hampe) A. Jaeger
Ulea octoblephare (Spruce ex A. Jaeger) Müll. Hal. = *Zanderia octoblepharis* (Spruce ex A. Jaeger) Goffinet
Uleastrum octoblephare (Spruce ex A. Jaeger) R. H. Zander = *Zanderia octoblepharis* (Spruce ex A. Jaeger) Goffinet
Vesicularia amphibola (Mitt.) Broth. = *V. vesicularis* (Schwägr.) Broth.
Vesicularia subdenticulata (Müll. Hal.) Broth. = *V. vesicularis* (Schwägr.) Broth.