

# A Review of Intra-Philippine Distribution Patterns of Philippine Mosses based on Recent Evidence of Tectonic Evolution of the Archipelago: Insights and Problems

**Virgilio C. Linis**

Researcher I and Curator of bryophytes and lichens, Philippine National Herbarium, Botany Division, National Museum of the Philippines, P. Burgos Ave. cor. Taft Ave., 1000 Manila. verlinis@yahoo.com

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## Abstract

A recent review of the distribution patterns of Philippine mosses is presented. Interpretation about the distribution of local moss flora through correlation with information from the latest plate tectonic history of the archipelago, which has its beginning from the Oligocene period, is discussed. Long distance and chance dispersal as alternative explanations for local moss distribution are also supported.

Keywords: biogeography, moss flora, plate tectonics, Philippines

## Introduction

Progress resulting from almost 90 years of continued bryological exploration in the Philippines has changed the overall picture of the affinity of Philippine mosses. In a recent analysis, Tan (1992) showed that the country's moss flora is predominantly East Asiatic in species composition. Moreover, three important features emerged from his analysis: (1) there is a much closer relationship between the moss floras of the Philippines (especially Luzon and Mindoro) and the Himalayan/ Indochina/ Hainan region; (2) there is a strong floristic connection between mosses on Mindanao Island, Philippines and New Guinea; and (3) endemism in Philippine mosses, both at the generic and species level, is low. The last conclusion is particularly significant; there are only two endemic Philippine moss genera known today: *Merrillobryum* Broth and *Macgregorella* Bartr and the percentage of endemic Philippine moss species has gone down to nearly 10% (Tan, 1984) from a high 30% in the early part of this century (Bartram, 1939).

The above conclusions indeed show a strong deviation from the first summary of Philippine moss phytogeography made by C. B. Robinson in 1914. Based mainly on the large moss collections housed at the Bureau of Science Herbarium, two of his conclusions then were: (1) that the moss flora of the Philippines is overwhelmingly Malayan; and (2) that the Philippine moss flora has a high percentage of endemism both at the generic and species levels.

The complex geologic history of the Philippine Island group has its beginning in the Tertiary plate tectonics of Southeast Asia (Aurelio, 2001; Fernandez, 1982; Hall 1996, 1998; and Holloway, 1982). At present, the geological evidence is clear about the composite origin of the Philippine archipelago. For instance, the island of Palawan, northeastern Panay and southwestern part of Mindoro, being part of the North Palawan-Calamian microcontinental plate, were reported to have been positioned near the coast of China, forming part of the continuous continental shelf (Southeast Eurasian Margin) with Hainan and Taiwan during the Eocene some 50 million years ago (Holloway, 1982). Because of the opening of the South China Sea in the Oligocene, Palawan, northeastern Panay and southwestern Mindoro were pushed to their present day positions in the Philippine archipelago. The origin of Eastern Mindoro, the rest of Panay and neighboring islands are still a subject of controversy, however, Aurelio (2001) have suggested that these islands could have been formed by the collision of the North Palawan microcontinental plate and the Philippine Mobile Belt.

The Philippine Mobile Belt consisted the remaining islands of the archipelago making the Luzon block and the Eastern Mindanao islands group. The Luzon block, which includes Polillo and Bicol Peninsula, were believed to have moved north from near the Equator to become position south of Taiwan in recent time. Bicol Peninsula was only connected to Luzon mainland during the last one million years. The Eastern Mindanao islands group including the large islands in the Visayas except for Negros and northeastern Panay, drifted since mid-Eocene from 140° E, 10° S south of the Equator to its present geographic position at the end of the Pleistocene (Hall, 1996). The islands group including Samar and Leyte that lie east of the Philippine Fault are interesting as they were believed to have been formed by the oblique convergence of the Philippine Sea Plate in the Pacific side of the archipelago and the Philippine Mobile Belt.

Western Mindanao, dissected by the Philippine Fault from Eastern Mindanao, was connected to each other by the Agusan-Davao and Cotabato Basins. These two basins were sedimentary deposits developed over a single pre-Oligocene volcanic arc (Quebral, 1994). Western Mindanao comprising the remaining part of the island from Mount Apo and other volcanic cones in Central Mindanao westward was formed by the interaction of the Sulu Sea-Cagayan Ridge-Sulu-Zamboanga Arc-Celebes Sea System (Aurelio, 2001). The system is a series of oceanic basins and ridges southeast of North Palawan microcontinental plate and like the latter is also part of the continental (Eurasian) plate. With all possibilities considered, the Philippine archipelago reaches its present configuration only after the last glaciation.

According to Tan and Iwatsuki (1991) the moss flora of the Philippines has 55 families, 228 genera and 700 species. The species endemism was a low 5% (Hallingback and Hodgetts, 2000). Based on my present field observations and studies of herbarium collections mainly of the Philippine National Herbarium (PNH), however, I was able to increase this number of total species count to 742. The newly added 42 species of mosses since the last count of Tan and Iwatsuki in 1991 with their corresponding published information are listed in Table 1.

While our knowledge of Philippine moss phytogeography continues to rise, much of this research focused on external phytogeography and bryogeographical affinities in relation to the neighboring countries and islands. The distribution of local mosses within the Philippine archipelago, however, is far from being well understood and defined.

**Table 1.** The newly added 42 species of mosses and their corresponding published information citing their Philippine distribution since the last count of Tan & Iwatsuki in 1991

Species	Published information citing their Philippine Distribution
1. <i>Acroporium aciphyllum</i> Dix.	Tan, B. C. 1994
2. <i>Acroporium johannis-winkleri</i> Broth.	Tan, B. C. & E. H. Mandia 2001
3. <i>Acroporium ramicola</i> (Hampe) Broth.	Tan, B. C., L. Lubos & Schwarz, U. 2000
4. <i>Atracylocarpus novoguineensis</i> (Broth. & Geh.) Norris & Kop.	Tan, B. C., L. Lubos & Schwarz, U. 2000
5. <i>Barbula zennoskeanna</i> Tan	Tan, B. C. 1994b
6. <i>Braunfelsia edentula</i> (Mitt.) Wijk. & Marg.	Linis, V. C. & B. C. Tan 2005
7. <i>Calymperes mangaloreense</i> Dix. & P. dela Verde	Tan, B. C. 1996
8. <i>Calymperes motleyi</i> Mitt. ex Dozy & Molk.	Tan, B. C. 1996
9. <i>Calymperes subintegrum</i> Broth. in J. Schmidt	Tan, B. C. 1996
10. <i>Campylopus flagelliferus</i> (C. Müll.) Jaeg.	Tan, B. C., L. Lubos & Schwarz, U. 2000
11. <i>Chaetometrium torquescens</i> Bosch. & Lac.	Tan, B. C. 1996
12. <i>Clastobryophyllum asperifolium</i> (Thwaites & Mitt.) Dix.	Tan, B. C. 1996
13. <i>Clastobryum aspernum</i> (Dix.) Tan	Tan, B. C. 1996
14. <i>Dicranoloma daymannianum</i> Bartr.	Tan, B. C. & E. H. Mandia 2001
15. <i>Dimorphocladon borneense</i> Dix.	Tan, B. C. 1996
16. <i>Distichophyllum gracicaule</i> Fleisch.	Tan, B. C. 1996
17. <i>Ectropothecium ptychopholium</i> Nishimura	Tan, B. C., L. Lubos & Schwarz, U. 2000
18. <i>Fissidens guangdongensis</i> Iwats. & Z.-H. Li	Tan, B. C., L. Lubos & Schwarz, U. 2000
19. <i>Garovaglia aristata</i> Bosch & Lac.	Tan, B. C. 1996
20. <i>Garovaglia bauerlenii</i> (Geh.) Par.	Tan, B. C., L. Lubos & Schwarz, U. 2000
21. <i>Holomitrium stenobasis</i> Dix.	Tan, B. C., L. Lubos & Schwarz, U. 2000
22. <i>Horikawaea redefnaria</i> Tan & Lin	Tan, B. C. & P. Lin 1995
23. <i>Hypnodendron auricomum</i> Broth. & Geh.	Tan, B. C., L. Lubos & Schwarz, U. 2000
24. <i>Isocladiella surcularis</i> (Dix.) Tan & Mohammed	Tan, B. C. 1993
25. <i>Leucobryum boninense</i> Sull. & Lesq.	Tan, B. C., L. Lubos & Schwarz, U. 2000
26. <i>Leucoloma amoena-virens</i> Mitt.	Tan, B. C. 1996
27. <i>Macromitrium archboldii</i> Bartr.	Tan, B. C., L. Lubos & Schwarz, U. 2000
28. <i>Meiotheciella papillosa</i> (Bosch.) B. C. Tan, Schof. & Ramsay	Tan, B. C., L. Lubos & Schwarz, U. 2000
29. <i>Neolinbergia cladomnioides</i> Akiyama	Tan, B. C., L. Lubos & Schwarz, U. 2000
30. <i>Papillidiopsis malayanum</i> (Dix.) B. C. Tan	Tan, B. C. 1993
31. <i>Pinnatella fourea</i> Thér. & P. dela Verde	Linis, V. C. & B. C. Tan 2005
32. <i>Pinnatella intralimbata</i> Fleisch.	Tan, B. C. 1996
33. <i>Raccocarpus alpinus</i> (Wright.) Par.	Tan, B. C. & E. H. Mandia 2001
34. <i>Racomitrium lanuginosum</i> (Hedw.) Brid.	Tan, B. C. 1993
35. <i>Rhaphidostichum bunodiscarpum</i> (C. Müll.) Fleisch.	Tan, B. C. 1993
36. <i>Rhynchostegiella vriesei</i> (Dozy & Molk.) Broth.	Tan, B. C., L. Lubos & Schwarz, U. 2000
37. <i>Schlotheimia emarginato-pilosa</i> herz.	Tan, B. C., L. Lubos & Schwarz, U. 2000
38. <i>Sematophyllum microclacielium</i> Fleisch.	Tan, B. C. 1993
39. <i>Symphytidontella obtusata</i> Tix.	Tan, B. C. 1996
40. <i>Symphytidontella parvifolia</i> Bartr.	Tan, B. C., L. Lubos & Schwarz, U. 2000
41. <i>Taxiphyllyum arcuatum</i> (Bosch & Sande-Lac.) He	Tan, B. C. 1993 as <i>Homalia arcuata</i> Bosch & Sande-Lac.
42. <i>Trichosteleum singapurense</i> Fleisch.	Tan, B. C., L. Lubos & Schwarz, U. 2000

Tan and Iwatsuki (1991) updated the distributional information of all Philippine moss taxa reported in literature up to the end of 1990. They summarized the distribution of Philippine mosses by identifying three general patterns: Philippine-wide, mainly Luzon, and mainly Mindanao. These distribution patterns indicate the probable origins and the effectiveness of propagules' dispersability and colonization. Despite this contribution, however, our knowledge of the distributions and affinities of Philippine mosses is far from complete. The goal of this paper is to further update our information about the intra-Philippine moss distribution patterns accumulated since the start of the 20th century until today, and presents new interpretations, conclusions, and problems.

## Materials and Methods

I compiled published information on Philippine moss flora from studies based on the Philippines exclusively (Linis, 2004; Linis and Tan, 2005; Tan, 1996; Tan and Iwatsuki, 1991; Tan, Lubos, and Schwarz, 2000; and Tan and Mandia, 2001), as well as data contained in systematic revisions and monographs of paleotropical mosses (Akiyama, Koponen, and Norris, 1991; Akiyama and Suleiman, 2001; Arts, 2001; Buck, 1980a, b; Buck and Crum, 1978; Eddy, 1988; Eddy, 1990; Eddy, 1996; Ellis and Tan, 1999; Enroth, 1994; He, 1997; He and Snider, 2000; Hofmann, 1998; Ignatov and Koponen 1996; Koponen, 1981; Kruijer, 2002; Magill, 1980; Miller and Manuel, 1982; Nowak, 1980; Tan 1990; Tan, 1993; Tan 1994; Tan, 1998; Tan, undated; Tan and Iwatsuki, 1992; Tan and Jia, 1999; Tan and Lin 1995; Tan and Robinson 1990; Touw, 2001; and Yamaguchi 1993). These publications include distribution maps that often include islands and localities from the Philippines. In addition, I included the distributional data of Philippine mosses within the archipelago from the labels of the collections kept at the PNH.

I have been critical and conservative in interpreting and analyzing the above information by accepting and rejecting certain genera and species that I believe are only synonyms. Also, I was selective in accepting distributional information of species based from publications whose range information was listed as 'Philippines' only by considering them as 'insufficiently known.'

Western Mindanao is defined here to include the entire Zamboanga peninsula, Lanao, Maguindanao and Cotabato of Mindanao Island as well Mount Apo and the highlands of Central Mindanao. Eastern Mindanao includes the remaining area of Mindanao Island as well as the smaller island groups of Dinagat and Siargao Islands.

## Results and Discussion

The various patterns of moss distributions, which I proposed for the Philippine archipelago and their examples, are shown in Table 2. These patterns seem to exist today because of two factors: 1.) New discoveries and progress made in the study of local moss flora in the last 15 years have increased and improved on the distributional information of many local species; and, 2.) Many islands and regions in the archipelago have sufficient data to permit biogeographic assumptions at this time.

**Table 2.** Intra-Philippine distribution patterns of Philippine mosses (742 spp) based from published information and from collections kept at the Philippine National Herbarium (PNH)

Categories	No. of taxa	%	Various examples of Philippine mosses for each category
1. Widespread in the Philippines	73	9.84	<i>Bryum coronatum</i> Schwaegr., <i>Spiridens reinwardtii</i> Nees, <i>Taxithelium instratum</i> (Brid.) Broth., and <i>Pyrhobryum spiniforme</i> (Hedw.) Mitt.
2. Luzon	220	29.65	
2.1 Documented in Northern Luzon (Cordilleran) only	116	15.63	<i>Floribundaria aurea</i> (Mitt.) Broth., <i>Macrothamnium hylocomioides</i> Fleisch., <i>Neckera crenulata</i> Harv. in Hook., <i>Merilliobryum frabronioides</i> Broth., and <i>Rhacithecium papillosum</i> (Williams) Wijk & Marg.
2.2 Known only in Bicol Peninsula	3	0.41	<i>Phylodon lingulatus</i> (Card.) Buck, and <i>Calyptothecium squarrosum</i> Nog. & Tan
2.3 Widespread in Luzon	101	13.61	<i>Aerobryopsis parisii</i> (Card.) Broth., <i>Brachymenium coarctatum</i> Bosch. & Lac., <i>Desmoneura brachiata</i> (Hook. & Wils.) Vitt, and <i>Indothuidium kiasense</i> (Williams) Touw
3. Luzon & Mindoro	48	6.47	<i>Barbula consanguinea</i> (Thwait. & Mitt.) Jaeg., <i>Braunfelsia edentula</i> (Mitt.) Wijk. & Marg., <i>Clastrobryum cuculligerum</i> (Lac.) Tix., and <i>Glyptothecium sciurooides</i> (Hook.) Hampe
4. Luzon & Palawan	22	2.96	<i>Calymperes afzelii</i> Sw., <i>Duthiella declinata</i> (Mitt.) Zant., <i>Fissidens hollianus</i> Dozy & Molk., and <i>Leucoloma walkeri</i> Broth.
5. Luzon, Mindoro & Palawan	16	2.16	<i>Aerobrytidium crispifolium</i> (Broth. & Geh.) Fleisch., <i>Calymperes erosum</i> C. Müll., <i>Clastrobryophilum bogoricum</i> (Bosch & Lac.) and <i>Garckeia flexuosa</i> (Griff.) Marg. & Nork.
6. Luzon, Mindoro, Palawan & western Mindanao	24	3.23	<i>Acropodium secundum</i> (Reinw. & Hornsch.) Fleisch., <i>Chaetomitrium orthorrhynchum</i> (Dozy & Molk.) Bosch & Lac., <i>Distichophyllum nigricaulle</i> Mitt. ex Bosch & Lac., and <i>Himantocladium plumula</i> (Nees) Fleisch.
7. Luzon, Mindoro & Panay	2	0.27	<i>Macromitrium reinwardtii</i> Schwaegr. and <i>Acropodium sigmatodontium</i> (C. Müll.) Fleisch.

**Table 2.** Cont.

Categories	No. of taxa	%	Various examples of Philippine mosses for each category
8. Disjunctive between Luzon & some islands in the Visayas	68	9.16	<i>Aequatoriella bifaria</i> (Bosch & Lac.) Touw, <i>Cirriphyllum oxyrrhynchum</i> (Dozy & Molk.) Fleisch., <i>Dicranella coarctata</i> (C. Müll.) Bosch. & Lac., and <i>Eurychium vagans</i> (Jaeg.) Bartr.
9. Disjunctive between Luzon & Mindanao	136	18.32	<i>Breutelia arundinifolia</i> (Duby) Fleisch., <i>Calymperes serratulum</i> A. Br. ex C. Müll., <i>Dicranoloma brevisetum</i> (Dozy & Molk.) Par., and <i>Zygodon reinwardtii</i> (Hornsch.) Braun in B. S. G.
10. Mindoro only	3	0.41	<i>Dicranoloma daymannianum</i> Bartr., <i>Distichophyllum noguchiianum</i> Tan, and <i>Rhaccocarpus alpinus</i> (Wright.) Par.
11. Disjunctive between Mindoro & Mindanao	10	1.35	<i>Macromitrium ochraceum</i> (Dozy & Molk.) C. Müll., <i>Papillaria leuconeura</i> (C. Müll.) Jaeg., <i>Syrrhopodon prolifer</i> Schwaegr., and <i>Trismegistia panduriformis</i> (C. Wright) Broth.
12. Mindoro & some islands in the Visayas	6	0.81	<i>Syrrhopodon spiculosus</i> Hook. & Grev., <i>Leucobryum chlorophyllosum</i> C. Müll., <i>Haplolyrium pseudotriste</i> (C. Müll.) Broth., and <i>Racomitrium lanuginosum</i> (Hedw.) Brid.
13. Mindoro & Palawan only	3	0.41	<i>Pelekium bonianum</i> (Besch.) Touw, <i>Taxiphyllum arcuatulum</i> (Bosch & Sande-Lac.) He, and <i>Taxithelium merillii</i> Broth.
14. Palawan & Sulu archipelago	21	2.83	<i>Clastobryophyllum asperifolium</i> (Thwait. & Mitt.) Dix., <i>Eptychium setigerum</i> (Sull.) Broth., <i>Garovaglia aristata</i> Bosch & Lac., and <i>Pinnatella mucronata</i> (Bosch & Lac.) Fleisch.
15. Palawan & western Mindanao	1	0.14	<i>Desmotheca apiculata</i> (Dozy & Molk.) Lindb. in Card.
16. Visayas 16.1 Leyte & Samar	3	0.41	<i>Neckeropsis boniana</i> (Besch.) Touw & Ochyra, <i>Neckeropsis moutieri</i> (Broth. & Par.) Fleisch.
16.2 Recorded two or more islands	1	0.14	<i>Chaetomitrium elmeri</i> Broth.
17. Visayas & Mindanao only	5	0.67	<i>Distichophyllum kinabaluense</i> Nog. & Iwats., <i>Mastopoma uncinifolium</i> (Broth.) Broth. in Par., and <i>Oligotrichum falcifolium</i> (Griff.) G. Smith.
18. Mindanao and Sulu archipelagos 18.1 Widespread in Mindanao	61	8.22	<i>Acroporium ramicola</i> (Hampe) Broth., <i>Atryctylorus novoguineensis</i> (Broth. & Geh.) Norris & Kop., <i>Dicranoloma armittii</i> (C. Müll.) Par., and <i>Dawsonia longifolia</i> (Bruch & Schimp.) Zant. var. <i>superba</i> (Grev.) Zant.
18.2. Eastern Mindanao only	6	0.81	<i>Bryobrothera crenulata</i> (Broth. & Par.) Thér., <i>Campylopus flagelliferus</i> (C. Müll.) Jaeg., <i>Papillidiopsis malesiana</i> Buck & Tan, and <i>Leskeodon acuminatus</i> (Bosch & Lac.) Fleisch.
18.3 Western Mindanao & Sulu archipelagos	19	2.56	<i>Cinclidotus involutus</i> Hilp., <i>Distichophyllum cucullatum</i> Bartr., <i>Ectropotheciopsis novoguineensis</i> (Geh.) Fleisch., and <i>Fissidens zwickeyi</i> Bartr.
18.4 Sulu archipelago only	1	0.14	<i>Chaetomitrium pseudo-elongatum</i> Broth. in Warb.

**Table 2.** Cont.

Categories	No. of taxa	%	Various examples of Philippine mosses for each category
19. Known only from one island, such as Panay, Bohol, Negros, Samar, Leyte, Sibuyan, Camiguin, etc. (Mindoro, Palawan and Sulu archipelagos are given a different category)	12	1.62	<i>Buxbaumia javanica</i> C. Müll., <i>Leskeodon philippinensis</i> Broth., <i>Rhamphidium dixonii</i> Bartr., <i>Hookeriopsis wichurae</i> Fleisch., and <i>Splachnobryum limbatum</i> Norris & Zander
20. Insufficiently known taxa	8	1.07	<i>Wijkia hornschuchii</i> (Dozy & Molk.) Crum, and <i>Papillidiopsis ramulina</i> (Thwait. & Mitt.) Buck & Tan
Total	742	100.00	

The Philippine terrestrial biogeographic regions were reviewed and updated using the geographic distribution patterns of plants (mainly flowering plants), arthropods, amphibians, reptiles, birds and mammals. This update includes the 16 biogeographic regions recognized by the DENR, as published in the second iteration of the National Biodiversity Strategy and Action Plan of 1997 (Ong, Afuang, and Rosell-Ambal, 2002). However, for the analysis of intra-Philippine distribution patterns of Philippine mosses based on current information about 20 categories are recognized in this paper. All these categories were based on our current knowledge on the local plate tectonics of the Philippine Island groups and from known distribution patterns of flowering plants and major animal groups.

Only 73 species (9.84%) of the Philippine mosses are widespread. Perhaps this number is still small and may increase in the near future as more extensive collections are made in all islands within the archipelago. More than 82.21% (ca 610 spp.) of Philippine mosses are found in Luzon Island making Luzon the most bryologically investigated island within the archipelago or perhaps the most species-rich island with respect to bryophytes. Of these, approximately 116 and 3 species are documented within the Cordillera Mountain Range of Northern Luzon and from Bicol Peninsula, respectively. Those documented from Cordillera Mountain Range are mainly temperate East Asiatic mosses, including Himalayan taxa, which reached this northern highland of Luzon but failed to colonize the rest of the island. The 3 moss taxa documented from Bicol have no report outside the peninsula as of now.

Many mosses display disjunctive distribution patterns within the Philippines. For example, 136 species were recorded only on Luzon

and Mindanao, and 10 species were only collected on Mindoro and Mindanao. Species displaying disjunctive distributions are likely a result of under-sampling in the intervening islands.

Sixty-one species (ca 8.22%) of Philippine mosses were known only from the Mindanao Island group and Sulu archipelagos. This pattern is consistent with Hall's (1998) claim that the island of Mindanao and Sulu archipelagos have different geological origins and plate tectonic histories from the rest of the islands forming the Philippine archipelago. Specifically, the moss flora of Mindanao Island has a strong southern and Australasian influence compared to other large islands in the Philippines (Tan, Lubos, and Schwarz, 2000).

A number of Philippine mosses are known only from a single island (e.g., Mindoro or Palawan), groups of islands (e.g., Luzon, Mindoro and Panay, Palawan and Sulu archipelagos and the Western Mindanao and Sulu archipelagos) or part of a former island, such as Southern Batangas of Luzon Island, that are known to have an Asiatic continental crust origin. These categories are apparently valid since they show a plate tectonic basis. For example, southern Batangas of Luzon Island, Mindoro and parts of northern Panay are all known to have originated from the Asiatic continental shelf.

Only seven species (0.94%) were included under the 'insufficiently known taxa' category. These species were reported in the literature including Philippines in their distributional range but the actual locality where they are found within the archipelago has not been cited in literature.

I must emphasize that the intra-Philippine distribution patterns displayed by Philippine mosses in Table 2 are based on the interpretation of available information and are considered reliable as long as these data remain valid. Many areas in the Philippines remain under-sampled, including the Eastern Visayas and Mindanao.

It is also worth noting moss species are alive and active in nature today in the Philippines, thus, a species found only in Luzon at present may eventually spread to Palawan or Mindanao Island in the next thousand of years. Perhaps, this is a reflection of the ease of dispersal of moss propagules over great distances as they can be moved about by wind, by typhoons, by birds and other animals and by all means of long distance dispersal. What is often lacking is the presence of an ideal habitat for the moss species to become established and thrive on, hence, its absence in an island or a region in the Philippines as of now.

Knowledge of Philippine moss phytogeography continues to rise. Much of it, however, is focused on external phytogeography and bryogeographical affinities in relation to the neighboring countries and islands. The goal of this paper is, therefore, to further update our information about the intra-Philippine moss distribution patterns accumulated since the start of the 20th century until today, and presents new interpretations, conclusions, and problems. Published information on Philippine moss flora as well as the distribution data of Philippine mosses within the archipelago from the labels of the collections kept at the Philippine National Herbarium (PNH) are analyzed and resulted to the following patterns of moss distributions: Only 73 species (9.84%) of the Philippine mosses are widespread; More than 82.21% (ca 610 spp.) of Philippine mosses are found in Luzon Island. Of these, approximately 116 and 3 species are documented within the Cordillera Mountain Range of Northern Luzon and from Bicol Peninsula, respectively. Many mosses display disjunctive distribution patterns within the Philippines and are likely a result of under-sampling in the intervening islands. Sixty-one species (ca 8.22%) of Philippine mosses are known only from the Mindanao Island group and Sulu archipelago. A number of Philippine mosses are known only from a single island, and only seven species (0.94%) are included under the 'insufficiently known taxa' category. Intra-Philippine distribution patterns displayed by Philippine mosses in this study are based on the interpretation of available information and are considered reliable as long as these data remain valid. Many areas in the Philippines remain undersampled

## Conclusions

I wish to conclude that the most serious threat to the study of Philippine mosses today is the rapid and continued destruction of the forests throughout the country. According to the Environmental Science for Social Change (1999) the calculated rate of loss of forest cover in the Philippines is about 200,000 hectares per year. Unless bryologists work hand in hand with environmentalists and conservationists to protect and preserve the remaining natural forests, we will never be able to determine the actual local distribution of Philippine mosses in this country as well as conserve the Philippine moss diversity.

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**Appendix.** List of Philippine mosses and their current intra- and extra-Philippine distribution

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Accanthurryncium papillatum</i>	Widespread	Malesia, Australia
<i>Achrophyllum javense</i>	Luzon & Mindanao	Java, New Guinea and Southern Hemisphere
<i>Acroporium aciphyllum</i>	Luzon	Thailand and Malay Peninsula
<i>Acroporium condensatum*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Acroporium diminutum</i>	Widespread	Tropical Asia
<i>Acroporium hamulatum</i>	Luzon, Mindoro & Palawan	Malesia
<i>Acroporium hermaphroditum</i>	Luzon & Mindanao	Malesia
<i>Acroporium johannis-winkleri</i>	Visayas & Mindanao	West Malesia
<i>Acroporium lamprophyllum</i>	Luzon & some islands in the Visayas	Malesia, Australia and Oceania
<i>Acroporium ramicola</i>	Mindanao	Borneo and Papua New Guinea
<i>Acroporium rufum</i>	Widespread	Borneo, Java and Sumatra
<i>Acroporium secundum</i>	Luzon, Mindoro, Palawan & Western Mindanao	China, Indochina, Malay Peninsula, Borneo and Java
<i>Acroporium sigmatodontium</i>	Luzon, Mindoro, & Panay	Indochina, Malesia and Oceania (Hawaii)
<i>Acroporium stramineum</i>	Widespread	Malesia, Northern Australia and Oceania
<i>Acroporium strepsiphyllum</i>	Luzon & Mindanao	Tropical Asia, Australia and Oceania
<i>Actinodontium ascendens</i>	Insufficiently known taxa	Sri Lanka, Thailand and Malesia
<i>Actinodontium rhipidostegum</i>	Luzon & Mindanao	Malay Peninsula, Java, Borneo and Sulawesi
<i>Aequatoriella bifaria</i>	Luzon & some islands in the Visayas	Malesia and Oceania
<i>Aerobrytidium filamentosum</i>	Luzon & Mindanao	Sri Lanka, India, Himalayas, Indochina, west Malesia
<i>Aerobryopsis crispifolia</i>	Luzon, Mindoro & Palawan	Malay Peninsula, Borneo, Sulawesi, Lesser Sunda Islands and New Guinea
<i>Aerobryopsis leptosigmata</i>	Bicol	Vietnam, Malay Peninsula, Sumatra, Java and New Guinea
<i>Aerobryopsis parisii</i>	Luzon	China (Taiwan) and Japan
<i>Aerobryopsis subdivergens</i>	Luzon & Mindanao	Taiwan, Japan and Borneo
<i>Aerobryopsis wallichii</i>	Widespread	Continental Asia and Malesia
<i>Aerobryum speciosum</i>	Luzon & Mindanao	Sri Lanka, India, Bhutan, China, Thailand, Vietnam, Indonesia and New Guinea
<i>Amphidium papillosum</i>	Northern Luzon (Cordilleran)	Circumtemperate reaching northern Malesia
<i>Anoectangium aestivum</i>	Northern Luzon (Cordilleran)	sub-Cosmopolitan
<i>Anoectangium euchloron</i>	Luzon & Mindoro	Pantropical
<i>Anomobryum auratum</i>	Northern Luzon (Cordilleran)	East Africa
<i>Anomobryum erectum</i>	Northern Luzon (Cordilleran)	Cosmopolitan
<i>Anomobryum gemmigerum*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Anomodon viticulosus</i>	Northern Luzon (Cordilleran)	Circumpolar Boreo-temperate
<i>Aongstroemia orientalis</i>	Northern Luzon (Cordilleran)	Siberia, India, China, Himalayas, Malesia (Borneo) and Central America
<i>Arthrocormus schimperi</i>	Luzon & Mindanao	Tropical Asia and Oceania
<i>Atractylocarpus novoguineensis</i>	Mindanao	Bhutan, Nepal, Sumatra, Borneo, Sulawesi and New Guinea
<i>Atrichum crispulum</i>	Northern Luzon (Cordilleran)	Sub-Oceanic Boreal-Montane reaching Malesia
<i>Atrichum undulatum</i>	Northern Luzon (Cordilleran)	Circumpolar Boreo-temperate reaching northern Malesia
<i>Barbella compressiramea</i>	Luzon	India, Himalayas, China (Taiwan) and Burma
<i>Barbella convolvens</i>	Mindoro & some islands in the Visayas	India, Ceylon, Himalayas, Thailand, Sumatra, Java, Sulawesi and Borneo

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Barbella cubensis</i>	Luzon & Mindanao	Sri Lanka, India, Sikkim, Bhutan, China, Japan, Thailand, Borneo, Sumatra, Java, New Guinea, Australia and Central America
<i>Barbella elongata*</i>	Luzon & Mindanao	Philippine Endemic
<i>Barbella flagellifera</i>	Luzon	Sri Lanka, India, Indochina, Japan, China (Taiwan) and Malesia
<i>Barbella horridula</i>	Northern Luzon (Cordilleran)	Sumatra
<i>Barbella macroblastica*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Barbella stevensii</i>	Northern Luzon (Cordilleran)	India, Himalayas and Thailand
<i>Barbula arcuata</i>	Luzon	Tropical and subtropical Asia
<i>Barbula consanguinea</i>	Luzon & Mindoro	Tropical Asia
<i>Barbula indica</i>	Widespread	Pantropical
<i>Barbula inflexa</i>	Luzon & some islands in the Visayas	Tropical Asia
<i>Barbula javanica</i>	Luzon & Mindanao	Sumatra and Java
<i>Barbula obscuriretis</i>	Luzon & some islands in the Visayas	Tropical Asia
<i>Barbula pseudoehrenbergii</i>	Luzon & some islands in the Visayas	Tropical Asia
<i>Barbula subcomosa</i>	Luzon & some islands in the Visayas	Pantropical
<i>Barbula williamsii*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Bartramia ithyphylla</i>	Northern Luzon (Cordilleran)	Widely distributed bipolar species. In the tropic confined to high mountains of New Guinea and Australia
<i>Bartramidula imperfecta</i>	Endemic to only one island (Leyte)	Borneo
<i>Bescherellia elegantissima</i>	Western Mindanao & Sulu archipelago	Sulawesi, New Guinea, Australia and New Zealand
<i>Brachymenium acuminatum</i>	Northern Luzon (Cordilleran)	Continental Asia, mainly northern and western Malesia
<i>Brachymenium coarctatum</i>	Luzon	Malesia and Oceania
<i>Brachymenium exile</i>	Luzon & some islands in the Visayas	Pantropical and pan-subtropical
<i>Brachymenium nepalense</i>	Widespread	Continental East Asia, Malesia and Fiji
<i>Brachythecium buchananii</i>	Northern Luzon (Cordilleran)	India, Bhutan, China, Japan, Korea and Indochina
<i>Brachythecium plumosum</i>	Luzon & Mindanao	Sri Lanka, Bhutan, China, Japan, Korea, Borneo, New Guinea, Australia, Oceania (Hawaii), America, Africa and Europe
<i>Braunfelsia dicranoides</i>	Luzon & Mindanao	Malesia
<i>Braunfelsia edentula</i>	Luzon & Mindoro	Malesia
<i>Breutelia arundinifolia</i>	Luzon & Mindanao	East Asia and Oceania
<i>Breutelia merrillii*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Brothera leana</i>	Northern Luzon (Cordilleran)	Eastern Europe and America
<i>Brotherella curvirostris</i>	Northern Luzon (Cordilleran)	India, Himalayas, Indochina and China
<i>Brotherella falcata</i>	Luzon	Indochina, China, Japan and Malesia
<i>Bryobrothera crenulata</i>	Eastern Mindanao	Australia (Queensland), Oceania (Fiji), Solomon Islands and New Caledonia
<i>Bryoxiphium norvegicum</i>	Northern Luzon (Cordilleran)	China, Japan, Lesser Sunda Islands (Lombok)
<i>Bryum apiculatum</i>	Luzon & Mindanao	Tropical and subtropical Asia, northern Australia and Oceania
<i>Bryum argenteum</i>	Northern Luzon (Cordilleran)	Cosmopolitan
<i>Bryum billardieri</i>	Luzon & Mindoro	Pantropical and Pan-subtropical
<i>Bryum capillare</i>	Luzon, Mindoro & Palawan	Cosmopolitan
<i>Bryum cellulare</i>	Luzon & some islands in the Visayas	Pantropical and Pan-temperate
<i>Bryum clavatum</i>	Luzon & Mindoro	Circum-temperate

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Bryum coronatum</i>	Widespread	Pantropical
<i>Bryum erythropilum</i>	Luzon & Mindanao	Tropical and subtropical Asia
<i>Bryum neelgheriense</i>	Northern Luzon (Cordilleran)	Pantropical and Pan-subtropical
<i>Bryum paradoxum</i>	Widespread	Pantropical
<i>Bryum rubrolimbatum</i>	Northern Luzon (Cordilleran)	Temperate northern and southern hemisphere, India, Japan and Malesia
<i>Bryum russulum</i>	Northern Luzon (Cordilleran)	Borneo, Sulawesi and New Guinea
<i>Buxbaumia javanica</i>	Endemic to one island only (Negros)	Malesia
<i>Caduciciella mariei</i>	Luzon & Palawan	Southwest China, tropical Asia, Australia, Oceania and Africa (Tanzania)
<i>Callicostella beccariana</i>	Luzon	Sumatra and Borneo
<i>Callicostella papillata</i>	Widespread	Paleotropical
<i>Callicostella prabaktiana</i>	Luzon & Mindanao	Vietnam, Thailand, Malay Peninsula, Java, Borneo and New Guinea
<i>Calymperes aeruginosum</i>	Luzon & Mindanao	Malay Peninsula, Java, Sulawesi, New Guinea, Solomon Island, Fiji and New Caledonia
<i>Calymperes afzelii</i>	Luzon & Palawan	Nearly Pantropical
<i>Calymperes boulaiyi</i>	Luzon & Mindanao	Indo-Pacific
<i>Calymperes erosum</i>	Luzon, Mindoro & Palawan	Essentially Pantropical
<i>Calymperes fasciculatum</i>	Luzon & some islands in the Visayas	Indo-Pacific
<i>Calymperes graeffeanum</i>	Widespread	Paleotropical and Oceania
<i>Calymperes hyophilaceum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Paleotropical and Oceania
<i>Calymperes lonchophyllum</i>	Luzon & Palawan	Pantropical
<i>Calymperes mangalorensis</i>	Palawan & Sulu archipelago	Southern India
<i>Calymperes molluscense</i>	Luzon, Mindoro, Palawan & Western Mindanao	Indo-Pacific
<i>Calymperes motleyi</i>	Palawan & Sulu archipelago	Seychelles, India, Thailand, Malay Peninsula, Borneo, Sulawesi, Java, Oceania and Australia
<i>Calymperes porrectum</i>	Mindoro & Mindanao	Indo-Pacific
<i>Calymperes robinsonii</i>	Luzon & some islands in the Visayas	Malay Peninsula, Papua New Guinea
<i>Calymperes schmidti</i>	Palawan & Sulu archipelago	Thailand, Malay Peninsula, Fiji, New Caledonia and Australia
<i>Calymperes serratum</i>	Widespread	Paleotropical
<i>Calymperes strictifolium</i>	Luzon & Mindanao	Indo-Pacific
<i>Calypertes subserratum</i>	Mindanao	Java and New Britain
<i>Calypertes subintegrum</i>	Luzon	Indo-Pacific
<i>Calypertes taitense</i>	Widespread	Paleotropical
<i>Calypertes tenerum</i>	Widespread	Pantropical
<i>Calypthothecium crispulum</i>	Luzon & Mindanao	Nepal, Sumatra and Java
<i>Calypthothecium hookeri</i>	Northern Luzon (Cordilleran)	Himalayas, China, Taiwan, Japan, Burma and Thailand, China
<i>Calypthothecium ramosii</i>	Luzon & some islands in the Visayas	India, Sri Lanka, Ceylon, China, Indonesia, New Guinea and Oceania
<i>Calypthothecium recurvulum</i>	Luzon & Mindanao	Philippines Endemic
<i>Calypthothecium squarrosum*</i>	Bicol	India, Indochina, Malesia and Oceania
<i>Calypthothecium urvilleanum</i>	Widespread	Java
<i>Calyptrochaeta microblasta</i>	Luzon & Mindanao	Malesia
<i>Calyptrochaeta parviretis</i>	Luzon & Mindoro	China
<i>Calyptrochaeta ramosa</i>	Luzon	India, Malay Peninsula, Sumatra, Java, Borneo and New Guinea
<i>Calyptrochaeta remotifolia</i>	Luzon & Mindanao	Indo- Malesia
<i>Campylopodium medium</i>	Luzon & Mindoro	Tropical Asia
<i>Campylopus aureus</i>	Luzon	New Guinea
<i>Campylopus austrosubulatus</i>	Northern Luzon (Cordilleran)	Tropical and sub-tropical Asia
<i>Campylopus comosus</i>	Luzon & Mindanao	

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Campylopus ericooides</i>	Luzon & Mindoro	Continental Asia and Malesia
<i>Campylopus exasperatus</i>	Luzon & some islands in the Visayas	Malesia
<i>Campylopus flagelliferus</i>	Eastern Mindanao	Pantropical
<i>Campylopus hermitrichus</i>	Luzon & Mindanao	Malesia
<i>Campylopus laxitextus</i>	Luzon & some islands in the Visayas	Java and Sulawesi
<i>Campylopus savannarum</i>	Luzon	Almost Circum-tropical
<i>Campylopus umbellatus</i>	Widespread	Paleotropical
<i>Ceratodon purpureus</i>	Northern Luzon (Cordilleran)	Cosmopolitan
<i>Chaetomitriopsis glaucoarpa</i>	Luzon & Mindanao	Nepal, Sikkim, Assam China (Taiwan), Laos, Vietnam, Malay Peninsula, Java, Sulawesi and New Guinea
<i>Chaetomitrium beccarii</i>	Luzon & some islands in the Visayas	Borneo
<i>Chaetomitrium elegans</i>	Western Mindanao & Sulu archipelago	New Guinea
<i>Chaetomitrium elmeri</i>	Visayas	Borneo
<i>Chaetomitrium elongatum</i>	Palawan & Sulu archipelago	Java, Borneo and Moluccas
<i>Chaetomitrium everetti</i>	Palawan & Sulu archipelago	Borneo
<i>Chaetomitrium fimbriatum</i>	Insufficient data	Borneo, Moluccas and New Guinea
<i>Chaetomitrium laevifolium*</i>	Palawan & Sulu archipelago	Philippine Endemic
<i>Chaetomitrium lanceolatum</i>	Northern Luzon (Cordilleran)	Java
<i>Chaetomitrium leptopoma</i>	Luzon	Malay Peninsula, Borneo and Java
<i>Chaetomitrium orthorrhynchum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Indochina and Malesia
<i>Chaetomitrium papillifolium</i>	Luzon & Mindanao Malesia	Sri Lanka, India, Indochina and
<i>Chaetomitrium perarmatum*</i>	Luzon	Philippine Endemic
<i>Chaetomitrium philippinense</i>	Visayas & Mindanao	Malesia
<i>Chaetomitrium pseudo-elongatum*</i>	Sulu archipelago	Philippine Endemic
<i>Chaetomitrium schofieldii</i>	Western Mindanao & Sulu archipelago	Borneo
<i>Chaetomitrium torquescens</i>	Palawan & Sulu archipelago	Java, Seram and New Guinea
<i>Chaetomitrium warburgii*</i>	Luzon & Mindanao	Philippine Endemic
<i>Chaetomitrium weberi</i>	Western Mindanao & Sulu archipelago	Borneo
<i>Chameleion pequense</i>	Luzon	Pantropical
<i>Chiostomum rostratum</i>	Luzon	Sri Lanka, India, Indochina, China and Malesia
<i>Chrysocladium flammeum</i>	Northern Luzon (Cordilleran)	India, Himalayas, China, Japan and Thailand
<i>Chrysocladium retrorsum</i>	Northern Luzon (Cordilleran)	India, Ceylon, China, Japan, Vietnam and Taiwan
<i>Cinclidotus involutus</i>	Western Mindanao & Sulu archipelago	New Guinea and Oceania
<i>Cirriphyllum oxyrrhynchum</i>	Luzon & some islands in the Visayas	Java
<i>Cladopodanthus muticus</i>	Luzon & Mindanao	Borneo
<i>Cladopodanthus speciosus</i>	Luzon & some islands in the Visayas	Malay Peninsula, Sumatra, Borneo, in Java and Papua New Guinea
<i>Claopodium assurgens</i>	Luzon & Mindanao	Continental Asia and Java
<i>Claopodium prionophyllum</i>	Widespread	Continental East Asia, Malesia and Oceania
<i>Clastobryophilum asperifolium</i>	Palawan & Sulu archipelago	Sri Lanka and Malay Peninsula
<i>Clastobryophilum bogoricum</i>	Luzon, Mindoro & Palawan	Indochina, Malay Peninsula, Java and Borneo
<i>Clastobryopsis brevinnervis</i>	Northern Luzon (Cordilleran)	Southern Japan, Borneo, Java and Lesser Sunda Islands (Bali, Lombok and Flores)
<i>Clastobryopsis robusta</i>	Northern Luzon (Cordilleran)	China (Taiwan), Japan, Borneo, Java and New Guinea
<i>Clastobryum asperrimum</i>	Palawan & Sulu archipelago	Borneo
<i>Clastobryum caudatum</i>	Luzon & Mindoro	Vietnam, Thailand and Malesia

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Clastobryum conspicuum</i>	Northern Luzon (Cordilleran)	China, Borneo, Java and New Guinea
<i>Clastobryum cuculligerum</i>	Luzon & Mindoro	Java
<i>Clastobryum epiphyllum</i>	Luzon & Palawan	Sri Lanka, Lesser Sunda Islands and Australia
<i>Clastobryum glabrescens</i>	Mindanao	China and Taiwan
<i>Clastobryum igrotum</i>	Northern Luzon (Cordilleran)	Malesia
<i>Clastobryum indicum</i>	Luzon	Burma, Vietnam and Malesia
<i>Clastobryum leucophyllum</i>	Luzon & Mindoro	Malesia
<i>Clastobryum novoginensis</i>	Northern Luzon (Cordilleran)	New Guinea
<i>Clastobryum panchoi</i>	Luzon & Palawan	Malesia
<i>Clastobryum rutilans</i>	Northern Luzon (Cordilleran)	Malesia
<i>Clastobryum scalare</i>	Eastern Mindanao	Java
<i>Clastobryum spiculiferum</i>	Northern Luzon (Cordilleran)	Thailand, Malay Peninsula Sumatra and Lesser Sunda Islands (Flores)
<i>Cryptodicranum armitii</i>	Mindanao	Borneo, Sulawesi, Maluku, New Guinea, New Britain and Solomon Islands
<i>Cryptogonium phyllogonioides</i>	Mindoro & Mindanao	Widely disjunctive in Malay Peninsula, Java, New Guinea, Oceania, New Caledonia, New Zealand, New Hebrides and Austral Island
<i>Cryptopillaria fuscescens</i>	Luzon & Mindanao	Sri Lanka, India, southern China, Himalayas, Indochina, Malesia New Guinea and Samoa
<i>Ctenidiadelphus plumularia</i>	Endemic to one island only (Negros)	Peninsular Malaysia, Borneo and Java
<i>Ctenidium andoi</i>	Luzon & Mindoro	Japan, China (Taiwan), Java and New Guinea
<i>Ctenidium luzonense*</i>	Luzon & Mindanao	Philippine Endemic
<i>Ctenidium malacobolum</i>	Northern Luzon (Cordilleran)	Japan, China (Taiwan), Malesia and New Caledonia
<i>Ctenidium polychaetum</i>	Luzon & some islands Visayas	Java, Borneo, Ceram and New in the Hebrides
<i>Cyathophorum adiantum</i>	Widespread	Malesia and Solomon Island
<i>Cyathoporum hookerianum</i>	Luzon	Nepal, Bhutan, India, China, Japan, Taiwan, Indochina, Peninsular Malaysia, Java
<i>Cyathoporum parvifolium</i>	Luzon & Mindanao	Sumatra, Java, Moluccas and Papua New Guinea
<i>Cyathoporum spinosum</i>	Luzon & some islands in the Visayas	Indochina, Malesia and New Hebrides
<i>Cyclodictyon blumeanum</i>	Widespread	South China, Malesia and Oceania
<i>Daltonia angustifolia</i>	Luzon & Mindanao	Sri Lanka, Nepal, Vietnam, Malay Peninsula, Borneo, Java, New Guinea and New Zealand
<i>Daltonia aristifolia</i>	Mindanao	Tropical Asia
<i>Daltonia armata</i>	Mindoro & Mindanao	Malay Peninsula and Sumatra
<i>Daltonia contorta</i>	Northern Luzon (Cordilleran)	Sri Lanka, Malay Peninsula, Java, Fiji and Hawaii
<i>Dawsonia beccariei var. <i>limbata</i></i>	Mindanao	Borneo, Sulawesi and New Guinea
<i>Dawsonia longifolia var. <i>superba</i></i>	Mindanao	Borneo, Sulawesi, New Guinea and New Zealand
<i>Dendrocyathophorum decolyi</i>	Northern Luzon (Cordilleran)	India, China, Japan, Taiwan, Sumatra, Java, Moluccas, Seram and New Guinea
<i>Desmotrichia apiculata</i>	Palawan & Western Mindanao	Widely scattered from the Andamans to New Caledonia, but absent in northern Borneo
<i>Desmotrichia brachiata</i>	Luzon	Malay Peninsula and New Guinea
<i>Diaphanodon blandus</i>	Northern Luzon (Cordilleran)	Sri Lanka, India, China (Taiwan), Himalayas, Sumatra, Borneo, Java and Lesser Sunda Islands

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Dicranella coarctata</i>	Luzon & some islands in the Visayas	Indo- Malesia
<i>Dicranella schreberiana</i>	Northern Luzon (Cordilleran)	Circumpolar Boreo-temperate reaching Northern Malesia
<i>Dicranella setifera</i>	Luzon & some islands in the Visayas	South-East Asia
<i>Dicranodontium fleischerianum</i>	Luzon & Mindanao	Sri Lanka, Himalayas, Japan, Taiwan, Java, Western and Central Europe and Africa (Morocco)
<i>Dicranodontium subasperum*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Dicranoloma assimile</i>	Luzon & Mindanao	China (Hainan), Thailand, Malesia, and Oceania
<i>Dicranoloma billardieri</i>	Luzon & Mindanao	Vietnam, Malesia, Australia, New Caledonia, New Zealand, southern and eastern Africa, Antarctic Islands and southern South America
<i>Dicranoloma blumii</i>	Widespread	China (Taiwan), Malesia and Oceania
<i>Dicranoloma brevisetum</i>	Luzon & Mindanao	Sri Lanka, India, Vietnam, Malesia and Oceania
<i>Dicranoloma daymannianum</i>	Mindoro	Vietnam, Malay Peninsula, Sumatra, Java, Sulawesi, Lesser Sunda Islands and New Guinea
<i>Dicranoloma fragile</i>	Northern Luzon (Cordilleran)	South-East Asia
<i>Dicranoloma reflexum</i>	Luzon & some islands in the Visayas	Malay Peninsula, Java and Sumatra
<i>Didymodon constrictus</i>	Northern Luzon (Cordilleran)	Tropical Asia
<i>Didymodon luzonensis*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Dimorphocladon borneense</i>	Palawan & Sulu archipelago	Thailand and Borneo
<i>Diphyscium buckii*</i>	Mindanao	Philippine Endemic
<i>Diphyscium fulvifolium</i>	Luzon	Tropical Asia
<i>Diphyscium involutum</i>	Luzon & some islands in the Visayas	Tropical Asia
<i>Diphyscium rupestre</i>	Luzon & some islands in the Visayas	Tropical Asia and Malesia
<i>Distichophyllum brevicuspis</i>	Northern Luzon (Cordilleran)	Malay Peninsula and Java
<i>Distichophyllum catinifolium</i>	Luzon & Mindanao	Borneo and Sumatram
<i>Distichophyllum collenchymatosum</i>	Endemic to one island only (Negros)	Subtropical in East Asia
<i>Distichophyllum cucullatum</i>	Western Mindanao & Sulu archipelago	New Guinea
<i>Distichophyllum cuspidatum</i>	Luzon & Mindanao	Sri Lanka, China (Taiwan), Japan, Thailand, Malay Peninsula, Sumatra, Java, Borneo and New Guinea, New Caledonia and Society Islands
<i>Distichophyllum gracicaule</i>	Palawan & Sulu archipelago	Malay Peninsula and Java
<i>Distichophyllum kinabaluense</i>	Visayas & Mindanao only	Borneo
<i>Distichophyllum maibare</i>	Luzon	Japan, China, Taiwan and Malay Peninsula
<i>Distichophyllum mittenii</i>	Luzon & Mindanao	Tropical Asia and Oceania reaching as far south as New Caledonia and Vanuatu
<i>Distichophyllum nigricaulle</i>	Luzon, Mindoro, Palawan & Western Mindanao	Nepal, Thailand, Japan (Ryukyu), China (Taiwan), Malay Peninsula, Sumatra, Java, Borneo and New Guinea
<i>Distichophyllum noguchianum*</i>	Mindoro	Philippine Endemic
<i>Distichophyllum obtusifolium</i>	Luzon	Japan and Malay Peninsula
<i>Distichophyllum osterwaldii</i>	Luzon & some islands in the Visayas	Japan, China (Taiwan), Malay Peninsula, Java and Borneo
<i>Distichophyllum santosi*</i>	Luzon & some islands in the Visayas	Philippine Endemic
<i>Distichophyllum subcuspidatum</i>	Endemic to one island only (Sibuyan)	Borneo
<i>Distichophyllum subnigricaulle</i>	Luzon & Mindanao	Borneo and New Guinea

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Distichophyllum tortile</i>	Luzon	Indochina, Malay Peninsula, Java, Borneo, and Banka
<i>Ditrichum difficile</i>	Luzon & some islands in the Visayas	Cosmopolitan
<i>Ditrichum plagiacyron</i>	Luzon	Introduced in the Philippines?, Europe
<i>Dixonia thamnoioides</i>	Northern Luzon (Cordilleran)	Ceylon and Thailand
<i>Duthieella declinata</i>	Luzon & Palawan	Himalayas and China
<i>Duthieella flaccida</i>	Luzon, Mindoro & Palawan	India, Japan, China and Papua New Guinea
<i>Duthieella formosana</i>	Northern Luzon (Cordilleran)	China (Taiwan)
<i>Duthieella wallichii</i>	Luzon	Himalayas, Japan, China and Java
<i>Ectropotheciella distichophylla</i>	Widespread	Indochina, Java, Borneo, Sulawesi and Amboina
<i>Ectropotheciella decrescens</i>	Palawan & Sulu archipelago	Malay Peninsula, Java and Sulawesi
<i>Ectropotheciopsis novoguineensis</i>	Western Mindanao & Sulu archipelago	East Malesia
<i>Ectropothecium brotheri</i>	Northern Luzon (Cordilleran)	Malesia
<i>Ectropothecium buitenzorgii</i>	Widespread	West and south Malesia and India?
<i>Ectropothecium cyperoides</i>	Luzon & Mindanao	Burma, Thailand, Borneo and Sumatra
<i>Ectropothecium dealbatum</i>	Widespread	Vietnam, Malesia and Oceania
<i>Ectropothecium elegantipinnatum</i>	Luzon, Mindoro, Palawan & Western Mindanao	West Malesia
<i>Ectropothecium falciforme</i>	Luzon & Mindanao	Sumatra, Borneo, Java, Sulawesi and Lombok
<i>Ectropothecium ferrugineum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Borneo
<i>Ectropothecium ichnotocladum</i>	Luzon	Sumatra, Borneo, Java, Sulawesi, Amboina and Annam
<i>Ectropothecium intorquatum</i>	Luzon	China, Thailand and Malesia
<i>Ectropothecium luzoniæ</i>	Luzon & some islands in the Visayas	Borneo
<i>Ectropothecium monumentorum</i>	Widespread	Burma, Taiwan, Malesia and Oceania
<i>Ectropothecium moritzii</i>	Luzon	China, Vietnam, Thailand, Sumatra, Borneo and Lesser Sunda Islands (Bali and Flores)
<i>Ectropothecium penzigianum</i>	Northern Luzon (Cordilleran)	China
<i>Ectropothecium perminutum</i>	Luzon & Mindoro	China and Peninsular Malaysia
<i>Ectropothecium ptychopolum</i>	Western Mindanao & Sulu archipelago	Borneo
<i>Ectropothecium striatulum</i>	Palawan & Sulu archipelago	West Malesia
<i>Ectropothecium zollingeri</i>	Luzon & Palawan	Malesia and Oceania
<i>Entodon bandongiae</i>	Luzon	Taiwan, Sumatra, Java and Sulawesi
<i>Entodon plicatus</i>	Widespread	Wide-ranging, from Mauritius to Australia and Oceania
<i>Entodon rubicundus</i>	Luzon & Mindoro	Ceylon, China, Japan, Himalayas and Sulawesi
<i>Entodontopsis anceps</i>	Luzon & Mindoro	India and Java
<i>Entodontopsis ligulatum</i>	Northern Luzon (Cordilleran)	Indochina
<i>Enthostodon buseanus</i>	Luzon	Tropical and sub-tropical Indo-Malesia
<i>Enthostodon physcomitrioides</i>	Northern Luzon (Cordilleran)	China (Yunnan and Taiwan)
<i>Enthostodon wichurae</i>	Northern Luzon (Cordilleran)	Japan and Malesia
<i>Ephemeropsis tjboidensis</i>	Mindanao	China, Indochina, Borneo, Java and Lesser Sunda Islands (Bali and Lombok)
<i>Epipterygium tozeri</i>	Luzon & Mindanao	Warmer regions of northern hemisphere extending to temperate Asia and Malesia
<i>Erpodium luzonense</i>	Luzon	Indochina
<i>Erpodium biseriatum</i>	Western Mindanao & Sulu archipelago	Pantropical
<i>Erythrodontium julaceum</i>	Widespread	Paleotropical, most abundant in areas with seasonal climate

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Eurychium asperisetum</i>	Luzon & Mindoro	Sri Lanka, China, Japan, Thailand, Java and New Guinea
<i>Eurychium vagans</i> var. <i>bergmaniae</i>	Northern Luzon (Cordilleran)	New Guinea
<i>Eutypchium setigerum</i>	Palawan & Sulu archipelago	Borneo, New Guinea, Australia (Queensland), Fiji, Solomon Island, New Hebrides
<i>Exostratum blumei</i>	Luzon & Mindanao	Sri Lanka, southern India, South China, Japan, Indochina, Malesia, Australia and Oceania
<i>Exostratum sullivantii</i>	Luzon & some islands in the Visayas	Malay Peninsula, China (Taiwan), Java, Borneo, Sulawesi and New Guinea
<i>Fabronia curvirostris</i>	Northern Luzon (Cordilleran)	Vietnam, Sumatra, Java and New Guinea
<i>Fauriella tenuis</i>	Luzon	China
<i>Fissidens anomalus</i>	Northern Luzon (Cordilleran)	India, Ceylon, Nepal, China, Thailand, Vietnam, Burma and Java
<i>Fissidens areolatus</i>	Northern Luzon (Cordilleran)	China (Taiwan), Japan, India, Nepal, Burma, Thailand, Vietnam, Malay Peninsula, Sumatra, Borneo and New Guinea
<i>Fissidens asplenoides</i>	Luzon & some islands in the Visayas	Almost Cosmopolitan
<i>Fissidens bogoriensis</i>	Luzon & some islands in the Visayas	China (Taiwan), Japan, Malay Peninsula and Java
<i>Fissidens bryoides</i>	Northern Luzon (Cordilleran)	Malay Peninsula
<i>Fissidens ceylonensis</i>	Luzon, Palawan & Mindanao	Sri Lanka, south India, China, Indochina and Malesia
<i>Fissidens crassinervis</i>	Luzon & Palawan	Japan (Ryukyu), Thailand, Malay Peninsula, Borneo, Sumatra, Amboina and New Guinea
<i>Fissidens crenulatus</i> var. <i>elmeri</i>	Widespread	Japan, China, Papua New Guinea and Micronesia
<i>Fissidens dubius</i>	Luzon	Almost Cosmopolitan
<i>Fissidens geminiflorus</i>	Luzon & Mindoro	Malay Peninsula, Sumatra and Java
<i>Fissidens guangdongensis</i>	Western Mindanao & Sulu archipelago	Southern China (Guangdong) and Japan
<i>Fissidens gymnogynus</i>	Luzon & Mindoro	China, Japan and Korea
<i>Fissidens hollianus</i>	Luzon & Palawan	Indochina, southern Japan, Taiwan, Malay Peninsula, Borneo, Java, Sumatra and New Guinea
<i>Fissidens hyalinus</i>	Luzon	India, Nepal, Himalayas, China (Taiwan), Japan, Malay Peninsula, Java, Borneo, North and South America
<i>Fissidens javanicus</i>	Luzon	India, Nepal, Sri Lanka, China (Taiwan), Japan, Burma, Thailand, Malay Peninsula, Sumatra, Borneo, Java and New Guinea
<i>Fissidens laxus</i>	Luzon & Palawan	Nepal, China, Japan, Indochina, Malay Peninsula, Borneo, Sumatra and Java
<i>Fissidens limbinervis</i>	Northern Luzon (Cordilleran)	Sulawesi
<i>Fissidens maceratus</i>	Luzon & Palawan	Tropical Asia, Oceania and Australia
<i>Fissidens microcladus</i>	Luzon & Palawan	Sri Lanka, India, Nepal, Japan, China, Laos, Thailand and Americas
<i>Fissidens nobilis</i>	Widespread	Himalayas, Japan, Korea, China and tropical Asia
<i>Fissidens oblongiflorus</i>	Mindoro & some islands in the Visayas	South China, Japan and South Pacific
<i>Fissidens obscurirete</i>	Northern Luzon (Cordilleran)	China, Japan, Korea and New Caledonia
<i>Fissidens papillosum</i>	Luzon & some islands in the Visayas	China (Taiwan), Japan, Malay Peninsula, Borneo and Java

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Fissidens plagiochiloides</i>	Northern Luzon (Cordilleran)	Nepal, China and Japan
<i>Fissidens punctulatus</i>	Luzon	Continental Asia
<i>Fissidens rizalensis</i>	Luzon	Japan (Ryukyu)
<i>Fissidens serratus</i>	Endemic to one island only (Negros)	India, Ceylon, Malay Peninsula, Borneo and New Guinea
<i>Fissidens strictulus</i>	Northern Luzon (Cordilleran)	China, Japan and India
<i>Fissidens subangustus</i>	Northern Luzon (Cordilleran)	Japan and Indonesia
<i>Fissidens taxifolius</i>	Luzon & some islands in the Visayas	Cosmopolitan
<i>Fissidens wlichurae</i>	Mindoro & Mindanao	China (Taiwan), Malay Peninsula, Java and New Guinea
<i>Fissidens zippelianus</i>	Widespread	Widespread in the Old World
<i>Fissidens zollingeri</i>	Luzon, Mindoro & Palawan	Japan, China, Indochina, Malesia, Oceania, Micronesia and South America
<i>Fissidens zwickeyi*</i>	Western Mindanao & Sulu archipelago	Philippine Endemic
<i>Fleischerbryum macrophyllum</i>	Luzon & Mindanao	Temperate to tropical Asia
<i>Floribundaria floribunda</i>	Widespread	Paleotropical, Oceania and Australia
<i>Floribundaria pseudofloribunda</i>	Luzon & Mindanao	Northeast India, China (Taiwan), Thailand, Malay Peninsula, Sumatra, Java, Borneo, New Guinea and Vanuatu Islands
<i>Floribundaria sparsa</i>	Luzon & Mindanao	India, Himalayas, China (Taiwan), Burma, Thailand, Laos and Lombok
<i>Floribundaria thuidioides</i>	Luzon, Palawan & Mindanao	China, West Malesia and Java
<i>Floribundaria walkeri</i>	Luzon	Himalayas, India and Laos
<i>Foreauella orthothecia</i>	Northern Luzon (Cordilleran)	Southern India, Himalayas and Thailand
<i>Funaria hydrometrica</i>	Widespread	Cosmopolitan
<i>Gammiea ceylonensis</i>	Luzon	Sri Lanka, Indochina, China, Malesia and Africa
<i>Gammiea tonkinensis</i>	Luzon & Mindanao	Indochina, China, Japan and Indonesia
<i>Garckea flexuosa</i>	Luzon, Mindoro & Palawan	Paleotropical, Oceania and Australia
<i>Garovaglia angustifolia</i>	Luzon & Mindanao	Vietnam, Malay Peninsula, Indonesia, New Guinea and Oceania
<i>Garovaglia aristata</i>	Palawan & Sulu archipelago	South Malesia
<i>Garovaglia bauerlenii</i>	Western Mindanao & Sulu archipelago	Malay Peninsula, Indonesia and New Guinea
<i>Garovaglia compressa</i>	Luzon	Malay Peninsula, Indonesia and New Guinea
<i>Garovaglia elegans</i>	Widespread	Malesia
<i>Garovaglia luzonensis*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Garovaglia plicata</i>	Luzon & Mindanao	China, Thailand, Vietnam, Malay Peninsula, Indonesia and New Guinea
<i>Glossadelphus hermaphroditus</i>	Mindanao	Java
<i>Glossadelphus microsimilans</i>	Luzon	Borneo
<i>Glossadelphus similans</i>	Luzon	China, Vietnam, Laos, Malay Peninsula, Java and Lesser Sunda Islands (Lombok)
<i>Glyphomitrium nymmanium</i>	Luzon & Mindoro	India, Thailand and Malay Peninsula
<i>Glypothecium sciurooides</i>	Luzon & Mindoro	Sri Lanka, China (Taiwan), Sumatra, Java, Lombok, Sulawesi, Lesser Sunda Islands, New Guinea, Australia, New Zealand, Argentina and Chile
<i>Gollania benguetensis*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Gollania philippinensis</i>	Northern Luzon (Cordilleran)	Continental China and Taiwan
<i>Grimmia affinis</i>	Northern Luzon (Cordilleran)	Circum-boreal reaching Malesia
<i>Groutiella goniorrhyncha</i>	Luzon & some islands in the Visayas	Pantropical
<i>Gynostomielia longinervis</i>	Luzon & some islands in the Visayas	Southern Japan

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Gymnostomiella verniosa</i>	Luzon & some islands in the Visayas	Tropical Asia
<i>Gymnostomum aurantiacum</i>	Northern Luzon (Cordilleran)	China and Thailand
<i>Gymnostomum recurvirostre</i>	Luzon & Mindoro	Cosmopolitan
<i>Hageniella micans</i>	Northern Luzon (Cordilleran)	Britain, Ireland, western Europe, south and southwest China, Borneo, Hawaii, Canada (British Columbia), Eastern United States, Mexico and Central America
<i>Haplohymenium pseudotriste</i>	Mindoro & some islands in the Visayas	China, Japan and Taiwan
<i>Herpetineuron toccae</i>	Luzon & Mindoro	East Asia and Malesia
<i>Heterophyllum affine</i>	Northern Luzon (Cordilleran)	Almost Cosmopolitan
<i>Himantocladium cyclophyllum</i>	Widespread	India, Indochina, Malesia and Oceania
<i>Himantocladium plumula</i>	Luzon, Mindoro, Palawan & Western Mindanao	Sumatra, Borneo, Java and New Caledonia
<i>Himantocladium warburgii</i>	Mindanao	Borneo
<i>Holomitrium cylindraceum</i>	Luzon & Mindoro	Malesia (Java), Polynesia, southern and eastern Africa
<i>Holomitrium stenobasis</i>	Mindanao	Malesia
<i>Homaliodendron exiguum</i>	Luzon & Mindanao	Sri Lanka, Himalayas, Indochina, southern Japan, Taiwan, Malesia and Australia
<i>Homaliodendron flabellatum</i>	Widespread	Tropical Asia, Australia and Oceania
<i>Homaliodendron microdendron</i>	Luzon & Mindanao	South India, Sikkim, Khasia, China, Indochina and Malesia
<i>H. montagneanum f. amplifolia</i>	Northern Luzon (Cordilleran)	China, Indochina, Borneo and Lesser Sunda Islands (Lombok and Bali)
<i>Homaliodendron pinnatelloides</i>	Mindanao	Malay Peninsula
<i>Homalothecium laevisetum</i>	Luzon & some islands in the Visayas	Russia, China (Yunnan, Hunan, Hubei, Anhwei, Shensi, Liaoning and Taiwan), Japan, Korea, Sulawesi and New Guinea
<i>Hookeria acutifolia</i>	Luzon & Mindanao	Temperate and Pantropical
<i>Hookeriopsis utacamundiana</i>	Luzon & Mindanao	Tropical Asia and Oceania (Hawaii)
<i>Hookeriopsis wlichurae</i>	Endemic to one island only (Negros)	Malesia
<i>Horikawaea redfearnii</i>	Palawan & Sulu archipelago	Hainan
<i>Hymenodon angustifolius</i>	Luzon & Mindanao	Malesia
<i>Hymenodon pilifer</i> subsp. <i>sericeus</i>	Luzon & some islands in the Visayas	Sumatra, Borneo, Java, Sulawesi, Flores, Ternate, New Guinea and Bismarcks Archipelago
<i>Hymenostyliella llanosi</i>	Luzon	India and Himalayas
<i>Hyphophila involuta</i>	Widespread	Pantropical
<i>Hypnodendron auricomum</i>	Mindanao	Sulawesi, Ceram, New Guinea and Solomon Islands
<i>Hypnodendron dendroides</i>	Widespread	Sri Lanka, Malesia and Oceania
<i>Hypnodendron diversifolium</i>	Luzon & Mindanao	Vietnam, Malesia and Solomons
<i>Hypnodendron fusco-mucronatum</i>	Widespread	Borneo
<i>Hypnodendron junghuhnii</i>	Western Mindanao & Sulu archipelago	Malay Peninsula, Sumatra, Java and New Guinea
<i>Hypnodendron milnei</i>	Luzon, Mindoro, Palawan & Western Mindanao	Borneo, Sumatra, Java, Sulawesi, Batjan, Buru, Ceram, Solomons, New Hebrides and Ile des Pins
<i>H. reinwardtii</i> ssp. <i>caducifolium</i>	Widespread	Widespread in Malesia but not common
<i>H. subspininervium</i> ssp. <i>arborescens</i>	Luzon & Mindanao	Sri Lanka, India and Malesia
<i>Hypnodendron viticense</i>	Luzon & Mindanao	Vietnam, Japan (Ryukyu), Taiwan, Borneo, New Guinea, Melanesia and Oceania
<i>Hypopterygium flavolimbatum</i>	Luzon & some islands in the Visayas	Paleotropical, paleo-subtropical, Japan, China, Solomon Islands, North America along the Pacific coast

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Hypopterygium tamarisci</i>	Luzon & Mindoro	Pantropical and Pan-subtropical
<i>Hypopterygium vriesei</i>	Widespread	India, Indochina, Malay Peninsula, Malesia, New Guinea, Bismarck Archipelago, Vanuatu, Fiji and New Caledonia
<i>Indothuidium kiasense</i>	Luzon	India, Sri Lanka, Himalayas, Assam, Burma, Thailand, China (Yunnan), Malay Peninsula, Sulawesi and Moluccas
<i>Isocladieilla surcularis</i>	Luzon & Palawan	Sri Lanka, south China, Japan, Indochina, west Malesia
<i>Isopterygium albescens</i>	Luzon & some islands in the Visayas	Ceylon, Himalayas, Japan, Sumatra, Borneo, Java, Sulawesi and Oceania (Hawaii)
<i>Isopterygium bancanum</i>	Widespread	Himalayas, Vietnam, west and south China
<i>Isopterygium minutifirameum</i>	Luzon, Mindoro & Palawan	India, Indochina, Malesia and Oceania
<i>Isopterygium pendulum*</i>	Luzon	Philippine Endemic
<i>Isopterygium saxense*</i>	Western Mindanao & Sulu archipelago	Philippine Endemic
<i>Isothecium trichocladioides</i>	Luzon & Mindanao	Java
<i>Jaegerina luzonensis</i>	Northern Luzon (Cordilleran)	Indochina and New Guinea
<i>Jaegerina williamsii*</i>	Luzon	Philippine Endemic
<i>Leiomela javanica</i>	Northern Luzon (Cordilleran)	Malesia, Central America and Africa
<i>Leptohymenium tenuue</i>	Northern Luzon (Cordilleran)	Northern India, Khasia and Burma
<i>Leptostomum erectum</i>	Mindanao	Sri Lanka, Java, Sulawesi, Lombok, New Guinea, Australia and New Zealand
<i>Leskeodon acuminatus</i>	Eastern Mindanao	Malesia
<i>Leskeodon brevicuspidatus</i>	Eastern Mindanao	New Guinea
<i>Leskeodon philippinensis*</i>	Endemic to one island only (Biliran)	Philippine Endemic
<i>Leucobryum aduncum</i>	Luzon, Mindoro & Palawan	Sri Lanka, India, China, Indochina, Malesia and New Caledonia
<i>Leucobryum arkafianum</i>	Luzon & Mindanao	Thailand, Sumatra, Borneo, Sulawesi, Ceram and New Guinea
<i>Leucobryum boninense</i>	Western Mindanao & Sulu archipelago	Japan, China and Taiwan
<i>Leucobryum bowringii</i>	Luzon & some islands in the Visayas	India, Sri Lanka, Japan, China (Taiwan), Himalayas, Thailand, Cambodia, Vietnam, Malay Peninsula, Borneo, Sulawesi, Sumatra, Java, Ceram, New Guinea and Solomon Islands
<i>Leucobryum chlorophyllosum</i>	Mindoro and some islands in the Visayas	Vietnam, Borneo, Java, Lesser Sunda Islands, Ceram, New Guinea and New Caledonia
<i>Leucobryum javense</i>	Widespread	Sri Lanka, India, Himalayas, China, Japan, Indochina and Malesia
<i>Leucobryum juniperoides</i>	Luzon & Mindanao	India, Sri Lanka, Himalaya, Japan, Korea, China (Taiwan), Burma, Thailand, Borneo, Sulawesi, Sumatra, Java and New Guinea, Europe, Macronesia, Madagascar, Turkey, and Caucasus
<i>Leucobryum sanctum</i>	Widespread	India, Indochina, Malesia, Caroline Island and Fiji
<i>Leucobryum scabrum</i>	Mindanao	Japan and China (Taiwan)
<i>Leucobryum scalare</i>	Luzon & some islands in the Visayas	India, Sri Lanka, China, Indochina, Malay Peninsula, Borneo, Sumatra, Java, Ceram, New Guinea and New Caledonia
<i>Leucoloma amoene-virens</i>	Palawan & Sulu archipelago	Continental South-East Asia, Malay Peninsula

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Leucomoma molle</i>	Luzon & Mindanao	Tropical Sia, Malesia and Oceania
<i>Leucomoma perviride*</i>	Luzon, Mindoro & Palawan	Philippine Endemic
<i>Leucomoma walkeri</i>	Luzon & Palawan	South India, Assam, Burma, Thailand, Malay Peninsula and Lesser Sunda Island
<i>Leucomium strumosum</i>	Luzon & Mindanao	Ceylon, Malaysia, Oceania (New Caledonia, Fiji, Samoa and Marquesas)
<i>Leucophanes angustifolium</i>	Luzon & Mindanao	Pantropical
<i>Leucophanes candidum</i>	Widespread	Sri Lanka, Malesia and Oceania
<i>Leucophanes glaucum</i>	Luzon & Mindanao	Malesia, Polynesia and Australia
<i>Leucophanes octoblepharoides</i>	Luzon & Mindanao	Continental East Asia, Malesia, Oceania and northern Australia
<i>Lopidium struthiopteris</i>	Widespread	Paleotropical, Australia and Oceania
<i>Macgregoria indica*</i>	Luzon	Philippine Endemic
<i>Macrohyumenium strictum</i>	Mindanao	Borneo
<i>Macromitrium angustum</i>	Luzon & Mindoro	Malesia
<i>Macromitrium archboldii</i>	Mindanao	New Guinea
<i>Macromitrium benguetense*</i>	Luzon	Philippine Endemic
<i>Macromitrium blumei</i>	Luzon & Mindanao	West and South Malesia
<i>Macromitrium cuspidatum</i>	Luzon & some islands in the Visayas	Sumatra, Java and Borneo
<i>Macromitrium falcatulum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Indochina and West Malesia
<i>Macromitrium fasciculare</i>	Luzon & Mindoro	Malesia (Java, Sulawesi and New Guinea)
<i>Macromitrium formosae</i>	Luzon	China (Taiwan) and Malesia
<i>Macromitrium foxworthyi</i>	Luzon, Mindoro, Palawan & Western Mindanao	Malesia
<i>Macromitrium goniostomum*</i>	Luzon & Mindanao	Philippine Endemic
<i>Macromitrium incurvifolium</i>	Insufficient data	Malesia, northern Australia and Oceania
<i>Macromitrium longicaule</i>	Luzon & Mindanao	Malesia and Oceania
<i>Macromitrium mindorense*</i>	Mindoro & Mindanao	Philippine Endemic
<i>Macromitrium nepalense</i>	Luzon	Tropical Asia
<i>Macromitrium ochraceum</i>	Mindoro & Mindanao	Malesia
<i>Macromitrium orthostichum</i>	Luzon, Mindoro, Palawan & Western Mindanao	West Malesia
<i>Macromitrium reinwardtii</i>	Luzon, Mindoro, & Panay	Malesia, northern Australia and Oceania
<i>Macromitrium robinsonii*</i>	Luzon	Philippine Endemic
<i>Macromitrium salakanum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Taiwan, Malay Peninsula, Java, Borneo, Lesser Sunda Island and New Caledonia
<i>Macromitrium semipellucidum</i>	Luzon & Mindanao	Malesia and Oceania
<i>Macromitrium subtile ssp. <i>subuligerum</i></i>	Luzon, Mindoro, Palawan & Western Mindanao	Malesia and Oceania
<i>Macromitrium sulcatum</i>	Luzon & Mindanao	Tropical Asia
<i>Macrothamnium hylocomioides</i>	Northern Luzon (Cordilleran)	New Guinea
<i>Macrothamnium javense</i>	Luzon & Mindoro	Sumatra, Borneo, Java and Sulawesi
<i>Macrothamnium macrocarpum</i>	Luzon & some islands in the Visayas	Eastern India, Ceylon, Sumatra, Borneo, Java and Hawaii
<i>Mastopoma armitii</i>	Mindanao	Seram and New Guinea
<i>Mastopoma robinsonii*</i>	Luzon	Philippine Endemic
<i>Mastopoma uncinifolium</i>	Visayas & Mindanao	Borneo
<i>Meiotheciella papillosa</i>	Mindanao	Java, New Caledonia and Australia
<i>Meiotheciella attenuatum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Malay Peninsula
<i>Meiothecium bogoriense</i>	Mindanao	Malesia and Australia
<i>Meiothecium hamatum</i>	Luzon & some islands in the Visayas	Ceylon, Sumatra, Java and Fiji
<i>Meiothecium jagorii</i>	Luzon & some islands in the Visayas	Thailand, Malay Peninsula, Borneo and Java

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Meiothecium microcarpum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Tropical Asia, East India, East and West Malesia, Australia and Oceania
<i>Merriliobryum fabrioides*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Mesomodon flavescentis</i>	Luzon & Mindanao	Tropical Asia
<i>Meteoriella soluta</i>	Northern Luzon (Cordilleran)	India, China, Japan and Taiwan
<i>Meteoriopsis reclinata</i>	Luzon & Mindoro	Sri Lanka, Nepal, Sikkim, Bhutan, China, Japan, Indochina, Malay Peninsula, Java, Borneo, New Guinea, Australia (Queensland) and Vanuatu Islands
<i>Meteoriopsis squarrosa</i>	Luzon & Mindanao	Ceylon, India, Nepal, Himalayas, Burma, Thailand, Sumatra and Java
<i>Meteoriump crispifolium</i>	Luzon & Mindanao	Sulawesi and New Guinea
<i>Meteoriump polytrichum</i>	Widespread	Tropical East Asia, Oceania and Australia
<i>Meteoriump subpolytrichum</i>	Luzon, Mindoro & Palawan	Himalayas, China and Japan
<i>Microcampylopus khasianus</i>	Northern Luzon (Cordilleran)	India, Sikkim, Sri Lanka, Burma, China (Taiwan), Azores, Ascension, Burundi, Rwanda, Uganda and Malagasy
<i>Microcampylopus laevigatum</i>	Luzon	India, Sikkim, Sri Lanka, Burma and Java
<i>Microdus brasiliensis</i>	Luzon	Pantropical
<i>Microdus leibergii*</i>	Luzon	Philippine Endemic
<i>Microdus miquelianus</i>	Luzon & Mindoro	Malesia
<i>Mitthyridium constrictum</i>	Luzon & Mindanao	China, Malay Peninsula, Borneo, Papua New Guinea, Oceania and Australia
<i>Mitthyridium fasciculatum</i>	Widespread	Paleotropical, Oceania and Australia
<i>Mitthyridium flavum</i>	Widespread	India, China, Thailand, Malesia and Australia
<i>Mitthyridium iwatsukianum*</i>	Luzon	Philippine Endemic
<i>Mitthyridium papuanum</i>	Luzon	Indo-Pacific
<i>Mitthyridium repens</i>	Luzon	Indo-Pacific
<i>Mitthyridium sublateum</i>	Endemic to one island only (Sibuyan)	Malesia
<i>Mitthyridium wallissii</i>	Widespread	Malesia
<i>Mniomalia semilimbata</i>	Luzon	Tropical Asia to Oceania
<i>Mnium laevinerve</i>	Northern Luzon (Cordilleran)	Southern China, Japan, Northwest Himalayas, Taiwan and Malesia
<i>Myuriump pseudorufescens</i>	Luzon & Mindanao	Indochina, Malesia, Solomon Island and Fiji
<i>Neckeria crenulata</i>	Northern Luzon (Cordilleran)	China, Vietnam, Thailand and Burma
<i>Neckeropsis andamana</i>	Luzon & Mindanao	Sri Lanka, Andaman Island, Indochina, Malay Peninsula and Java
<i>Neckeropsis boniana</i>	Leyte & Samar	Burma and Vietnam
<i>Neckeropsis exserta var. scrobiculata</i>	Luzon & Mindanao	Borneo
<i>Neckeropsis fimbriata</i>	Luzon	Nepal, Sikkim, Burma, Thailand and Malay Peninsula
<i>Neckeropsis gracilenta</i>	Luzon & Mindanao	Nicobar Island, Thailand, Cambodia, Malay Peninsula, Sumatra, Java, Borneo and Oceania
<i>Neckeropsis lepineana</i>	Widespread	Paleotropical and Paleo-subtropical, Oceania
<i>Neckeropsis moutieri</i>	Leyte & Samar	China (Tonkin)
<i>Neckeropsis nanodisticha</i>	Luzon & Mindanao	Borneo, New Guinea and Australia
<i>Neckeropsis nitidula</i>	Luzon	China, Korea, Southern Japan (Ryukyu) and Botel Tobago
<i>Neckeropsis semperiana</i>	Luzon	China (Tonkin), Thailand and Vietnam
<i>Neobarbella comes</i>	Northern Luzon (Cordilleran)	Ceylon, Himalayas, Sumatra and Java
<i>Neolinbergia cladomnioides</i>	Western Mindanao & Sulu archipelago	Borneo
<i>Neolinbergia robusta</i>	Mindanao	Borneo and Seram

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Neolinbergia rugosa</i>	Luzon & Mindanao	Thailand, Malay Peninsula, Indonesia and New Guinea
<i>Octoblepharum albidum</i>	Widespread	Pantropical
<i>Oedipodium fragile</i>	Luzon & some islands in the Visayas	China and Vietnam
<i>Oedipodium rufescens</i>	Luzon & some islands in the Visayas	India, Ceylon, Thailand, Malay Peninsula, Australia and Oceania (New Caledonia)
<i>Oligotrichum aligerum</i>	Luzon & Mindoro	Circum-oceanic bordering Pacific Ocean
<i>Oligotrichum falcifolium</i>	Visayas & Mindanao	Himalayas
<i>Orthodontium infrectum</i>	Luzon & Mindanao	India, Sri Lanka, southern China and Malesia
<i>Orthomnium dilatatum</i>	Northern Luzon (Cordilleran)	Sri Lanka, India, China, Japan, Malay Peninsula, Sumatra and Java
<i>Orthomnium elatbatum</i>	Northern Luzon (Cordilleran)	Malesia
<i>Orthomnium javense</i>	Mindanao	Java
<i>Orthomnium loheri</i>	Luzon	Malesia
<i>Orthorrhynchium elegans</i>	Mindanao	Sri Lanka, northern Sumatra, Lesser Sunda Islands, New Guinea and east Australia
<i>Oxyrrhynchium vagans</i>	Luzon & some islands in the Visayas	China, Japan, Sri Lanka, India, Nepal, Thailand, Vietnam, Malay Peninsula, Borneo, Ceram, Java, Lesser Sunda Islands and Oceania (Hawaii)
<i>Oxystegus tenuirostris</i>	Luzon & Mindoro	Cosmopolitan
<i>Pachyneuropsis bartlettii*</i>	Luzon	Philippine Endemic
<i>Palamocladium leskeoides</i>	Luzon & Mindanao	India, Nepal, Sri Lanka, China, Japan, Korea, Vietnam, Java, Lesser Sunda Islands, Australia, Oceania (Hawaii), America and Africa
<i>Papillaria flexicaulis</i>	Northern Luzon (Cordilleran)	India, Ceylon, Indonesia, China (Formosa), New Guinea, Australia, Tasmania, New Zealand, Southern Chile and Juan Hernandez Island
<i>Papillaria leuconeura</i>	Mindoro & Mindanao	India, Vietnam, Sumatra, Java, Ceram, Sulawesi, Halmahera and New Caledonia
<i>Papillaria semitorta</i>	Northern Luzon (Cordilleran)	Sri Lanka, Northeast India, Nepal, Sikkim, Bhutan, China, Taiwan, Japan, Indochina, Java, Borneo, Sulawesi and Moluccas
<i>Papillidiopsis koponenii</i>	Luzon & Mindanao	South Malesia
<i>Papillidiopsis malayanum</i>	Palawan & Sulu archipelago	Malay Peninsula and Borneo
<i>Papillidiopsis malesiana</i>	Eastern Mindanao	Malesia
<i>Papillidiopsis ramulina</i>	Insufficient data	China (Taiwan), Malay Peninsula, North Borneo and Australia
<i>Papillidiopsis stissophylla</i>	Luzon & Mindanao	China (Taiwan) and Flores
<i>Pelekium contortulum</i>	Luzon	Tropical East Africa, India, Himalayas, continental Southeast Asia, China and Malesia
<i>Pelekium bonianum</i>	Mindoro & Palawan	India, Himalayas, Indochina, Malay Peninsula, Sumatra, Borneo, Solomons, New Guinea and Oceania
<i>Pelekium gratum</i>	Luzon & Mindanao	West, Central and East Tropical Africa, Comores, Madagascar, Mascarenes, continental Tropical Asia, Malesia, Melanesia, Tonga, Samoa and Australia
<i>Pelekium investe</i>	Luzon & Mindanao	Tropical West and Central Africa, Comores, Madagascar, continental Tropical Asia, Nicobars, China (Taiwan), Malesia, Melanesia, Society Islands and Australia

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Pelekium synoicum</i>	Luzon & Mindanao	Malay Peninsula, Borneo, Java, Sulawesi, Solomons, New Guinea, Australia and Oceania
<i>Pelekium velatum</i>	Widespread	Tropical East Africa, Sri Lanka, Nicobars, Thailand, Malesia, Micronesia and Australia
<i>Pelekium versicolor</i>	Luzon	Widespread in tropical Asia and warm temperate East Asia, Cameroon, many parts of eastern and southern Africa, Madagascar and Réunion
<i>Philonotis bartramiooides</i>	Luzon & Mindanao	Tropical Asia
<i>Philonotis evanidinervis</i>	Luzon & Mindanao	Java
<i>Philonotis falcata</i>	Luzon	Widespread in Asia and Malesia
<i>Philonotis hastata</i>	Luzon & some islands in the Visayas	Pantropical
<i>Philonotis mollis</i>	Luzon	Tropical and subtropical Asia
<i>Philonotis nitida</i>	Luzon	China (Tonkin), Java and Sumatra
<i>Philonotis roylei</i>	Northern Luzon (Cordilleran)	Tropical and subtropical Asia
<i>Philonotis secunda</i>	Luzon & Mindanao	Tropical and subtropical Asia
<i>Philonotis speciosa</i>	Luzon & Mindanao	Northeast India and Nepal
<i>Philonotis thwaitesii</i>	Luzon	Continental and temperate Asia extending to Malay Peninsula
<i>Philonotis tibbodensis</i>	Luzon & Mindanao	Tropical Asia
<i>Philonotis treubii</i>	Luzon & Mindanao	Java
<i>Philonotis turneriana</i>	Luzon & Palawan	Scattered localities in Indomalesia and Hawaii
<i>Phyllodon lingulatus</i>	Bicol	Japan, Taiwan and Vietnam
<i>Physcomitrium japonicum</i>	Endemic to one island only (Negros)	Circumpolar Temperate reaching northern Malesia
<i>Pilotrichopsis dentata</i>	Luzon & some islands in the Visayas	China, Japan and Taiwan
<i>Pinnatella alopecuroides</i>	Luzon & Mindanao	East Asia, Malesia and Australia (Queensland)
<i>Pinnatella ambigua</i>	Luzon, Mindoro, Palawan & Western Mindanao	Bhutan, China, Japan, Indochina, Malay Peninsula, Borneo, Sumatra, Java and Seram
<i>Pinnatella anacamptolepis</i>	Luzon & Mindanao	India, Sri Lanka, China, Taiwan, Thailand, Vietnam, Malay Peninsula, Indonesia and New Guinea
<i>Pinnatella foureana</i>	Luzon	India, Nepal, China, Burma and Thailand
<i>Pinnatella intralimbata</i>	Palawan & Sulu archipelago	Burma, Thailand and Vietnam
<i>Pinnatella kuehliana</i>	Palawan & Sulu archipelago	China, Burma, Thailand, Malesia, Australia and Oceania
<i>Pinnatella makinoi</i>	Northern Luzon (Cordilleran)	China, Japan, Taiwan and Vietnam
<i>Pinnatella mucronata</i>	Palawan & Sulu	Seychelles, Sri Lanka, Thailand, Malesia, Solomon Island and Samoa
<i>Pinnatella nana</i>	Luzon & Mindanao	Indochina and Malesia
<i>Plagiommium integrum</i>	Northern Luzon (Cordilleran)	Indo-Pacific
<i>Plagiommium rhynchophorum</i>	Luzon & some islands in the Visayas	Pantropical
<i>Plagiommium succulentum</i>	Luzon & Mindanao	Tropical Asia and Malesia
<i>Plagiotheciopteris oblonga</i>	Mindanao	East Malesia (New Guinea)
<i>Plagiothecium neckeroideum</i>	Northern Luzon (Cordilleran)	Temperate and subtropical north hemisphere extending to Malesia,
<i>Plagiothecium nemorale</i>	Northern Luzon (Cordilleran)	Temperate and subtropical north hemisphere extending to Malesia,
<i>Platyhypnidium muelleri</i>	Luzon & Palawan	India, Bhutan, Japan, Thailand, Vietnam, Malay Peninsula, Sumatra, Java, Sulawesi, New Guinea and Australia
<i>Pogonatum camusii</i>	Luzon & Mindanao	Malesia
<i>P. cirratum</i> ssp. <i>macrophyllum</i>	Widespread	Thailand, Vietnam, Malesia and Solomon Island

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Pogonatum microphyllum</i>	Luzon & some islands in the Visayas	Java and Sulawesi
<i>Pogonatum microstomum</i>	Luzon	Continental Asia and Malesia
<i>Pogonatum neesii</i>	Widespread	Widespread in Eurasia, Malesia, Oceania, northern Australia
<i>Pogonatum nudiusculum</i>	Northern Luzon (Cordilleran)	China, Japan, Taiwan, Thailand and Malay Peninsula
<i>Pogonatum philippinense</i>	Luzon & Mindanao	Malesia and Oceania
<i>Pogonatum piliferum</i>	Luzon & some islands in the Visayas	Malesia
<i>Pogonatum proliferum</i>	Luzon & Mindanao	Continental Asia, Taiwan and Malesia
<i>Pogonatum rutteri</i>	Mindanao	Malesia
<i>Pogonatum spinulosum</i>	Luzon	China, Japan and Taiwan
<i>Pogonatum subtortile</i>	Luzon & Mindoro	India, Thailand and Malesia
<i>Pogonatum urcigerum</i>	Luzon	Circum-boreal reaching its southernmost stations in New Guinea
<i>Pohlia ambigua</i>	Northern Luzon (Cordilleran)	Temperate northern hemisphere
<i>Pohlia elongata</i>	Northern Luzon (Cordilleran)	sub-Cosmopolitan
<i>Pohlia flexuosa</i>	Luzon & some islands in the Visayas	India, Nepal, Sri Lanka, China, Japan, Korea, Sumatra, Java, Sulawesi, New Guinea and Oceania (Hawaii)
<i>Pohlia longicollis</i>	Northern Luzon (Cordilleran)	Temperate northern hemisphere
<i>Pohlia nutans</i>	Luzon & some islands in the Visayas	sub-Cosmopolitan
<i>Porotrichodendron mahahaicum</i>	Luzon	China
<i>Pseudobarbella attenuata</i>	Luzon, Mindoro, Palawan & Western Mindanao	Sri Lanka, China, Japan, Thailand and West Malesia
<i>Pseudobarbella laxifolia</i>	Luzon	China (Taiwan)
<i>Pseudohypnella verrucosa</i>	Western Mindanao & Sulu archipelago	Java, Lesser Sunda Islands (Flores) and New Guinea
<i>Pseudoleskeopsis zippelii</i>	Luzon	China, Japan, Korea and Taiwan
<i>Pseudopohlia microstoma</i>	Northern Luzon (Cordilleran)	India and Sulawesi
<i>Pseudospiridentopsis horrida</i>	Luzon	Bhutan, Assam, China (Yunnan and Taiwan) and Japan
<i>Pseudosymblepharis angustata</i>	Luzon & Mindanao	Tropical Asia and Oceania
<i>Pseudotaxiphyllum arquifolium</i>	Luzon, Mindoro & Palawan	China, Malay Peninsula, Java and Lesser Sunda Islands (Flores)
<i>Pseudotaxiphyllum pohliaecarpum</i>	Luzon & Palawan	China, Japan and Taiwan
<i>Pseudotrichypus convolvens</i>	Luzon & some islands in the Visayas	Sri Lanka, India, Sikkim, Thailand, Borneo, Sumatra, Sulawesi and Java
<i>Pterobryella longifrons</i>	Luzon, Mindoro, Palawan & Western Mindanao	Oceania (Fiji)
<i>Pterobryopsis crassicaulis</i>	Luzon & some islands in the Visayas	Continental South-East Asia, west and south Malesia
<i>Pterobryopsis gedehensis</i>	Luzon & Mindanao	Java
<i>Pyrrhobryum latifolium</i>	Luzon & some islands in the Visayas	Paleotropical
<i>Pyrrhobryum spiniforme</i>	Widespread	Pantropical
<i>Raccocarpus alpinus</i>	Mindoro	Sumatra, Borneo, Sulawesi and New Guinea
<i>Racomitrium fasciculare</i>	Luzon & Mindoro	Circumboreal reaching Malesia
<i>Racomitrium heterostichum</i>	Northern Luzon (Cordilleran)	Circumboreo-temperate reaching Malesia
<i>Racomitrium lanuginosum</i>	Mindoro & some islands in the Visayas	Cosmopolitan
<i>Racomitrium subsecundum</i>	Northern Luzon (Cordilleran)	Malesia
<i>Racopilum aristatum</i>	Northern Luzon (Cordilleran)	Tropical and subtropical Asia
<i>Racopilum cuspidigerum</i>	Luzon & some islands in the Visayas	Pantropical
<i>Racopilum johannis-winkleri</i>	Luzon & Mindanao	Borneo
<i>Racopilum magnirete</i>	Western Mindanao & Sulu archipelago	Borneo
<i>Racopilum spectabile</i>	Widespread	Malesia and Oceania
<i>Radulina elegantissima</i>	Luzon, Mindoro & Palawan	Sumatra and Java

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Radulina hamata</i>	Widespread	Indo-Pacific, China, Japan and Australia
<i>Reimersia inconspicua</i>	Northern Luzon (Cordilleran)	Temperate to subtropical continental Asia to Malesia
<i>Rhacithecium papillosum</i>	Northern Luzon (Cordilleran)	China
<i>Rhamphidium dixonii*</i>	Endemic to one island only (Negros)	Philippine Endemic
<i>Rhaphidostichum bunodicarpum</i>	Luzon & Palawan	South Malesia and Bismarck Archipelago
<i>Rhaphidostichum luzonense</i>	Luzon	Indochina and Malesia
<i>Rhaphidostichum piliferum</i>	Luzon & some islands in the Visayas	China (Fujian, Guizhou and Hainan), Taiwan and Malesia
<i>Rhizogonium graeffeanum</i>	Luzon & Mindanao	Malay Peninsula, Sumatra, Borneo, Java, New Guinea, Australia and Oceania
<i>Rhizogonium lamii</i>	Luzon & Mindanao	Malay Peninsula, Sumatra, Borneo, New Guinea, and Samoa
<i>Rhodobryum aubertii</i>	Luzon	Tropical Asia, northern Australia and Africa
<i>Rhodobryum giganteum</i>	Luzon & Mindanao	Tropical and subtropical Asia and East Africa
<i>Rhynchostegiella edanoi*</i>	Luzon & Mindoro	Philippine Endemic
<i>Rhynchostegiella menadensis</i>	Luzon & Palawan	India, Indochina, Malesia and New Hebrides
<i>Rhynchostegiella mindorenensis</i>	Luzon & Mindoro	China
<i>Rhynchostegiella santosi*</i>	Northern Luzon (Cordilleran)	Philippine Endemic
<i>Rhynchostegiella vriesei</i>	Mindanao	Malesia
<i>Rhynchostegium celebicum</i>	Luzon & Mindanao	India, Bhutan, China, Cambodia, Thailand, Laos, Vietnam, Malay Peninsula, Sumatra, Java, New Guinea and Oceania (Hawaii)
<i>Rhynchostegium philippinense</i>	Luzon	Malesia
<i>Schistomitrrium apiculatum</i>	Lzon, Mindoro & Palawan	Malesia
<i>Schistomitrrium mucronifolium</i>	Luzon & Mindanao	Common in southeastern Malesia
<i>Schistomitrrium nievenhuusii</i>	Luzon & Mindoro	Malesia
<i>Schlottheimia emarginato-pilosa</i>	Mindanao	Ceram, Sulawesi and New Guinea
<i>Schlottheimia grevilleana</i>	Luzon	Indo-Malesia
<i>Schlottheimia wallissii</i>	Luzon, Mindoro, Palawan & Western Mindanao	Malesia
<i>Schoenobryum concavifolium</i>	Northern Luzon (Cordilleran)	India, Bangladesh, Nepal, Sri Lanka, Burma, Thailand, Sumatra, Java, Sulawesi and New Guinea
<i>Scopelophila cataractae</i>	Luzon & some islands in the Visayas	sub-Cosmopolitan
<i>Scopelophila ligulata</i>	Luzon & Mindanao	sub-Cosmopolitan
<i>Sematophyllum brotheri</i>	Luzon & Mindanao	Malesia
<i>Sematophyllum microcladioides</i>	Luzon & Mindanao	Malesia and Oceania
<i>Sematophyllum saproxylophilum</i>	Luzon & Mindanao	China and Malesia
<i>Sematophyllum subhumile</i>	Insufficient data	China, Japan, South and South-East Asia, Malesia and Carolines
<i>Sematophyllum subpinnatum</i>	Insufficient data	Pantropical and Pan-subtropical reaching Japan
<i>Sphagnum cuspidatum</i>	Luzon	East Asia, Malesia and Africa (Rwanda and Madagascar)
<i>Sphagnum cuspidatum</i>	Mindanao	East and SouthEast Asia, boreal Asia, Europe, oceanic North America and Central Africa
<i>Sphagnum junghuhnianum</i>	Widespread	Continental South-East Asia and Malesia
<i>Sphagnum luzonense</i>	Northern Luzon (Cordilleran)	Thailand and Vietnam
<i>Sphagnum perichaetiale</i>	Luzon & some islands in the Visayas	Pantropical
<i>Sphagnum robinsonii</i>	Northern Luzon (Cordilleran)	Thailand
<i>Sphagnum sericeum</i>	Mindoro & Mindanao	Malesia

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Spiridens reinwardtii</i>	Widespread	Malesia and Oceania
<i>Splachnobryum obtusum</i>	Luzon & some islands in the Visayas	Subcosmopolitan to tropical and subtropical regions spread by human agency
<i>Splachnobryum wiemannii</i>	Luzon	Malesia
<i>Splachnobryum limbatum</i>	Endemic to one island only (Cebu)	New Guinea and Pacific islands
<i>Stereodontopsis excavata</i>	Luzon & Mindanao	Malay Peninsula, Sulawesi, New Guinea and Oceania (Samoa)
<i>Symblepharis reinwardtii</i>	Luzon	Tropical Asia
<i>Symphydodon copelandii</i>	Luzon	Borneo
<i>Symphydodon merrillii*</i>	Luzon & Mindoro	Philippine Endemic
<i>Symphydodon perrottetii</i>	Luzon	India, Burma, Thailand, Vietnam, West and South Malesia
<i>Sympysodon neckeroides</i>	Luzon, Mindoro, Palawan & Western Mindanao	Malesia and New Caledonia
<i>Sympysodonta attenuata</i>	Luzon & Mindanao	Java, Sarawak and New Guinea
<i>Sympysodonta cylindracea</i>	Luzon & Mindanao	Malesia, New Guinea and Oceania
<i>Sympysodonta obtusa</i>	Luzon & Palawan	Vietnam, Sumatra and Borneo
<i>Sympysodonta parvifolia</i>	Mindanao	North Moluccas, Batjan Island and New Guinea
<i>Sympysodonta subulata</i>	Luzon & Mindoro	Borneo
<i>Syrrhopodon albovaginatus</i>	Widespread	India, south China, Indochina, Malesia and Oceania
<i>Syrrhopodon aristifolius</i>	Mindoro & Mindanao	Indo-Pacific
<i>Syrrhopodon armatus</i>	Luzon	Paleotropical
<i>Syrrhopodon ciliatus</i>	Mindanao	Indo-Pacific
<i>Syrrhopodon confertus</i>	Luzon & some islands in the Visayas	Indo-Pacific
<i>Syrrhopodon croceus</i>	Widespread	Tropical Asia, Oceania and Australia
<i>Syrrhopodon flammeonervis</i>	Luzon & some islands in the Visayas	Southwest China, Indochina and Borneo
<i>Syrrhopodon gardneri</i>	Luzon	Pantropical
<i>Syrrhopodon hispidissimus</i>	Mindanao	Indo-Pacific
<i>Syrrhopodon involutus</i>	Widespread	Paleotropical
<i>Syrrhopodon japonicus</i>	Widespread	China, Japan, Korea, Indochina, Malesia and Oceania
<i>Syrrhopodon loreus</i>	Luzon & Mindanao	Indo-Pacific
<i>Syrrhopodon muelleri</i>	Widespread	Sri Lanka, China, Thailand, Malesia, Australia and Oceania
<i>Syrrhopodon parasiticus</i>	Northern Luzon (Cordilleran)	Pantropical
<i>Syrrhopodon rufescens</i>	Luzon	Malesian
<i>Syrrhopodon spiculosus</i>	Mindoro & some islands in the Visayas	Paleotropical
<i>Syrrhopodon tibidensis</i>	Luzon, Mindoro & Palawan	China and Java
<i>Syrrhopodon trachyphyllus</i>	Luzon	Paleotropical
<i>Syrrhopodon tristiculus</i>	Widespread	Paleotropical
<i>Taxiphyllo arcuatum</i>	Mindoro & Palawan	China, Japan, Thailand, Sumatra and Moluccas
<i>Taxiphyllo taxirameum</i>	Luzon & some islands in the Visayas	Ceylon, Himalayas, Thailand, Taiwan, Sumatra and Java
<i>Taxithelium alare</i>	Luzon & some islands in the Visayas	Borneo
<i>Taxithelium bakeri</i>	Luzon & Mindoro	New Guinea
<i>Taxithelium batanense</i>	Luzon & Mindoro	China and Thailand
<i>Taxithelium benguetiae</i>	Luzon	Malesia
<i>Taxithelium goetscheanum</i>	Luzon	Borneo
<i>Taxithelium instratum</i>	Widespread	Tropical Asia and Australia
<i>Taxithelium kerianum</i>	Luzon, Mindoro, Palawan & Western Mindanao	Java, New Guinea and Australia
<i>Taxithelium merillii</i>	Mindoro & Palawan	Borneo
<i>Taxithelium nepalense</i>	Luzon & Mindanao	Pantropical, Paleo-subtropical and Oceania
<i>Taxithelium ramicola</i>	Luzon & Palawan	Borneo

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Taxithelium robinsonii</i> *	Luzon, Mindoro, Palawan & Western Mindanao	Philippine Endemic
<i>Taxithelium spuriosubtile</i> *	Luzon & Mindoro	Philippine Endemic
<i>Taxithelium verniei</i>	Widespread	Indochina, Malesia and Oceania
<i>Tayloria indica</i>	Northern Luzon (Cordilleran)	Temperate and tropical Asia
<i>Tayloria subglabra</i>	Luzon & Mindanao	Temperate and tropical Asia
<i>Thamnobryum ellipticum</i>	Luzon	Sumatra, Borneo and Java
<i>Thamnobryum latifolium</i>	Luzon	Japan, Sumatra, Java and New Zealand
<i>Thamnobryum negrosense</i>	Luzon & Mindanao	New Guinea
<i>Thamnobryum subserratum</i>	Northern Luzon (Cordilleran)	Ceylon and Himalayas
<i>Thuidium cymbifolium</i>	Widespread	Pantropical and Pan-subtropical
<i>Thuidium plumulosum</i>	Luzon & Mindanao	Tropical Asia, Australia and Oceania
<i>Thuidium prystocalyx</i>	Luzon & Mindanao	Widespread in tropical and subtropical parts of Asia and Oceania
<i>Timmia anomala</i>	Northern Luzon (Cordilleran)	Pantropical
<i>Trachycladiella aurea</i>	Northern Luzon (Cordilleran)	Eastern Himalayas, southern China, Japan, Taiwan, Sulawesi, west Java and Ceram
<i>Trachyloma indicum</i> var. <i>indicum</i>	Widespread	Sri Lanka, India, Indochina, Taiwan, Malesia, Australia and Oceania
<i>Trachyphyllum inflexum</i>	Luzon & Mindoro	India and New Caledonia
<i>Trachypodopsis serrulata</i>	Luzon	Sri Lanka, India, Indochina, Malay Peninsula, Sumatra, Java, Sulawesi, Lesser Sunda Islands, Madagascar and Southeast Africa
<i>Trachypus bicolor</i>	Luzon & Mindoro	Sri Lanka, India, Nepal, China, Japan, Burma, Thailand, Sumatra, Java, Borneo, Sulawesi, Lombok, Ceram, New Guinea, Fiji and Hawaii
<i>Trachypus humilis</i>	Luzon & Mindanao	Sri Lanka, India, China, Japan, Burma, Sumatra, Java, New Guinea, Australia and Oceania
<i>Trachypus longifolius</i>	Northern Luzon (Cordilleran)	Sri Lanka, India, Japan, Korea, China and Hawaii
<i>Trachythecium micropyxis</i>	Luzon & Mindanao	Sumatra, Borneo, Java, Amboina, New Guinea and Oceania (New Caledonia)
<i>Trachythecium verrucosum</i>	Widespread	Malesia, New Caledonia and Australia
<i>Trematodon longicollis</i>	Luzon & Mindoro	Pantropical and Pan-subtropical
<i>Trichosteleum boschii</i>	Luzon & Mindanao	Himalayas, Japan, China, Tropical Asia, Australia and Fiji
<i>Trichosteleum complanatum</i>	Luzon & Palawan	West Malesia
<i>Trichosteleum mindanense</i> *	Mindanao	Philippine Endemic
<i>Trichosteleum petrophilum</i> *	Luzon	Philippine Endemic
<i>Trichosteleum ruficaule</i>	Luzon, Mindoro, Palawan & Western Mindanao	Indo-Pacific and Northeast Australia
<i>Trichosteleum singapurense</i>	Western Mindanao & Sulu archipelago	China (Hainan), Malay Peninsula and Flores
<i>Trichosteleum stigmosum</i>	Insufficient data	Java, Papua New Guinea and Oceania (Fiji and Samoa)
<i>Warburgiella bistrumosa</i>	Luzon & Mindoro	Borneo and Java
<i>Trichostomum brachydontium</i>	Luzon	China
<i>Trismegistia calderensis</i>	Luzon & Mindanao	Sumatra
<i>Trismegistia korthalsii</i>	Luzon & Mindanao	Sumatra, Java and New Guinea
<i>Trismegistia lancifolia</i>	Widespread	Malesia
<i>Trismegistia panduriformis</i>	Mindoro & Mindanao	Borneo
<i>Tuerckheimia angustifolia</i>	Luzon	Eastern Europe and America
<i>Vesicularia dubyana</i>	Widespread	West and South Malesia
<i>Vesicularia miquelii</i>	Luzon & some islands in the Visayas	Malesia
<i>Vesicularia montagnei</i>	Widespread	Sri Lanka, Himalayas, Malesia, Australia and Oceania

\* = Philippine endemic.

**Appendix. Cont.**

Species	Intra Philippine distribution	Extra-Philippine distribution
<i>Vesicularia reticulata</i>	Widespread	South India, Himalayas, Malesia and Oceania
<i>Vesicularia succosa</i>	Northern Luzon (Cordilleran)	India
<i>Warburgiella bistrumosa</i>	Luzon & Mindoro	Borneo and Java
<i>Warburgiella breviseta</i>	Luzon & Mindanao	Borneo
<i>Warburgiella cupressinoides</i>	Luzon & Mindanao	China (Taiwan), Indochina and Malesia
<i>Warburgiella philippinensis*</i>	Luzon & Mindoro	Philippine Endemic
<i>Warburgiella pycnophylla</i>	Luzon	Malay Peninsula and Java
<i>Warburgiella leptorrhynchoides</i>	Northern Luzon (Cordilleran)	India, Malesia and Australia
<i>Wijkia deflectifolia</i>	Northern Luzon (Cordilleran)	India, Himalayas, Indochina and China
<i>Wijkia hornschuchii</i>	Insufficient data	China, Japan, Malay Peninsula, Borneo, Java and New Guinea
<i>Weissia controversa</i>	Luzon & Mindoro	sub-Cosmopolitan
<i>Weissia edentula</i>	Luzon & Mindoro	Tropical Asia and Oceania
<i>Wilsoniella decipiens</i>	Luzon	Tropical Asia
<i>Zygodon intermedius</i>	Mindanao	Temperate to tropical southern Hemisphere to Malesia
<i>Zygodon reinwardtii</i>	Luzon & Mindanao	Pantropical and pan-subtropical
<b>TOTAL = 742</b>		

\* = Philippine endemic.