New Liverwort and Hornwort Records for Vietnam

Author(s): Lei Shu, You-Liang Xiang, Xia-Fang Cheng, Yu-Mei Wei, Jian Wang, Li-Na Zhang, Wei Li, Xiang-Bo Yin, Wei-Ping Zhang, Chao-Xian Zhao, Tao Peng, Truong Van Do, Thi Ngan Lu & Rui-Liang Zhu

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New liverwort and hornwort records for Vietnam

*Lei SHU[a], You-Liang XIANG[a], Xia-Fang CHENG[a], Yu-Mei WEI[b], Jian WANG[a], Li-Na ZHANG[c], Wei LI[d], Xiang-Bo YIN[a], Wei-Ping ZHANG[a], Chao-Xian ZHAO[a], Tao PENG[e], Truong Van DO[f], Thi Ngan LU[f] & Rui-Liang ZHU[a, g]**

[a]*Department of Biology, School of Life Sciences, East China Normal University, 3663 Zhong Shan North Road, Shanghai 200062, China*

[b]*Guangxi Institute of Botany, Guangxi Zhuang Autonomous Region and the Chinese Academy of Sciences, Guilin, Guangxi 541006, China*

[c]*Research Center for Terrestrial Biodiversity of the South China Sea, Institute of Tropical Agriculture and Forestry, Hainan University, 58 Renmin Road, Haikou, Hainan 570228, China*

[d]*Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, Liaoning 110016, China*

[e]*School of Life Science, Guizhou Normal University, 116 Bao Shan North Road, Guiyang, Guizhou 550001, China*

[f]*Vietnam National Museum of Nature, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Hanoi, Vietnam*

[g]*Tiantong National Station of Forest Ecosystem, Shanghai Key Lab for Urban Ecological Processes and Eco-Restoration, East China Normal University, 500 Dongchuan Road, Shanghai 200241, China*

Abstract – One hundred species and 19 genera (*Aneura, Apopellia, Asterella, Calypogeia, Cryptolophocolea, Cylindrocolea, Fossombronia, Haplomitrium, Jackiella, Megaceros, Metacalypogeia, Mnioloma, Nardia, Neolepidozia, Nowellia, Odontoschisma, Saccogynidium, Schiffneria,* and *Syzygiella*) are newly added to the liverwort and hornwort flora of Vietnam. A revised checklist of liverworts and hornworts in Vietnam, including 430 species in 79 genera is presented based on literature and the present additions.

Bryoflora / bryophytes / checklist / Indochina / Hepaticae / Marchantiophyta

* Corresponding author: rlzhu@bio.ecnu.edu.cn

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INTRODUCTION

Vietnam is the easternmost country on the Indochina Peninsula with a quite long and narrow (8°10′-23°24′ N, 102°09′-109°30′ E) territory. Being a part of Indochina region of the paleotropical kingdom, Vietnam has rich diversity of plants and plays an important role in the relationship between the flora of China-Himalayas and that of Malaysia. Compared with the adjacent countries of China (Jia & He, 2013) and Thailand (Sukkharak & Chantanaorrapint, 2014), however, the liverwort and hornwort flora of Vietnam has not been well investigated. The updated checklist of liverworts and hornworts of the country contained only five species of hornworts and 296 species of liverworts (Bakalin & Nguyen, 2016**)**. Under the support of a grant from the Ministry of Science and Technology of China, a bryophyte expedition organized by Rui-Liang Zhu (HSNU) mainly to the northern Vietnam, was carried out by a joint group from China and Vietnam from October 2013 to November 2013. The main field collectors include Rui-Liang Zhu, Jian Wang, Yu-Mei Wei, Lei Shu and Chao-Xian Zhao from East China Normal University, from Guangxi Institute of Botany, and Truong Van Do, Ngan Thi Lu from the Vietnam National Museum of Nature. A total of over 2000 specimens of bryophytes were collected. Based on these collections, sixty one species (including one subspecies) and ten genera new to the moss flora of Vietnam were published in 2016 (Zhang *et al.*, 2016). Moreover, two rare liverworts previously known only from China, *Spruceanthus mamillilobulus* and *Gradsteinianthus tridentatus,* were reported new to Vietnam (Wang *et al.*, 2015, 2016). The purpose of the present paper is to present the new records of liverworts and hornworts. In addition, a revised checklist of the liverworts and hornworts in Vietnam is given.

MATERIALS AND METHODS

The specimens cited below were collected by Rui-Liang Zhu, Jian Wang, Lei Shu and Chao-Xian Zhao in the northern Vietnam during 22 October to 7 November 2013, with exception of one specimen collected by T. Pócs. Morphological and anatomical characters were studied using a light microscope (Olympus BX 43) equipped with an Olympus DP71 digital camera. Field pictures were taken with a digital camera (Leica D-Lux 6 or Canon G 11). All specimens cited are deposited in HSNU unless otherwise indicated.

RESULTS

Liverworts and hornworts new to Vietnam

The new records with collection data and ranges are enumerated below. Taxa presented alphabetically, with nomenclature mainly following Söderström *et al.* (2016). The format of this list follows Zhang *et al.* (2016).

Acrolejeunea infuscata (Mitt.) JianWang bis & Gradst.

Specimens examined. Montes Hoang-Lien-Son, in rupibus marmoreis cacuminis supra opp. Sapa, 1780 m, 27 Sept. 1963, *T. Pócs 2573/r* (U as *Trocholejeunea infuscata* (Mitt.) Verd.).

Distribution. Bhutan, China, India, Myanmar, Nepal, Sri Lanka and Thailand (Wang *et al.*, 2016), new to Vietnam.

Acrolejeunea pycnoclada (Taylor) Schiffn.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, 22°35′33.98″N, 105°53′27.11″E, 1321 m, on rotten logs, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-255*.

Distribution. Australia, Indomalesia, the Pacific region and tropical Africa (Gradstein, 1975; Thiers & Gradstein, 1989), new to Vietnam.

Acrolejeunea recurvata Gradst.

Representative specimens examined. Hà Giang: Quản Bạ District, Thái An Commune, 22°51′59.61″N, 105°05′24.31″E, 881 m, on rotten logs, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-145*.

Distribution. China, India, Laos, Nepal and Thailand (Wang *et al.*, 2016), new to Vietnam.

Aneura pinguis (L.) Dumort.

Specimens examined. Cao Bằng: Nguyên Bình District, 22°36′51.65″N, 105°52′01.99″E, 1810 m, on soil, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-64*. Hà Giang: Quản Bạ district, 22°57′49.07″N, 105°52′32.08″E, 878 m, on rotten logs, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-55*.

Distribution. Widely distributed in the northern Hemisphere (Furuki, 1991), new to Vietnam. *Aneura* is newly reported for Vietnam.

Anthoceros angustus Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, 22°37′28.47″N, 105°52′42.11″E, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-49*.

Distribution. Bhutan, China, India, Japan and Nepal (Hasegawa, 1993), new to Vietnam.

Anthoceros punctatus L.

Specimens examined. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng Village, 22°58′30.14″N, 105°05′15.71″E, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-2*.

Distribution. Widely distributed in America, Asia and Europe (Hasegawa, 1984), new to Vietnam.

Apopellia endiviifolia (Dicks.) Nebel & D.Quandt

Specimens examined. Hà Giang: Quản Bạ District, Nghĩa Thuận commune, Xín Cái Village, 23°07′49.04″N, 104°55′32.29″E, 1247 m, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-17*.

Distribution. Bhutan, China, India, Japan, Korea, Nepal, N America and Europe (Jia & He, 2013 as *Pellia endiviifolia*), new to Vietnam.

Apopellia is newly reported for Vietnam.

Asterella cruciata (Steph.) Horik.

Specimens examined. Hà Giang: Bắc Mê District, Thượng Tân Commune, Tà Lương Village, 22°43′41.28″N, 105°12′18.48″E, 125 m, on soil, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-206*.

Distribution. China (Long, 2006), Japan (Yamada & Iwatsuki, 2006), Korea (Gao & Wu, 2010) and Russia (Far East Region) (Borovichev *et al.*, 2015), new to Vietnam.

Asterella is new to the liverwort flora of Vietnam.

Asterella wallichiana (Lehm. & Lindenb.) Grolle (Figs 8-10)

Specimens examined. Hà Giang: Quản Bạ District, Nghĩa Thuận Commune, Xín Cái Village, 23°05′02.66″N, 104°58′37.19″E, 832 m, on soil, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-134*.

Distribution. Bangladesh, Bhutan, China, India, Indonesia, Japan, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Solomon Islands and Thailand (Long, 2006), new to Vietnam.

Although *Asterella wallichiana* is one of most common members of this genus in Asia, only a single fertile collection has been made in Vietnam (Figs 8-10).

Bazzania magna Horik.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′53.92″N,105°51′51.62″E, 1883 m, 23 Oct. 2013, *R.-L. Zhu et al. 20131023-24*.

Distribution. China and Japan (Zhou *et al.*, 2012), new to Vietnam.

Bazzania pearsonii Steph.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, 22°36′51.88″N, 105°52′03.15″E, 1809 m, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-167*.

Distribution. SE Asia (China, Japan, Sri Lanka, Thailand) and W Europe (Gao, 2003), new to Vietnam.

Calypogeia arguta Nees & Mont.

Representative specimen examined. Hà Giang: Quản Bạ District, Nghĩa Thuận Commune, Xín Cái Village, 23°07′46.55″N,104°55′29.85″E, 1262 m, on soil, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-33*.

Distribution. Widely distributed in SE Asia, Europe and N America (Gao, 2003), new to Vietnam.

Calypogeia is a newly recorded genus in Vietnam.

Calypogeia azurea Stotler & Crotz

Representative specimen examined. Hà Giang: Quản Bạ District, Nghĩa Thuận Commune, Xín Cái Village, 22°49′17.95″N, 104°53′14.69″E, 1086 m, on tree trunks, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-116*.

Distribution. Widely distributed in the temperate and subtropical regions of the northern Hemisphere (Gao, 2003), new to Vietnam. *Calypogeia azurea* is immediately separated from the known species of *Calypogeia* in Vietnam by the blue oil bodies and bilobed underleaves.

Calypogeia tosana (Steph.) Steph.

Representative specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′53.22″N, 105°52′03.19″E, 1781m, on tree trunks, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-281*.

Distribution. Widely distributed in E Asia and Hawaii (Gao, 2003), new to Vietnam.

Cephalozia hamatiloba subsp. ***siamensis*** (N.Kitag.) Váňa

Representative specimen examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén nature reserve, Thành Công commune, through Phia Oắc peak, 22°36′51.88″N, 105°52′03.15″E, 1820 m, on moist rock, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-168A*.

Distribution. Previously known from Thailand (Kitagawa, 1969; Lai *et al.*, 2008), new to Vietnam.

Cheilolejeunea clavata Mizut.

Representative specimen examined. Hà Giang: Vị Xuyên District, Phương Độ Commune, Lùng Vài Village, 22°49′24.69″N, 104°53′22.58″E, 991 m, on fallen tree trunks, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-98*.

Distribution. A highly disjunctive species, known only from Australia (Thiers, 1997) and Thailand (Lai *et al.*, 2008), new to Vietnam. The occurrence of this species in China and Malaysia is expected.

Cheilolejeunea kitagawae W.Ye & R.L.Zhu

Specimen examined. Hà Giang: Quản Bạ district, Thái An commune, Sếu Lọng village, along Độ stream, 22°57′50.80″N, 105°05′31.40″E, 899 m, on decaying logs, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-241B*.

Distribution. China (Zhu & So, 1999a as *Leucolejeunea paroica* N.Kitag.), India (Udar & Awasthi, 1983 as *L. paroica*), Japan (Mizutani, 1961 as *L. paroica*) and Thailand (Kitagawa, 1968 as *L. paroica*), new to Vietnam.

Cheilolejeunea obtusilobula (S.Hatt.) S.Hatt.

Specimen examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′09.52″N, 105°52′04.04″E, 968 m, on tree trunks, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-225B*.

Distribution. China, Japan, Korea and Japan (Zhu *et al.*, 2002), new to Vietnam.

Cheilolejeunea osumiensis (S.Hatt.) Mizut.

Specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, 22°36′32.70″N, 105°52′13.86″E, 1596 m, on tree trunks, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-214*.

Distribution. China and Japan (Zhu *et al.*, 2002), new to Vietnam.

Cheilolejeunea vittata (Steph. *ex* G.Hoffm.) R.M.Schust. & Kachroo

Specimen examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 7 to Vài Khau Village to Khau Canh place, 22°43′41.29″N, 105°12′18.48″E, 125 m, on tree trunks, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-209*.

Distribution. Australia, China, Indonesia, Malaysia, Papua New Guinea, Philippines and Sri Lanka (Zhu *et al.*, 2002), new to Vietnam.

Chiastocaulon dendroides (Nees) Carl

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′52.68″N, 105°52′05.61″E, 1796 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-225*. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°03′09.98″N, 104°51′43.33″E, 1265 m, on tree trunks, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-70*; Vị Xuyên District, Phương Độ Commune, Lùng Vài Village, 22°49′12.85″N, 104°53′13.67″E, 1132 m, on tree bark, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-128*.

Distribution. Australia (Renner *et al.*, 2016), China (So, 2001 as *Plagiochila dendroides*), Fiji (Inoue, 1984 as *P. dendroides* (Nees) Lindenb.), Indonesia, Japan, Korea, Malaysia (So, 2001 as *P. dendroides*), New Caledonia (Inoue, 1984 as *P. dendroides*), Papua New Guinea (Inoue, 1984 as *P. dendroides*), Philippines (So, 2001 as *P. dendroides*) and Tahiti (Inoue, 1982 as *P. dendroides*), new to Vietnam.

Cololejeunea dozyana (Sande Lac.) Schiffn.

Specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′44.97″N, 105°52′08.26″E, 1732 m, on shoots, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-270.*

Distribution. China, India, Indonesia, Malaysia, Nepal, Philippines and Thailand (He *et al.*, 2013), new to Vietnam.

Cololejeunea magnistyla (Horik.) Mizut.

Specimen examined. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°03′06.17″N, 104°51′58.63″E, 1056 m, on rock, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-55*.

Distribution. China and Japan (Zhu & So, 2001), new to Vietnam.

Cololejeunea pluridentata P.C.Wu & J.S.Lou **Fig. 5**

Specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′28.83″N, 105°52′14.76″E, 1604 m, epiphyllous, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-298C.*

Distribution. China (Zhu & So, 2001) and India (Singh & Singh, 2013), new to Vietnam.

Cololejeunea spinosa (Horik.) Pandé & R.N.Misra

Representative specimen examined. Cao Bằng: Rùng Khánh District, Cao Vít Gibbon Conservation Area, Phong Nậm Commune, 22°53′27.13″N, 106°32′67.75″E, 650 m, on decaying logs, 23 Oct. 2013, *R.-L. Zhu 20131023-48A*.

Distribution. China, India, Japan, Korea and Philippines (Zhu & So, 2001), new to Vietnam.

Colura inuii Horik.

Specimen examined. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°03′06.58″N,104°51′43.83″E, 1217 m, epiphyllous, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-151C*.

Distribution. China and Japan (Zhu & So, 2001), new to Vietnam.

Conocephalum japonicum (Thunb.) Grolle **Fig. 2**

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′33.90″N, 105°62′10.79″E, 1021 m, on soil, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-38*. Hà Giang: Quản Bạ District, Tam Sơn Town, Quản Bạ Heavens Gate, 23°02′56.49″N, 104°59′33.92″E, 1139 m, on rock with a thin layer of soil, 31 Oct. 2013, *R.-L. Zhu et al. 20131031-68*; Quản Bạ District, Nghĩa Thuận Commune, Xín Cái Village, 23°07′48.93″N, 105°55′34.31″E, 1243 m, on soil, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-8*.

Distribution. Bhutan, China, India, Korea, Japan, Nepal, Russia (Siberia, Kamchatka and Sakhalin) and Nepal (Long & Grolle, 1990; Furuki & Higuchi, 1995; Gao & Wu, 2010; Dandotiya *et al.*, 2011; Piippo & Koponen, 2013), new to Vietnam.

Cryptolophocolea compacta (Mitt.) L.Söderstr.

Specimens examined. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°02′02.71″N, 104°52′01.37″E, 1071 m, on wet rock along a river, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-14*.

Distribution. Widely distributed in the northern Hemisphere, new to Vietnam. *Cryptolophocolea* is reported for Vietnam for the first time.

Cylindrocolea kiaeri (Austin) Váňa

Representative specimen examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′48.41″N, 105°51′49.05″E, 1850 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-138*. Cao

Bằng: Nguyên Bình district, Phia Oắc-Phia Đén Nature Reserve, Thành Công commune, from the forest, 22°36′33.60″N, 105°52′14.80″E, 1601 m, on rock, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-223*.

Distribution. Widely distributed in Africa, Asia, N America and Oceania (Long & Grolle, 1990; Jia & He, 2013), new to Vietnam.

Cylindrocolea is newly reported for Vietnam.

Figs 1-6. **1.** *Haplomitrium mnioides* (Lindb.) R.M.Schust., male plants. **2.** *Conocephalum japonicum* (Thunb.) Grolle, sterile plants. **3.** *Riccardia pusilla* Grolle, sterile plants. **4.** *Megaceros flagellaris* (Mitt.) Steph., plants with sporophytes. **5.** *Cololejeunea pluridentata* P.C.Wu & J.S.Lou., sterile plants. **6.** *Schiffneria hyalina* Steph., sterile plants. 1 from *R.-L. Zhu et al. 20131027-141*, 2 from *R.-L. Zhu et al. 20131101-8*, 3 from *R.-L. Zhu et al. 20131103-72*, 4 from *R.-L. Zhu et al. 20131101-25*, 5 from *R.-L. Zhu et al. 20131025-298c*, 6 from *R.-L. Zhu et al. 20131102-64*.

Fossombronia japonica Schiffn.

Specimen examined. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng Village, along Độ stream, 22°57′58.14″N, 105°05′26.56″E, 834 m, on soil, 2 Nov. 2013, *R-L. Zhu et al. 20131102-98*.

Distribution. China, Indonesia, Japan, Papua New Guinea (Krayesky *et al.*, 2005) and Russian Far East (Borovichev & Bakalin, 2017), new to Vietnam.

Fossombronia is new to the liverwort flora of Vietnam.

Frullania motoyana Steph.

Specimen examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′52.73″N, 105°52′05.22″E, 1788 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-173*.

Distribution. China and Japan (Jia & He, 2013), new to Vietnam.

Haplomitrium mnioides (Lindb.) R.M.Schust. **Fig. 1**

Representative specimen examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 7 to Vài Khau Village to Khau Canh place, 22°37′14.15″N, 105°52′37.25″E, 1113 m, on rock covered with a thin layer of soil, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-141*.

Distribution. China and Japan (Gao, 2003), new to Vietnam.

Haplomitrium is newly reported for Vietnam.

Heteroscyphus tener (Steph.) Schiffn.

Representative specimen examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′51.88″N, 105°52′03.15″E, 1809 m, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-167B*.

Distribution. Bhutan, China, India, Japan, Nepal and Sri Lanka (Long & Grolle, 1990), new to Vietnam.

Jackiella javanica Schiffn.

Representative specimen examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′55.25″N, 105°51′46.25″E, 1905 m, on rock covered with a thin layer of soil, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-16*. Hà Giang: Vị Xuyên District, Phương Độ Commune, Mi Village, 22°49′12.10″N, 104°57′05.15″E, 246 m, on soil, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-1*; Quản Bạ district, Thái An commune, Sếu Lọng village, along Độ stream, 22°57′55.22″N, 105°05′30.23″E, 818 m, on rock, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-248*.

Distribution. Widely distributed in SE Asia, new to Vietnam.

Jackiella is newly reported for Vietnam.

Kurzia gonyotricha (Sande Lac.) Grolle

Representative specimen examined. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng Village, along Độ stream, 22°58′12.33″N, 105°05′21.80″E, 780 m, on soil, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-14*.

Distribution. SE Asia (Gao, 2003), new to Vietnam.

Lejeunea cocoes Mitt.

Specimens examined. Cao Bằng: Trùng Khánh District, Cao Vít Gibbon Conservation Area, 22°54′35.39″N, 106°33′01.74″E, 573 m, on rock with a thin layer of soil, 22 Oct. 2013, *R.-L. Zhu et al. 20131022-23*. Hà Giang: Bắc Mê District, Thượng Tân Commune, Tà Lương Village, 22°45′21.05″N, 105°13′47.13″E, 444 m, on rock, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-21*.

Distribution. Chagos Archipelago, China, Fiji, India, Indonesia, Malaysia, Papua New Guinea, Sri Lanka and Thailand (So & Zhu, 1998; Lee *et al.*, 2014), new to Vietnam.

Lejeunea curviloba Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′27.32″N, 105°51′59.40″E, 1688 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-243*. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°03′03.36″N, 104°51′49.20″E, 1103 m, epiphyllous, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-160*.

Distribution. Bhutan, China, India, Japan and Nepal (Zhu & Long, 2003), new to Vietnam.

Lejeunea dimorpha T.Kodama

Specimens examined. Hà Giang: Vị Xuyên District, Phương Độ Commune, Khuổi Mi Village, 22°49′33.48″N, 104°54′03.08″E, 742 m, epiphyllous, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-3*.

Distribution. Malaysia, Indonesia and Papua New Guinea (Lee, 2013), new to Vietnam. Vietnam is the known northernmost locality for this species.

Lejeunea discreta Lindenb.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′51.77″N, 105°52′01.92″E, 1814 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-161*. Hà Giang: Quản Bạ District, Thái An Commune, Sẩu Lọng Village, along Độ stream, 22°57′49.80″N, 105°05′32.69″E, 888 m, on tree trunks, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-230*; Vị Xuyên District, Phương Độ Commune, Lùng Vài Village, 22°49′24.29″N, 104°53′21.40″E, 1008 m, epiphyllous, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-164A*.

Distribution. Australia, Bhutan, Cambodia, China, India, Fiji, Indonesia, Japan, Korea, Malaysia, Nepal, New Caledonia, Papua New Guinea, Philippines, Sri Lanka and Thailand (Mizutani, 1987; Hürlimann, 1993; Chantanaorrapint *et al.*, 2004), new to Vietnam.

Lejeunea eifrigii Mizut.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′08.76″N, 105°52′03.78″E, 962 m, epiphyllous by a stream, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-107*.

Distribution. China, Indonesia, Japan, Malaysia, New Caledonia, Papua New Guinea, Philippines (Zhu & So, 2001) and India (Pócs *et al.*, 2007), new to Vietnam.

Lejeunea magohukui Mizut.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′10.67″N, 105°52′06.50″E, 976 m, on branch, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-47*.

Distribution. China and Japan (Zhu & So, 1999a), new to Vietnam.

Lejeunea pallidevirens S.Hatt.

Specimens examined. Hà Giang: Vị Xuyên District, Phương Độ Commune, Lùng Vài Village, 22°49′51.08″N, 104°53′56.91″E, 820 m, on tree bark, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-216B*.

Distribution. China, India and Japan (Pócs *et al.*, 2007), new to Vietnam.

Lejeunea parva (S.Hatt.) Mizut.

Specimens examined. Vĩnh Phúc: Tam Đảo District, Tam Đảo Town, Tam Đảo National Park, route to television peak, 21°27′36.77″N, 105°38′55.19″E, 1027 m, on fallen tree, 8 Nov. 2013, *R.-L. Zhu et al. 20131108-107*; Tam Đảo Town, Rùng Rình peak, 21°26′57.85″N, 105°39′02.29″E, 1091 m, on tree trunks, 9 Nov. 2013, *R.-L. Zhu et al. 20131109-42*.

Distribution. China, Japan, Korea, Singapore and Thailand (Lee *et al.*, 2014), India (Singh & Barbhuiya, 2012), new to Vietnam.

Lejeunea subacuta Mitt.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′49.04″N, 105°51′49.40″E, 1849 m, on rock, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-130*.

Distribution. China, India, Nepal, Sri Lanka (Zhu & So, 1999a) and Indonesia (Java) (Kamimura, 1974), new to Vietnam.

Lejeunea tuberculosa Steph.

Specimens examined. Cao Bằng: Trùng Khánh district, Cao Vít Gibbon Conservation Area, Phong Nậm Commune, from NàThông Village (Phìn valley) to Kha Muộn Village (Kha valley), 22°53′27.13″N, 106°32′67.75″E, 770 m, on fallen tree, 23 Oct. 2013, *R.-L. Zhu et al. 20131023-46B*. Hà Giang: Quản Bạ District, Tam Sơn Town, Quản Bạ Heavens Gate, 23°02′59.91″N, 104°59′30.95″E, 1176 m, on tree base, 31 Oct. 2013, *R.-L. Zhu et al. 20131031-6*.

Distribution. Africa, Bhutan, China, India, Indonesia, Malaysia, Nepal, Philippines and Thailand (Lee *et al.*, 2014), new to Vietnam.

Lepidozia fauriana Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′25.03″N, 105°52′17.16″E, 1580 m, on rock, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-11*; Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, 22°35′09.09″N, 105°52′03.25″E, 963 m, on soil, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-102*.

Distribution. SE Asia (Gao, 2003), new to Vietnam.

Lepidozia vitrea Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′54.39″N, 105°52′02.07″E, 1784 m, on fallen logs, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-242*.

Distribution. E Asia (Gao, 2003), new to Vietnam.

Leptolejeunea emarginata (Horik.) S.Hatt.

Specimens examined. Cao Bằng: Phia Oắc-Phia Đén nature reserve, 22°36′48.31″N, 105°51′50.31″E, 1855 m, epiphyllous, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-500*.

Distribution. China (Horikawa, 1934 as *Drepanolejeunea emarginata* Horik.; Yang, 2009), new to Vietnam.

Lophocolea minor Nees

Specimens examined. Cao Bằng: Trùng Khánh district, Cao Vít Gibbon Conservation Area, Phong Nậm Commune, from NàThông Village (Phìn valley) to Kha Muộn Village (Kha valley), 22°53′31.42″N, 106°32′11.56″E, 662 m, on tree root, associated with *Cololejeunea spinosa*, 23 Oct. 2013, *R.-L. Zhu et al. 20131023-83B*; Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′31.00″N, 105°52′13.15″E, 1578 m, on fallen tree, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-101*.

Distribution. Europe, N America, very common in E Asia, new to Vietnam.

Lophocolea muricata (Lehm.) Nees

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, 22°57′49.69″N, 105°05′30.32″E, 867 m, on rock, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-86.*

Distribution. America, Oceania and SE Asia (Gao, 2003 as *Chiloscyphus muricatus* (Lehm.) J.J. Engel & R.M.Schust.), new to Vietnam.

Lopholejeunea soae R.L.Zhu & Gradst.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, 22°36′24.80″N, 105°52′16.60″E, 1546 m, on tree bark, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-14B*; Vĩnh Phúc: Tam Đảo District, Tam Đảo Town, Tam Đảo National Park, 21°27′40.18″N, 105°38′58.76″E, 1081 m, on rotten logs, 8 Nov. 2013, *R.-L. Zhu et al. 20131108-111B*.

Distribution. China and Thailand (Zhu & Gradstein, 2005; Kornochalert *et al.*, 2012), new to Vietnam.

Lopholejeunea zollingeri (Steph.) Schiffn.

Specimens examined. Vĩnh Phúc: Tam Đảo District, Tam Đảo Town, Tam Đảo National Park, 21°27′40.18″N, 105°38′58.76″E, 1081 m, on rotten logs, 8 Nov. 2013, *R.-L. Zhu et al. 20131108-111A*.

Distribution. China, Fiji, Indonesia, Japan, Malaysia, Papua New Guinea, Philippines and Sri Lanka (Zhu & Gradstein, 2005), new to Vietnam.

Mastigolejeunea indica Steph.

Specimens examined. Hà Giang: Bắc Mê District, Thượng Tân Commune, Tà Lương Village, 22°45′27.38″N, 105°13′47.01″E, 478 m, on rock, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-15*.

Distribution. Distributed throughout Indomalesia (Sukkharak & Gradstein, 2014), new to Vietnam.

Mastigolejeunea repleta (Taylor) A.Evans

Specimens examined. Hà Giang: Vị Xuyên District, Minh Sơn Commune, Tân Sơn Village, 23°00′36.83″N, 104°54′49.55″E, 493 m, on tree bark, 5 Nov. 2013, *R.-L. Zhu et al. 20131105-64*.

Distribution. Widely distributed in Indomalesia (Sukkharak & Gradstein, 2014), new to Vietnam.

Megaceros flagellaris (Mitt.) Steph. **Fig. 4**

Representative specimen examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 7 to Vài Khau Village to Khau Canh place, 22°35′13.90″N, 105°53′20.50″E, 1329 m, on wet rock, 27 Oct. 2013, *R.-L. Zhu 20131027-175*.

Distribution. China, Hawaii, India, Indonesia, Japan, New Zealand, Papua New Guinea, Samoa, Philippines and Thailand (Hasegawa, 1983), new to Vietnam.

Megaceros is a newly recorded genus in Vietnam.

Metacalypogeia alternifolia (Nees) Grolle

Specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′55.91″N, 105°51′47.87″E, 1790 m, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-79B.*

Distribution. Bhutan, China, Hawaii, India, Japan and Nepal (Long & Grolle, 1990), new to Vietnam.

Metacalypogeia is new to the liverwort flora of Vietnam.

Mnioloma fuscum (Lehm.) R.M.Schust. **Fig. 7**

Specimen examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′55.09″N, 105°52′01.02″E,1789 m, on rock, 26 Oct. 2013, *R.-L. Zhu 20131026-296B*.

Distribution. Paleotropical (He *et al.*, 2013), new to Vietnam.

Mnioloma is new to the liverwort flora of Vietnam.

Myriocoleopsis minutissima (Sm.) R.L.Zhu, Y.Yu & Pócs subsp. ***minutissima***

Representative specimens examined. Cao Bằng: Trùng Khánh District, Cao Vít Gibbon Conservation Area, Ngọc Côn Commune, 22°54′29.33″N, 106°32′47.60″E, 545 m, on tree trunks, 22 Oct. 2013, *R.-L. Zhu et al. 20131022-31B*. Hà Giang: Quản Bạ District, Thanh Vân Commune, Thanh Long Village, 23°07′51.01″N, 104°55′40.22″E, 1237 m, on decaying shoots, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-3*.

Distribution. Widespread (Yu *et al.*, 2014), new to Vietnam.

Nardia assamica (Mitt.) Amakawa

Specimens examined. Hà Giang: Vị Xuyên District, Phương Độ Commune, Lùng Vài Village, 22°49′21.09″N, 104°53′18.01″E, 1073 m, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-109*.

Distribution. E Asia (Jia & He, 2013), new to Vietnam.

Nardia is newly reported for Vietnam.

Neolepidozia wallichiana (Gottsche) Fulford & J.Taylor

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak. 22°36′55.57″N, 105°52′00.49″E, 1804 m, on decaying logs, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-312*.

Distribution. China, India, Indonesia, Japan, Nepal and Sri Lanka (Gao, 2003), new to Vietnam.

Neolepidozia is newly reported for Vietnam.

Nowellia curvifolia (Dicks.) Mitt.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′26.37″N, 105°51′03.28″E, 1605 m, on decaying logs, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-380*.

Distribution. Widely distributed in the northern Hemisphere (Gao, 2003), new to Vietnam.

Nowellia is new to the liverwort flora of Vietnam.

Odontoschisma denudatum (Nees) Dumort. subsp. ***denudatum***

Specimens examined. Hà Giang: Quản Bạ district, Tam Sơn town, Quản Bạ Heavens Gate, 23°02′52.41″N, 104°59′33.76″E, 1139 m, on rock, 31 Oct. 2013, *R.-L. Zhu et al. 20131031-19*.

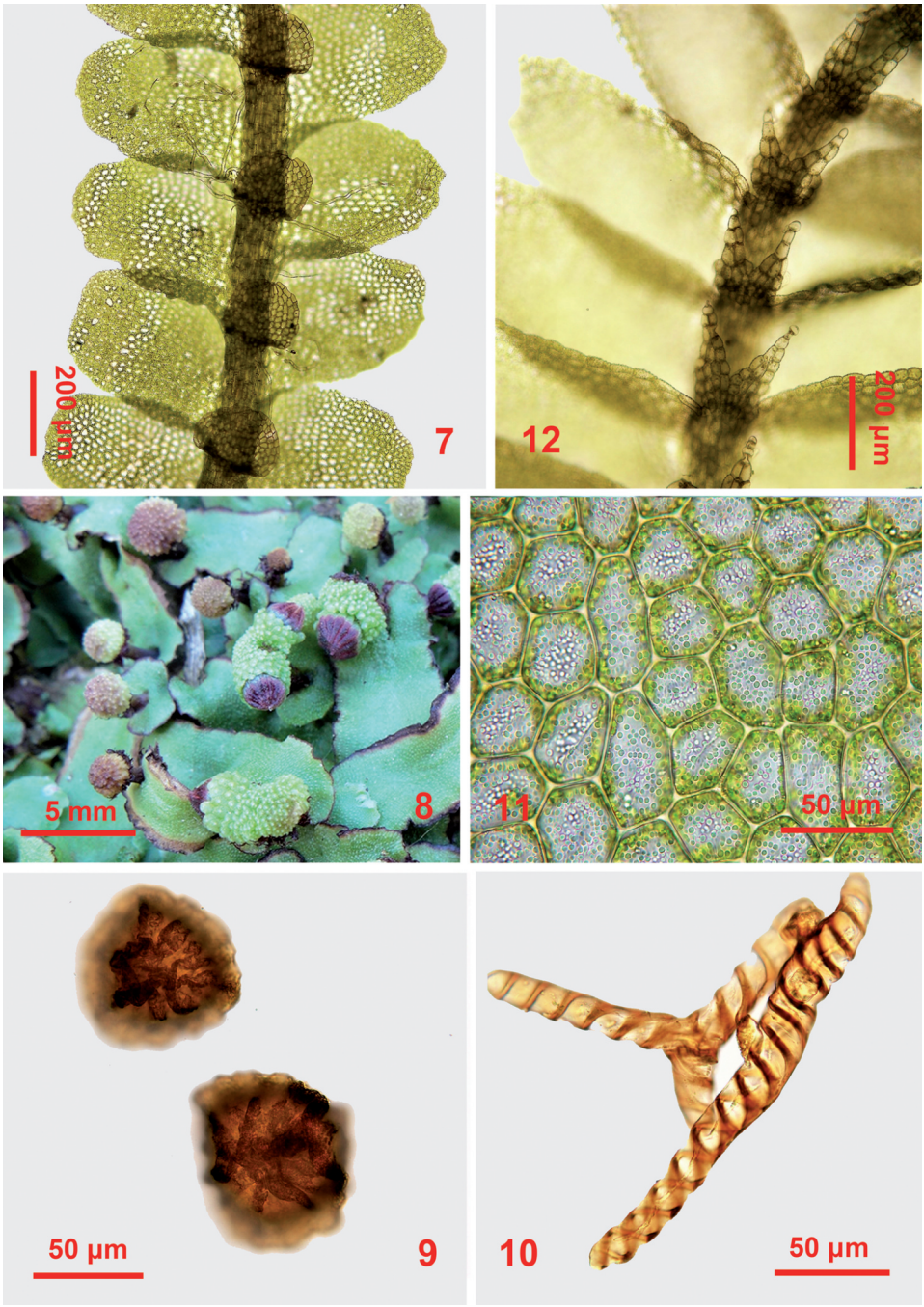
Distribution. Asia, Europe and America (Gradstein & Ilkiu-Borges, 2014), new to Vietnam.

Odontoschisma is newly reported for Vietnam.

Odontoschisma grosseverrucosum Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′51.65″N, 105°52′10.78″E, 1746 m, on soil, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-93*.

Distribution. S Japan, China and N Thailand (Gradstein & Ilkiu-Borges, 2014), new to Vietnam.



Figs 7-12. **7.** *Mnioloma fuscum* (Lehm.) R.M.Schust., portion of plant, ventral view. **8-10.** *Asterella wallichiana* (Lehm.) Grolle, 8, female plant, dorsal view, 9, spore, 10, elaters. **11-12.** *Saccogynidium muricellum* (De Not.) Grolle, 11, median cells of leaf lobe, 12, portion of plant, ventral view. 7 from *R.-L. Zhu et al. 20131026-296B,* 8-10 from *R.-L. Zhu et al. 20131101-134,* 11-12 from *R.-L. Zhu et al. 20131025-147.*

Pallavicinia subciliata (Austin) Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the Peak, 22°36′32.70″N, 105°52′13.86″E, 1598 m, on wet rock, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-213*.

Distribution. Widely distributed in E Asia, new to Vietnam.

Plagiochasma japonicum (Steph.) C.Massal.

Specimens examined. Hà Giang: Quản Bạ District, Tam Sơn Town, Quản Bạ Heavens Gate, 23°02′57.76″N, 104°59′32.79″E, 1164 m, on rock, 31 Oct. 2013, *R.-L. Zhu et al. 20131031-16*.

Distribution. Bhutan, China, Hawaii, India, Japan, Korea and Philippines (Bischler, 1979; Yamada & Iwatsuki, 2006), new to Vietnam.

Plagiochila assamica Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′55.41″N, 105°51′46.97″E, 1858 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-75*.

Distribution. Bhutan, China, India and Thailand (So, 2001), new to Vietnam.

Plagiochila gracilis Lindenb. & Gottsche

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′54.73″N, 105°51′51.31″E, 1873 m, on tree branches, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-110*.

Distribution. Bhutan, Canada, China, India, Indonesia, Japan, Korea, Nepal, Philippines, Sri Lanka and Thailand (So, 2001), new to Vietnam.

Plagiochila khasiana Mitt.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′48.41″N, 105°51′49.05″E, 1850 m, on rotten woods, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-141*.

Distribution. Bhutan, China, India, Nepal, Sri Lanka and Thailand (So, 2001), new to Vietnam.

Plagiochila ovalifolia Mitt.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′10.48″N, 105°52′05.72″E, 950 m, on rock, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-8*. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng Village, along Độ stream, 22°57′49.69″N, 105°05′30.32″E, 867 m, on rock, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-76*.

Distribution. China, Japan, Korea and Philippines (So, 2001), new to Vietnam.

Plagiochila salacensis Gottsche

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′28.80″N, 105°52′14.65″E, 1580 m, on tree trunks, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-275*. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng Village, 23°03′05.43″N, 104°51′59.11″E, 1068 m, on tree trunks, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-43*.

Distribution. China, India, Indonesia, Thailand and Philippines (So, 2001), new to Vietnam.

Plagiochila shangaica Steph.

Representative specimens examined. Cao Bằng: Trà Lĩnh District, Quốc Toản Commune, Thang Heng Lak, 22°45′18.91″N, 106°17′43.59″E, 638 m, on rock, 24 Oct. 2013, *R.-L. Zhu et al. 20131024-32*. Hà Giang: Bắc Mê District, Thượng Tân Commune, Tà Lương Village, 22°43′41.28″N, 105°12′18.48″E, 455 m, on rock with a thin layer of soil, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-219*; Vị Xuyên District, Thuận Hóa Commune, Lũng Buông Village, 22°54′39.31″N, 104°56′48.53″E, 159 m, on rock with a thin layer of soil, 6 Nov. 2013, *R.-L. Zhu et al. 20131106-88*.

Distribution. China and Japan (So, 2001), new to Vietnam.

Pleurozia acinosa (Mitt.) Trevis.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′53.30″N, 105°52′04.29″E, 1789 m, on rotten logs, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-191B*.

Distribution. Burma, China, Japan, Malaysia, Philippines, Sri Lanka and Thailand (Thiers, 1993), new to Vietnam.

Radula fulvifolia (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′24.81″N, 105°52′16.60″E, 1546 m, on tree trunks, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-16*.

Distribution. China, Philippines (Gao & Wu, 2008 as *Radula meyeri* Steph.), India (Dandotiya *et al.*, 2011), St. Helena Isl. (Müller, 1999), South Africa, Cote d'Ivoire, Réunion Is. (Müller *et al.*, 2001), Indonesia (Sumatra) and Thailand (Yamada, 1979 as *R. meyeri*), new to Vietnam.

Radula kojana Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 9 to Vài Khau village to Khau Cảnh place, 22°35′28.07″N, 105°53′24.08″E, 1300 m, on tree trunks, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-24*.

Distribution. China, Japan, Korea and Philippines (Yamada, 1979; Zhu & So, 2001), India (Singh *et al.*, 2016), new to Vietnam.

Radula madagascariensis Gottsche

Specimens examined. Cao Bằng: Trùng Khánh District, Cao Vít Gibbon Conservation Area, Ngọc Côn Commune, 22°54′31.89″N, 106°32′25.17″E, 603 m, on tree base, 22 Oct. 2013, *R.-L. Zhu et al. 20131022-48*. Hà Giang: Vị Xuyên District, Phương Độ Commune, Lùng Vài village, 22°49′13.05″N, 104°53′13.29″E, 1141 m, on tree bark, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-141*.

Distribution. Australia (Renner *et al.*, 2013), China (Gao & Wu, 2008), India, Indonesia (Sumatra, Java), Madagascar, Malaysia, Mauritius Is., Nepal, Philippines and Sri Lanka (Yamada, 1979) and Papua New Guinea (Yamada & Piippo, 1989), new to Vietnam.

Radula obscura Mitt.

Specimens examined. Cao Bằng: Nguyên Bình district, Phia Oắc-Phia Đén nature reserve, Thành Công commune, through Phia Oắc peak, 22°36′52.73″N, 105°52′05.15″E, 1791 m, on rotten tree, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-176B*.

Distribution. China, India, Malaysia (Borneo: Mt. Kinabalu), Nepal, Philippines, Sri Lanka and Thailand (Yamada, 1979), new to Vietnam.

Radula okamurana Steph.

Representative specimens examined. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng village, along Độ stream, 22°57′48.71″N, 105°05′31.49″E, 852 m, on tree trunks, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-188*; Vị Xuyên District, Phương Độ Commune, Khuổi Mi village, 22°49′03.51″N, 104°57′02.96″E, 296 m, on tree trunks, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-42*.

Distribution. China (Yamada & Inoue, 1988) and Japan (Yamada, 1979), new to Vietnam.

Radula retroflexa Taylor

Representative specimens examined. Hà Giang: Quản Bạ District, Thái An Commune, Sếu Lọng village, along Độ stream, 22°58′02.23″N, 105°05′22.93″E, 867 m, epiphyllous, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-29*; Quản Bạ District, Tùng Vài Commune, Thăng village, 23°03′02.01″N, 104°52′01.57″E, 1073 m, on tree trunks, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-8*; Vị Xuyên District, Phương Độ Commune, Khuổi Mi village, 22°48′47.61″N, 104°56′20.16″E, 386 m, on tree base, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-33*.

Distribution. China, Indonesia (Sumatra, Java), Japan, Malaysia, French Polynesia (Marquesas Is.), New Caledonia, New Guinea, Philippines, Samoa and Sri Lanka (Yamada, 1979), Thailand, Hawaii, New Zealand, Australia (Yamada, 1979 as *Radula retroflexa* var. *fauciloba* (Steph.) K.Yamada), Fiji, French Polynesia (Tahiti) and Vanuatu (So, 2006), new to Vietnam.

Radula tabularis Steph.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′54.28″N, 105°52′02.06″E, 1784 m, on rotten tree, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-258*. Hà Giang: Quản Bạ District, Tùng Vài Commune, Thăng village, 23°03′09.98″N, 104°51′43.33″E, 1265 m, on tree trunks, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-69B*.

Distribution. Australia, India, Mascarene Is., Malaysia (Borneo: Mt. Kinabalu), New Zealand and Campbell I., South Africa (Yamada, 1979) and Sri Lanka (Onraedt, 1983), new to Vietnam.

Riccardia diminuta Schiffn.

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′55.41″N, 105°52′00.44″E, 1790 m, on rock with a thin layer of soil, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-301*.

Distribution. China, Indonesia (Meijer, 1959) and Philippines (Furuki, 2006), new to Vietnam.

Riccardia elata (Steph.) Schiffn.

Specimens examined. Hà Giang: Bắc Mê District, Thượng Tân Commune, Tà Lượng Village, 22°45′27.94″N, 105°13′46.87″E, 446 m, on fallen logs, 29 Oct. 2013, *R.-L. Zhu et al. 20131029-27B*.

Distribution. China, India (Singh & Singh, 2007), Indonesia (Meijer, 1959), Malaysia (Chuah-Petiot, 2011), Philippines (Furuki, 2006) and Singapore (Furuki & Tan, 2013), new to Vietnam.

Riccardia multifida (L.) Gray subsp. ***decrescens*** (Steph.) Furuki

Representative specimens examined. Cao Bằng: Nguyên Bình District, 22°36′55.54″N, 105°52′00.63″E, 1784 m, on rock, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-299*. Hà Giang: Quản Bạ district, 22°57′52.30″N, 105°05′29.58″E, 900 m, on rotten logs, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-249*.

Distribution. Japan (Furuki, 1991), new to Vietnam.

Riccardia palmata (Hedw.) Carruth

Specimens examined. Cao Bằng: Nguyên Bình District, 22°36′48.90″N, 105°52′06.52″E, 1780 m, on rock, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-259*.

Distribution. Widely distributed in the northern Hemisphere (Furuki, 1991), new to Vietnam.

Riccardia pusilla Grolle **Fig. 3**

Representative specimens examined. Hà Giang: Quản Bạ district, 23°03′04.61″N, 104°51′59.85″E, 1063 m, on fallen logs, 3 Nov. 2013, *R.-L. Zhu et al. 20131103-75*.

Distribution. Japan (Furuki, 1991) and Philippines (Furuki, 2006), new to Vietnam.

Riccia fluitans L.

Specimens examined. Hà Giang: Vị Xuyên District, Phương Độ Commune, Khuổi Mi Village, 22°49′46.85″N, 104°13′19.85″E, 787 m, on soil, 7 Nov. 2013, *R.-L. Zhu et al. 20131107-47*.

Distribution. Subcosmopolitan, new to Vietnam.

Riccia glauca L.

Specimens examined. Hà Giang: Quản Bạ District, Thanh Vân Commune, Thanh Long Village, 23°05′14.72″N, 104°57′10.62″E, 790 m, on soil, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-136*.

Distribution. E Asia, Europe and N America, new to Vietnam.

Saccogynidium muricellum (De Not.) Grolle (Figs 11-12)

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′25.71″N, 105°52′09.85″E, 1609 m, on decaying logs, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-147*.

Distribution. China, Indonesia, Malaysia, Philippines and Thailand (Jia & He, 2013), new to Vietnam

Saccogynidium is new to the liverwort flora of Vietnam.

Scapania griffithii Schiffn.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc peak, 22°36′55.18″N, 105°51′46.50″E, 1907 m, on rock with a thin layer of soil, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-13*.

Distribution. China (Inoue, 1972; Gao & Wu, 2008) and Himalayan (Amakawa, 1964), new to Vietnam.

Scapania ligulata subsp. ***stephanii*** (Müll. Frib.) Potemkin, Piippo & T.J. Kop.

Representative specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′18.74″N, 105°52′19.44″E, 1598 m, on rock with a thin layer of soil, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-54*; Quang Thành Commune, Cầu 2 to Cá Hồi 4 place, 22°35′09.45″N, 105°52′04.80″E, 944 m, on rock with a thin layer of soil, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-224*.

Distribution. China (Potemkin *et al.*, 2004), Japan (Amakawa & Hattori, 1954) and South Korea (Hong, 1966), new to Vietnam.

Schiffneria hyalina Steph. **Fig. 6**

Specimens examined. Hà Giang: Quản Bạ district, Thái An commune, Sếu Lọng village, along Độ stream, 22°57′48.28″N, 105°05′31.63″E, 886 m, on decaying logs, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-64*.

Distribution. Bhutan, India, Japan, Indonesia, Malaysia, Papua New Guinea and Thailand (Long & Grolle, 1990; Eggers *et al.*, 1998), new to Vietnam.

Schiffneria is newly reported for Vietnam.

Schistochila yakushimensis N.Ohnishi & Deguchi

Specimens examined. Cao Bằng: Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, through Phia Oắc Peak, 22°36′53.30″N, 105°52′04.29″E, 1789 m, on rotten woods, 25 Oct. 2013, *R.-L. Zhu et al. 20131025-191A*; Nguyên Bình District, Phia Oắc-Phia Đén Nature Reserve, Thành Công Commune, from the forest station to the peak, 22°36′32.12″N, 105°52′13.89″E, 1594 m, on rotten woods, 26 Oct. 2013, *R.-L. Zhu et al. 20131026-110*.

Distribution. Japan, Thailand (Ohnishi & Deguchi, 2003), new to Vietnam.

Solenostoma comatum (Nees) C.Gao

Representative specimens examined. Hà Giang: Quản Bạ district, Thanh Vân Commune, Thanh Long Village, 23°05′16.44″N, 104°57′06.17″E, 831 m, on soil, 1 Nov. 2013, *R.-L. Zhu et al. 20131101-138*.

Distribution. Africa, SE Asia (Gao, 2003 as *Jungermannia comata* Nees), new to Vietnam.

Solenostoma hyalinum (Lyell *ex* Hook.) Mitt.

Representative specimens examined. Hà Giang: Quản Bạ District, Tùn Vài Commune, Thăng Village, 23°03′04.92″N, 104°51′59.93″E, 1045 m, on rock covered with a thin layer of soil, 3 Nov. 2013*, R.-L. Zhu et al. 20131103-103*; Vị Xuyên District, Thuận Hóa Commune, Lũng Buông Village, 22°54′39.43″N, 104°56′48.56″E, 1500 m, on soil, 6 Nov. 2013, *R.-L. Zhu et al. 20131106-72*.

Distribution. N and S America, Europa, E and SE Asia (Gradstein & Váňa, 1987, Fig. 18 as *Jungermannia hyalina* Lyell; Gao, 2003 as *J. hyalina*), new to Vietnam.

Solenostoma pyriflorum Steph.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 7 to Vài Khau Village to Khau Canh place, 22°37′14.76″N, 105°52′37.02″E, 1153 m, on soil, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-56A*.

Distribution. E Asia and N America (Gao, 2003 as *Jungermannia pyriflora* Steph.), new to Vietnam.

Solenostoma radicellosum Mitt.

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′09.70″N, 105°52′05.33″E, 951 m, on wet rock along river, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-3*.

Distribution. China, India, Japan, Korea, Papua New Guinea and Sri Lanka (Gao, 2003 as *Jungermannia radicellosa* (Mitt.) Steph.), new to Vietnam.

Solenostoma rosulans (Steph.) Váňa & D.G. Long

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, Cầu 2 to Cá Hồi 1 place, 22°35′09.81″N, 105°52′04.78″E, 969 m, on rock covered with a thin layer of soil, 28 Oct. 2013, *R.-L. Zhu et al. 20131028-113*.

Distribution. China and Japan (Gao, 2003 as *Jungermannia rosulans* (Steph.) Steph.), new to Vietnam.

Solenostoma tetragonum (Lindenb.) R.M.Schust. *ex* Váňa & D.G.Long

Specimens examined. Cao Bằng: Nguyên Bình District, Quang Thành Commune, from Km 7 to Vài Khau Village to Khau Canh place, 22°37′14.65″N, 105°52′36.99″E, 1153 m, on soil, 27 Oct. 2013, *R.-L. Zhu et al. 20131027-54*.

Distribution. Asian tropics (Zhu & So, 1996 as *Jungermannia tetragona* Lindenb.), new to Vietnam.

Spruceanthus planiusculus (Mitt.) X.Q.Shi, R.L.Zhu & Gradst.

Representative specimens examined. Vĩnh Phúc: Vị Xuyên District, Minh Sơn Commune, Tân Sơn Village, 23°00′44.43″N, 104°54′51.94″E, 478 m, on tree bark, 5 Nov. 2013, *R.-L. Zhu et al. 20131105-17*. Hà Giang: Vị Xuyên District, Thuận Hóa Commune, Lũng Buông Village, 22°54′17.10″N, 104°56′20.80″E, 296 m, on rotten branches, 6 Nov. 2013, *R.-L. Zhu et al. 20131106-22*.

Distribution. Widespread in the Indopacific region (Thiers & Gradstein, 1989 as *Archilejeunea planiuscula* (Mitt.) Steph.; Wang *et al.*, 2016), new to Vietnam.

Spruceanthus polymorphus (Sande Lac.) Verd.

Representative specimens examined. Hà Giang: Quản Bạ District, Thanh Vân Commune, Thanh Long Village, 23°00′42.01″N, 104°54′49.19″E, 455 m, epiphyllous, 5 Nov. 2013, *R.-L. Zhu et al. 20131105-36*.

Distribution. Indopacific (Thiers & Gradstein, 1989 as *Archilejeunea polymorpha* (Sande Lac.) Thiers & Gradst.; Wang *et al.*, 2016), new to Vietnam.

Syzygiella autumnalis (DC.) K.Feldberg, Váňa, Hentschel & Heinrichs

Representative specimen examined. Hà Giang: Quản Bạ district, Thái An commune, Sếu Lọng village, along Độ stream, 22°57′49.49″N, 105°05′32.55″E, 892 m, on rock covered with a thin layer of soil, 2 Nov. 2013, *R.-L. Zhu et al. 20131102-51*.

Distribution. Europe, N America and E Asia, new to Vietnam.
Syzygiella is recorded in Vietnam for the first time.

A revised checklist of liverworts and hornworts in Vietnam

An alphabetical listing of the known taxa of liverworts and hornworts in Vietnam is presented. Invalid names are not included. For saving space, bibliographic references are only given for records not listed by Bakalin & Nguyen (2016).

Hornworts (Anthocerotophyta)

1. *Anthoceros angustus* Steph. (present study)
2. *Anthoceros punctatus* L. (present study)
3. *Anthoceros subtilis* Steph.
4. *Folioceros fuciformis* (Mont.) D.C.Bharadwaj
5. *Megaceros flagellaris* (Mitt.) Steph. (present study)
6. *Phaeoceros carolinianus* (Michx.) Prosk. (= *Anthoceros lamellisporus* Steph. ≡ *Phaeoceros lamellisporus* (Steph.) Udar & D.K.Singh)
7. *Phaeoceros erectus* Udar & D.K.Singh

Liverworts (Marchantiophyta)

8. *Acrolejeunea fertilis* (Reinw. *et al.*) Schiffn.
9. *Acrolejeunea infuscata* (Mitt.) Jian Wang bis & Gradst. (present study)

10. *Acrolejeunea pycnoclada* (Taylor) Schiffn. (present study)
11. *Acrolejeunea recurvata* Gradst. (present study)
12. *Acrolejeunea sandvicensis* (Gottsche) Steph.
13. *Acromastigum echinatiforme* (De Not.) A.Evans
14. *Acromastigum echinatum* (Gottsche) A.Evans (Piippo, 1991)
15. *Acromastigum laevigatum* Mitt. *ex* A.Evans
16. *Allorgella hoana* Tixier (≡ *Otolejeunea hoana* (Tixier) Grolle)
17. *Allorgella semperiana* (Steph.) Bechteler *et al.* (≡ *Otolejeunea semperiana* (Steph.) Grolle)
18. *Aneura pinguis* (L.) Dumort. (present study).
19. *Apopellia endiviifolia* (Dicks.) Nebel & D.Quandt
20. *Asterella cruciata* (Steph.) Horik. (present study)
21. *Asterella wallichiana* (Lehm. & Lindenb.) Grolle (present study)
22. *Bazzania angustifolia* Horik.
23. *Bazzania angustistipula* N.Kitag.
24. *Bazzania asperrima* Steph.
25. *Bazzania assamica* (Steph.) S.Hatt. (≡ *Bazzania tridens* var. *assamica* (Steph.) Pócs)
26. *Bazzania asymmetrica* (Steph.) N.Kitag.
27. *Bazzania fauriana* (Steph.) S.Hatt.
28. *Bazzania intermedia* (Gottsche & Lindenb.) Trevis.
29. *Bazzania japonica* (Sande Lac.) Lindb.
30. *Bazzania magna* Horik. (present study)
31. *Bazzania ovistipula* (Steph.) Abeyw. (Kitagawa, 1978; Long & Grolle, 1990; Zhou *et al.,* 2012; Jia & He, 2013).
32. *Bazzania pearsonii* Steph. (present study)
33. *Bazzania praerupta* (Reinw. *et al.*) Trevis. (Bakalin & Nguyen, 2016 as *Bazzania sandei* (Steph.) Schiffn.)
34. *Bazzania recurva* (Mont.) Trevis.
35. *Bazzania revoluta* (Steph.) N.Kitag.
36. *Bazzania tridens* (Reinw. *et al.*) Trevis.
    Bazzania tridens var. *cornutistipula* (Steph.) Pócs
37. *Bazzania vietnamica* Pócs
38. *Bazzania vittata* (Gottsche) Trevis. (Hattori, 1951; Miller *et al.*, 1983)
39. *Calypogeia arguta* Nees & Mont. (present study)
40. *Calypogeia azurea* Stotler & Crotz (present study)
41. *Calypogeia tosana* (Steph.) Steph. (present study)
42. *Caudalejeunea reniloba* (Gottsche) Steph.
43. *Cephalozia hamatiloba* subsp. *siamensis* (N.Kitag.) Váňa (present study)
44. *Cheilolejeunea birmensis* (Steph.) Mizut.
45. *Cheilolejeunea ceylanica* (Gottsche) R.M.Schust. & Kachroo
46. *Cheilolejeunea clavata* Mizut. (present study)
47. *Cheilolejeunea eximia* (Ast & Tixier) R.L.Zhu & M.L.So
48. *Cheilolejeunea falsinervis* (Sande Lac.) Kachroo & R.M.Schust.
49. *Cheilolejeunea incisa* (Gottsche) R.M.Schust. & Kachroo
50. *Cheilolejeunea insignis* Ast & Tixier
51. *Cheilolejeunea kitagawae* W.Ye & R.L.Zhu (present study)
52. *Cheilolejeunea meyeniana* (Nees *et al.*) R.M.Schust. & Kachroo
53. *Cheilolejeunea obtusilobula* (S.Hatt.) S.Hatt. (present study)
54. *Cheilolejeunea osumiensis* (S.Hatt.) Mizut. (present study)
55. *Cheilolejeunea ryukyuensis* Mizut.

56. *Cheilolejeunea streimannii* Pócs & Ninh
57. *Cheilolejeunea trapezia* (Nees) Kachroo & R.M.Schust. (Bakalin & Nguyen, 2016 as *Pycnolejeunea convexifolia* (Mitt.) Steph.)
58. *Cheilolejeunea trifaria* (Reinw. *et al.*) Mizut.
59. *Cheilolejeunea turgida* (Mitt.) W.Ye & R.L.Zhu (Zhu & Lai, 2003 as *Leucolejeunea turgida* (Mitt.) Verd., Jia & He, 2013)
60. *Cheilolejeunea ventricosa* (Schiffn. *ex* P.Syd.) Xiao L.He
61. *Cheilolejeunea viridis* Steph.
62. *Cheilolejeunea vittata* (Steph. *ex* G.Hoffm.) R.M.Schust. & Kachroo (present study)
63. *Cheilolejeunea xanthocarpa* (Lehm. & Lindenb.) Malombe
64. *Chiastocaulon dendroides* (Nees) Carl (present study)
65. *Chiastocaulon oppositum* (Reinw. *et al.*) S.D.F.Patzak *et al.* (≡ *Plagiochilion oppositum* (Reinw. *et al.*) S.Hatt.)
66. *Cololejeunea aequabilis* (Sande Lac.) Schiffn.
67. *Cololejeunea angustiflora* (Steph.) Mizut.
68. *Cololejeunea appressa* (A.Evans) Benedix
69. *Cololejeunea bachmaensis* Tixier (Tixier, 1970b)
70. *Cololejeunea ceatocarpa* (Ångstr) Steph.
71. *Cololejeunea ceratilobula* (P.C.Chen) R.M.Schust.
72. *Cololejeunea chenii* Tixier
73. *Cololejeunea cordiflora* Steph.
74. *Cololejeunea crassipapillata* Tixier (Tixier, 1970c)
75. *Cololejeunea dankiaensis* Tixier
76. *Cololejeunea desciscens* Steph.
77. *Cololejeunea diaphana* A.Evans
78. *Cololejeunea dozyana* (Sande Lac.) Schiffn. (present study)
79. *Cololejeunea elephantorum* Tixier
80. *Cololejeunea ensifera* Tixier
81. *Cololejeunea equialbi* Tixier
82. *Cololejeunea falcata* (Horik.) Benedix
83. *Cololejeunea filicis* (Herzog) Piippo
84. *Cololejeunea floccosa* (Lehm. & Lindenb.) Schiffn.
    Cololejeunea floccosa var. *amoena* (Benedix) Pócs (≡ *Cololejeunea amoena* Benedix)
    Cololejeunea floccosa var. *amoenoides* Tixier (Tixier, 1979a, 1981; Engel, 1989; Crosby & Engel, 2006)
    Cololejeunea floccosa var. *aurita* Benedix
    Cololejeunea floccosa var. *ocellata* Tixier (Tixier, 1979a, 1981; Engel, 1989; Crosby & Engel, 2006)
    Cololejeunea floccosa var. *trivittata* Tixier (Tixier, 1981)
85. *Cololejeunea gottschei* (Steph.) Pandé, K.P.Srivast. & Ahmad
86. *Cololejeunea grossepapillosa* (Horik.) N.Kitag.
87. *Cololejeunea grushvitzkiana* Pócs
88. *Cololejeunea gynophthalma* Benedix
89. *Cololejeunea haskarliana* (Lehm.) Schiffn.
90. *Cololejeunea hildebrandii* (Austin) Steph.
91. *Cololejeunea hirta* Steph.
92. *Cololejeunea hoabinhiana* Tixier
93. *Cololejeunea hungii* Tixier

94. *Cololejeunea indica* Pandé & R.N.Misra (=*Cololejeunea planiflora* Benedix (cf. Singh & Pócs, 2016)
95. *Cololejeunea indosinica* Tixier
96. *Cololejeunea inflata* Steph.
97. *Cololejeunea inflectens* (Mitt.) Benedix
98. *Cololejeunea lanciloba* Steph.
99. *Cololejeunea latilobula* (Herzog) Tixier
100. *Cololejeunea littoralis* Tixier
101. *Cololejeunea longifolia* (Mitt.) Benedix *ex* Mizut.
102. *Cololejeunea macounii* (Spruce *ex* Underw.) A.Evans
103. *Cololejeunea madothecoides* (Steph.) Benedix
104. *Cololejeunea magnistyla* (Horik.) Mizut. (present study)
105. *Cololejeunea manlinensis* Tixier (Tixier, 1970b)
106. *Cololejeunea metzgeriopsis* (K.I.Goebel) Gradst. *et al.* (Tixier, 1980 as *Metzgeriopsis pusilla* K.I.Goebel; Miller *et al.*, 1983 as *M. pusilla;* Pócs & Piippo, 2011)
107. *Cololejeunea mutabilis* Benedix
108. *Cololejeunea obliqua* (Nees & Mont.) Schiffn.
109. *Cololejeunea ocellata* (Horik.) Benedix
110. *Cololejeunea ocelloides* (Horik.) Mizut.
111. *Cololejeunea ombrophila* Tixier
112. *Cololejeunea peraffinis* (Schiffn.) Schiffn.
Cololejeunea peraffinis var. *elegans* Benedix (Tixier, 1970b, 1978, 1979b; Miller *et al.*, 1983; Pócs & Piippo, 2011)
113. *Cololejeunea plagiophylla* Benedix
114. *Cololejeunea planissima* (Mitt.) Abeyw.
115. *Cololejeunea platyneura* (Spruce) A.Evans (Bakalin & Nguyen, 2016 as *Cololejeunea bichiana* Tixier (cf. Zhu & So, 1998)
116. *Cololejeunea pluridentata* P.C.Wu & J.S.Lou (present study)
117. *Cololejeunea pseudocristallina* P.C.Chen & P.C.Wu (Gao & Cao, 2000)
118. *Cololejeunea pseudofloccosa* (Horik.) Benedix
119. *Cololejeunea pseudoplagiophylla* P.C.Wu & J.S.Lou (Zhu & So, 1999a, 1999b, 2001; Gao & Cao, 2000; Asthana & Srivastava, 2003, Jia & He, 2013; Wu & Zhang, 2013)
120. *Cololejeunea pseudoschmidtii* Tixier
121. *Cololejeunea pseudostephanii* Tixier
122. *Cololejeunea raduliloba* Steph.
123. *Cololejeunea rotundilobula* (P.C.Wu & P.J.Lin) Piippo (Zhu & Lai 2003; Jia & He, 2013)
124. *Cololejeunea schmidtii* Steph.
125. *Cololejeunea selangorensis* Tixier
126. *Cololejeunea serrata* (Steph.) Benedix
127. *Cololejeunea serrulata* Steph.
128. *Cololejeunea sigmoidea* Ast & Tixier
129. *Cololejeunea sigmoidea* var. *dubia* Tixier (Tixier, 1985)
130. *Cololejeunea sintenisii* (Steph.) Pócs
131. *Cololejeunea spathulifolia* (Steph.) H.A.Mill.
132. *Cololejeunea sphaerodonta* Mizut.
133. *Cololejeunea spinosa* (Horik.) Pandé & R.N.Misra (present study)
134. *Cololejeunea stylilobula* Tixier *ex* R.L.Zhu
135. *Cololejeunea stylosa* Steph.

136. *Cololejeunea tamdaoensis* Tixier (Tixier, 1970b)
137. *Cololejeunea tenella* Benedix
138. *Cololejeunea teurnoumensis* Tixier
139. *Cololejeunea tranninhiana* Tixier
140. *Cololejeunea trichomanis* (Gottsche) Besch.
141. *Cololejeunea verrucosa* Steph.
142. *Cololejeunea vidaliana* Tixier (Tixier, 1968, 1985 as *C. papulosa* Tixier*, nom. illeg*.)
143. *Cololejeunea vietnamensis* Tixier
144. *Cololejeunea yakusimensis* (S.Hatt.) Mizut. (Zhu & Lai, 2003)
145. *Colura acroloba* ((Prantl) Jovet-Ast
146. *Colura ari* (Steph.) Steph.
147. *Colura brevistyla* Herzog
148. *Colura conica* (Sande Lac.) K.I.Goebel
149. *Colura corniantha* Grolle
150. *Colura corynophora* (Nees *et al.*) Trevis.
151. *Colura denticulata* Ast
152. *Colura inflata* K.I.Goebel
153. *Colura inuii* Horik. (present study)
154. *Colura jovet-astiae* Grolle
155. *Colura karstenii* K.I.Goebel
156. *Colura ornata* K.I.Goebel
157. *Colura superba* (Mont.) Steph.
158. *Colura tenuicornis* (A.Evans) Steph.
159. *Colura tixieri* Jovet-Ast
160. *Colura valida* Jovet-Ast
161. *Colura vietnamensis* Jovet-Ast & Tixier
162. *Conocephalum japonicum* (Thunb.) Grolle (present study)
163. *Cryptolophocolea compacta* (Mitt.) L.Söderstr. (present study)
164. *Cyathodium aureonitens* (Griff.) Mitt.
165. *Cyathodium cavernarum* Kunze *ex* Lehm. & Lindenb. (Stephani, 1895)
166. *Cyathodium smaragdinum* Schiffn.
167. *Cylindrocolea kiaeri* (Austin) Váňa (present study)
168. *Diplasiolejeunea cavifolia* Steph.
169. *Diplasiolejeunea cobrensis* Steph.
170. *Diplasiolejeunea rudolphiana* Steph.
171. *Drepanolejeunea angustifolia* (Mitt.) Grolle
172. *Drepanolejeunea bidoupensis* Pócs
173. *Drepanolejeunea commutata* Grolle & R.L.Zhu
174. *Drepanolejeunea dactylophora* (Nees *et al.*) J.B.Jack & Steph.
175. *Drepanolejeunea elegans* Herzog
176. *Drepanolejeunea erecta* (Steph.) Mizut.
177. *Drepanolejeunea fleischeri* (Steph.) Grolle & R.L.Zhu
178. *Drepanolejeunea foliicola* Horik.
179. *Drepanolejeunea nymanii* Steph.
180. *Drepanolejeunea obliqua* Steph.
181. *Drepanolejeunea pentadactyla* (Mont.) Steph.
182. *Drepanolejeunea spicata* (Steph.) Grolle & R.L.Zhu
183. *Drepanolejeunea tenera* K.I.Goebel
184. *Drepanolejeunea teysmannii* (Gottsche) Steph.

185. *Drepanolejeunea thwaitesiana* (Mitt.) Steph. var. *thwaitesiana*
Drepanolejeunea thwaitesiana (Mitt.) Steph. var. *zhengii* R.L.Zhu (Zhu & So, 2001; Gao & Wu, 2010; Wu & Zhang, 2013)
186. *Drepanolejeunea tricornua* Herzog
187. *Drepanolejeunea vesiculosa* (Mitt.) Steph.
188. *Drepanolejeunea yunnanensis* (P.C.Chen) Grolle & R.L.Zhu
189. *Dumortiera hirsuta* (Sw.) Nees
Dumortiera hirsuta subsp. *nepalensis* (Taylor) R.M.Schust.
190. *Fossombronia japonica* Schiffn. (present study).
191. *Frullania alstonii* Verd.
192. *Frullania apiculata* (Reinw. *et al.*) Nees
Frullania apiculata var. *goebelii* Schiffn. (Jovet-Ast & Tixier, 1958; Tixier, 1971)
193. *Frullania campanulata* Sande Lac.
194. *Frullania claviloba* Steph. (Pócs *et al.,* 1967)
195. *Frullania densiloba* Steph. *ex* A.Evans
196. *Frullania ericoides* (Nees) Mont.
197. *Frullania gracilis* (Reinw. *et al.*) Nees
198. *Frullania grandistipula* Lindenb. (Pócs *et al.,* 1967; Miller *et al.,* 1983)
199. *Frullania hamatiloba* Steph. (Pócs & Ninh, 2005)
200. *Frullania hypoleuca* Nees (Pócs *et al.,* 1967; Miller *et al.*, 1983)
201. *Frullania iwatsukii* S.Hatt.
202. *Frullania junghuhniana* Gottsche
203. *Frullania meyeniana* Lindenb.
204. *Frullania moniliata* (Reinw. *et al.*) Mont. (= *Frullania tamarisci* subsp. *obscura* var. *vietnamica* (S.Hatt.) S.Hatt.)
205. *Frullania monocera* (Hook.f. & Taylor) Gottsche *et al.*
206. *Frullania motoyana* Steph. (present study)
207. *Frullania muscicola* Steph. (Zhu & Lai, 2003; Jia & He, 2013)
208. *Frullania nepalensis* (Spreng.) Lehm. & Lindenb.
209. *Frullania neurota* Taylor
210. *Frullania nodulosa* (Reinw. *et al.*) Nees
211. *Frullania obscura* (Sw.) Mont. (Bakalin & Nguyen, 2016 as *Frullania arecae* (Spreng.) Gottsche, Pócs *et al.,* 1967 as *F. wallichiana* Mitt.)
212. *Frullania orientalis* Sande Lac.
213. *Frullania physantha* Mitt.
214. *Frullania pocsantha* Thaithong & S.Hatt.
215. *Frullania ramuligera* (Nees) Mont.
216. *Frullania rio-janeirensis* (Raddi) Ångstr.
217. *Frullania serrata* Gottsche
218. *Frullania ternatensis* Gottsche
219. *Frullania trichodes* Mitt. (Tixier, 1973a as *F. tenuicaulis* Mitt.)
220. *Gradsteinianthus tridentatus* (R.L.Zhu *et al.*) R.L.Zhu & Jian Wang bis (Wang *et al.*, 2016)
221. *Haplomitrium mnioides* (Lindb.) R.M.Schust. (present study)
222. *Herbertus armitanus* (Steph.) H.A.Mill.
223. *Herbertus dicranus* (Gottsche *et al.*) Trevis.
224. *Herbertus longifissus* Steph. (Stephani, 1895, Miller *et al.,* 1983; Tixier, 1962 as *Herberta longifissum* Steph.)
225. *Herbertus longispinus* J.B.Jack & Steph. (Juslén, 2006)
226. *Herbertus ramosus* (Steph.) H.A.Mill.

227. *Heteroscyphus argutus* (Reinw. *et al.*) Schiffn.
228. *Heteroscyphus coalitus* (Hook.) Schiffn.
229. *Heteroscyphus splendens* (Lehm. & Lindenb.) Grolle
230. *Heteroscyphus tener* (Steph.) Schiffn. (present study)
231. *Heteroscyphus zollingeri* (Gottsche) Schiffn.
232. *Isotachis japonica* Steph.
233. *Jackiella javanica* Schiffn. (present study)
234. *Jubula hutchinsiae* subsp. *javanica* (Steph.) Verd. (=*Jubula tonkinensis* Steph.)
235. *Kurzia gonyotricha* (Sande Lac.) Grolle (present study)
236. *Kurzia hispida* (Steph.) Grolle (Stephani, 1900-1924 as *Lepidozia hispida* Steph.; Grolle, 1963).
237. *Lejeunea alata* Gottsche
238. *Lejeunea anisophylla* Mont.
239. *Lejeunea apiculata* Sande Lac.
240. *Lejeunea cocoes* Mitt. (present study)
241. *Lejeunea curviloba* Steph. (present study)
242. *Lejeunea dimorpha* T.Kodama (present study)
243. *Lejeunea discreta* Lindenb. (present study)
244. *Lejeunea eifrigii* Mizut. (present study)
245. *Lejeunea exilis* (Reinw. *et al.*) Grolle
246. *Lejeunea flava* (Sw.) Nees subsp. *flava*
Lejeunea flava subsp. *orientalis* R.M.Schust. (Jovet-Ast & Tixier, 1962; Pócs, 1965)
247. *Lejeunea lunatigastria* Tixier
248. *Lejeunea magohukui* Mizut. (present study)
249. *Lejeunea micholitzii* Mizut.
250. *Lejeunea obscura* Mitt.
251. *Lejeunea pallidevirens* S.Hatt. (present study)
252. *Lejeunea papilionacea* Prantl
253. *Lejeunea parva* (S.Hatt.) Mizut. (present study)
254. *Lejeunea subacuta* Mitt. (present study)
255. *Lejeunea subolivacea* Mizut.
256. *Lejeunea trinitensis* Lindenb.
257. *Lejeunea tuberculosa* Steph. (present study)
258. *Lejeunea umbilicata* (Nees) Nees
259. *Lepidolejeunea bidentula* (Steph.) R.M.Schust.
260. *Lepidozia fauriana* Steph. (present study)
261. *Lepidozia trichodes* (Reinw. *et al.*) Nees
262. *Lepidozia vitrea* Steph. (present study)
263. *Leptolejeunea apiculata* (Horik.) S.Hatt.
264. *Leptolejeunea balansae* Steph.
265. *Leptolejeunea elliptica* (Lehm. & Lindenb.) Besch.
266. *Leptolejeunea emarginata* (Horik.) S.Hatt. (present study)
267. *Leptolejeunea epiphylla* (Mitt.) Steph.
268. *Leptolejeunea foliicola* Steph.
269. *Leptolejeunea latifolia* Herzog (Zhu & Lai, 2003)
270. *Leptolejeunea maculata* (Mitt.) Schiffn. (Bakalin & Nguyen, 2016 as *L. radiata* Steph.)
271. *Leptolejeunea massartiana* Schiffn. *ex* Herzog (Pócs *et al.,* 1967)
272. *Leptolejeunea subdentata* Schiffn. *ex* Herzog

273. *Leptolejeunea tripuncta* (Mitt.) Steph. (Bakalin & Nguyen, 2016 as *L. serrulata* Herzog; Shu *et al.*, 2016)
274. *Leptolejeunea vitrea* (Nees) Schiffn.
275. *Lophocolea minor* Nees (present study)
276. *Lophocolea muricata* (Lehm.) Nees (present study)
277. *Lopholejeunea applanata* (Reinw. *et al.*) Schiffn.
278. *Lopholejeunea eulopha* (Taylor) Schiffn.
279. *Lopholejeunea nigricans* (Lindenb.) Schiffn.
280. *Lopholejeunea soae* R.L.Zhu & Gradst. (present study)
281. *Lopholejeunea subfusca* (Nees) Schiffn.
282. *Lopholejeunea zollingeri* (Steph.) Schiffn. (present study)
283. *Marchantia emarginata* Reinw. *et al.* subsp. *emarginata*
Marchantia emarginata subsp. *tosana* (Steph.) Bischl.
284. *Marchantia paleacea* Bertol.
285. *Marchantia polymorpha* subsp. *polymorpha* (Singh & Singh, 2009)
Marchantia polymorpha subsp. *ruderalis* Bischl. E&t Boissel.-Dub.
286. *Mastigolejeunea humilis* (Gottsche) Schiffn.
287. *Mastigolejeunea indica* Steph. (present study)
288. *Mastigolejeunea repleta* (Taylor) A.Evans (present study)
289. *Mastigophora diclados* (Brid.) Nees
290. *Metacalypogeia alternifolia* (Nees) Grolle (present study)
291. *Metalejeunea cucullata* (Reinw. *et al.*) Grolle
292. *Metzgeria furcata* (L.) Corda
293. *Metzgeria lindbergii* Schiffn. (Kuwahara, 1966 as *M. conjugata* subsp. *japonica* S.Hatt.; Pócs *et al.,* 1967 as *M. conjugata* subsp. *japonica*; Pócs, 1968a as *M. conjugata* subsp. *japonica*, 1971 as *M. conjugata* subsp. *japonica*; Miller *et al.,*1983 as *M. conjugata* subsp. *japonica;* Koponen *et al.*, 2000 as *M. conjugata* subsp. *japonica;* Pócs & Ninh, 2005 as *M. conjugata* subsp. *japonica*)
294. *Metzgeria pubescens* (Schrank) Raddi
295. *Microlejeunea punctiformis* (Taylor) Steph.
296. *Mnioloma fuscum* (Lehm.) R.M.Schust. (present study)
297. *Monosolenium tenerum* Griff. (Miller *et al.*, 1983)
298. *Myriocoleopsis minutissima* (Sm.) R.L.Zhu *et al.* subsp. *minutissima* (present study)
299. *Myriocoleopsis vuquangensis* (Pócs & Ninh) Pócs
300. *Nardia assamica* (Mitt.) Amakawa (present study)
301. *Neolepidozia wallichiana* (Gottsche) Fulford & J.Taylor (present study)
302. *Notoscyphus lutescens* (Lehm. & Lindenb.) Mitt.
303. *Nowellia curvifolia* (Dicks.) Mitt. (present study)
304. *Odontoschisma denudatum* (Nees) Dumort. subsp. *denudatum* (present study).
305. *Odontoschisma grosseverrucosum* Steph. (present study)
306. *Pallavicinia levieri* Schiffn. (Grolle & Piippo, 1986)
307. *Pallavicinia lyellii* (Hook.) Gray
308. *Pallavicinia subciliata* (Austin) Steph. (present study)
309. *Plagiochasma appendiculatum* Lehm. & Lindenb.
310. *Plagiochasma rupestre* (J.R.Forst. & G.Forst.) Steph. (Miller *et al.,* 1983; Singh & Singh, 2009)
311. *Plagiochasma japonicum* (Steph.) C.Massal. (present study)
312. *Plagiochila assamica* Steph. (present study)
313. *Plagiochila bantamensis* (Reinw. *et al.*) Mont.

314. *Plagiochila chinensis* Steph.
315. *Plagiochila durelii* Schiffn. subsp. *durelii*
316. *Plagiochila flexuosa* Mitt.
317. *Plagiochila fordiana* Steph.
318. *Plagiochila frondescens* (Nees) Lindenb. (Miller *et al.,* 1983)
319. *Plagiochila fruticosa* Mitt.
320. *Plagiochila furcifolia* Mitt.
321. *Plagiochila gracilis* Lindenb. & Gottsche (present study)
322. *Plagiochila grollei* Inoue
323. *Plagiochila integrilobula* Schiffn.
324. *Plagiochila javanica* (Sw.) Nees & Mont.
325. *Plagiochila junghuhniana* Sande Lac.
326. *Plagiochila khasiana* Mitt. (present study)
327. *Plagiochila nepalensis* Lindenb.
328. *Plagiochila oblonga* Inoue
329. *Plagiochila obtusa* Lindenb.
330. *Plagiochila ovalifolia* Mitt. (present study)
331. *Plagiochila parvifolia* Lindenb.
332. *Plagiochila peculiaris* Schiffn.
333. *Plagiochila pseudorenitens* Schiffn.
334. *Plagiochila pulcherrima* Horik.
335. *Plagiochila renitens* (Nees) Lindenb.
336. *Plagiochila salacensis* Gottsche (present study)
337. *Plagiochila sandei* Dozy *ex* Sande Lac.
338. *Plagiochila sciophila* Nees *ex* Lindenb.
339. *Plagiochila secretifolia* Mitt.
340. *Plagiochila shangaica* Steph. (present study)
341. *Plagiochila semidecurrens* (Lehm. & Lindenb.) Lindenb.
342. *Plagiochila subplana* Lindenb.
343. *Plagiochila trabeculata* Steph.
344. *Pleurozia acinosa* (Mitt.) Trevis. (present study)
345. *Pleurozia gigantea* (F.Weber) Lindb.
346. *Pleurozia subinflata* (Austin) Austin
347. *Plicanthus birmensis* (Steph.) R.M.Schust.
348. *Plicanthus hirtellus* (F.Weber) R.M.Schust.
349. *Porella acutifolia* (Lehm. & Lindenb.) Trevis.
    Porella acutifolia var. *hattoriana* (Pócs) S.Hatt. (Pócs, 1968b as *P. plumosa* var. *hattoriana* Pócs; Hattori, 1976 as *P. acutifolia* var. *birmanica* S.Hatt.; Kitagawa, 1979 as *P. acutifolia* var. *birmanica*; Jia & He, 2013 as *P. acutifolia* var. *birmanica*)
    Porella acutifolia subsp. *tosana* S.Hatt. (Jia & He, 2013)
350. *Porella caespitans* (Steph.) S.Hatt.
    Porella caespitans (Steph.) S.Hatt. var. *reflexigastria* (Pócs) S.Hatt.
    Porella caespitans var. *cordifolia* (Steph.) S.Hatt. *ex* T.Katag. & T.Yamag.
351. *Porella campylophylla* (Lehm. & Lindenb.) Trevis. var. *campylophylla*
    Porella campylophylla var. *tixieri* (Pócs) S.Hatt. (Pócs,1968b; Hattori,1978; Long & Grolle, 1990)
352. *Porella densifolia* (Steph.) S.Hatt. subsp. *densifolia*
    Porella densifolia var. *paraphyllina* (P.C.Chen) Pócs (Pócs, 1968b; Hattori, 1969, 1978; Jia & He, 2013)
353. *Porella grandifolia* (Steph.) S.Hatt.

354. *Porella imbricata* Lour. (Loureiro, 1790; Bonner, 1989)
355. *Porella japonica* (Sande Lac.) Mitt.
356. *Porella madagascariensis* (Nees et Mont.) Trevis.
357. *Porella obtusata* var. *macroloba* (Steph.) S.Hatt. & M.X.Zhang (Pócs, 1968b as *P. thuja* (Dicks.) Moore; Singh & Singh, 2009)
358. *Porella perrottetiana* (Mont.) Trevis. var. *perrottetiana*
Porella perrottetiana var. *angustifolia* Pócs (Pócs, 1968b; Hattori, 1978; Bonner, 1989)
Porella perrottetiana var. *ciliatodentata* (P.C.Chen & P.C.Wu) S.Hatt. (Pócs, 1968b; Hattori, 1978; Gao & Wu, 2010)
Porella perrottetiana var. *triciliata* (Steph.) Pócs (Pócs, 1968b)
359. *Porella plumosa* (Mitt.) Parihar
360. *Ptychanthus striatus* (Lehm. & Lindenb.) Nees (Bakalin & Nguen, 2016 erroneously as *Porella striatus*)
361. *Radula acuminata* Steph.
362. *Radula aneurismalis* (Hook.f. & Taylor) Gottsche *et al.*
363. *Radula assamica* Steph.
364. *Radula borneensis* Steph.
365. *Radula cavifolia* Hampe *ex* Gottsche *et al.*
366. *Radula fulvifolia* (Hook.f. & Taylor) Gottsche *et al.* (present study)
367. *Radula gedena* Gottsche *ex* Steph.
368. *Radula javanica* Gottsche
369. *Radula kojana* Steph. (present study)
370. *Radula madagascariensis* Gottsche (present study)
371. *Radula nymannii* Steph.
372. *Radula obscura* Mitt. (present study)
373. *Radula obtusiloba* Steph.
374. *Radula okamurana* Steph. (present study)
375. *Radula retroflexa* Taylor (present study)
376. *Radula tabularis* Steph.
377. *Radula tjibodensis* K.I.Goebel
378. *Riccia balansae* Steph. (Stephani, 1900-1924)
379. *Riccia billardierei* Mont. & Nees (Jovet-Ast, 2000)
380. *Riccia crystallina* L.
381. *Riccia fluitans* L. (present study)
382. *Riccia frostii* Austin
383. *Riccia glauca* L. (present study)
384. *Riccardia diminuta* Schiffn. (present study)
385. *Riccardia elata* (Steph.) Schiffn. (present study)
386. *Riccardia graeffei* (Steph.) Hewson (Miller *et al.,* 1983; Furuki, 2002, 2006)
387. *Riccardia multifida* (L.) Gray subsp. *decrescens* (Steph.) Furuki (present study)
388. *Riccardia palmata* (Hedw.) Carruth. (present study)
389. *Riccardia pusilla* Grolle (present study)
390. *Ricciocarpos natans* (L.) Corda (Stephani, 1900-1924; Pearson,1921)
391. *Saccogynidium muricellum* (De Not.) Grolle (present study)
392. *Scapania ciliata* Sande Lac.
393. *Scapania griffithii* Schiffn. (present study)
394. *Scapania ligulata* subsp. *stephanii* (Müll. Frib.) Potemkin *et al.* (present study)
395. *Schiffneria hyalina* Steph. (present study)
396. *Schiffneriolejeunea cumingiana* (Mont.) Gradst.

397. *Schiffneriolejeunea tumida* var. *haskarliana* (Gottsche) Gradst. & Terken (Wu & Zhang, 2013)
398. *Schistochila acuminata* Steph.
399. *Schistochila aligera* (Nees & Blume) J.B.Jack & Steph.
400. *Schistochila blumei* (Nees) Trevis.
401. *Schistochila caudata* R.M.Schust. & J.J.Engel.
402. *Schistochila sciurea* (Nees) Schiffn. (Miller *et al.*, 1983)
403. *Schistochila yakushimensis* N.Ohnishi & Deguchi (present study)
404. *Solenostoma appressifolium* (Mitt.) Váňa & D.G.Long (Váňa, 1991 as *Jungermannia appressifolia* Mitt.)
405. *Solenostoma ariadne* (Taylor) R.M.Schust. *ex* Váňa & D.G.Long (Váňa, 1972 and 1991 as *Jungermannia ariadne* Taylor; Miller *et al.,* 1983 as *Plectocolea ariadne* (Taylor) Mitt.)
406. *Solenostoma comatum* (Nees) C.Gao (present study)
407. *Solenostoma haskarlianum* (Nees) R.M.Schust. *ex* Váňa & D.G.Long (Váňa, 1991 as *Jungermannia hasskarliana* (Nees) Mitt.)
408. *Solenostoma hyalinum* (Lyell *ex* Hook.) Mitt. (present study)
409. *Solenostoma pyriflorum* Steph. (present study)
410. *Solenostoma radicellosum* Mitt. (present study)
411. *Solenostoma rosulans* (Steph.) Váňa & D.G.Long (present study)
412. *Solenostoma tetragonum* (Lindenb.) R.M.Schust. *ex* Váňa & D.G.Long (present study)
413. *Solenostoma truncatum* (Nees) R.M.Schust. *ex* Váňa & D.G.Long (Váňa, 1991as *Jungermannia truncata* Nees)
414. *Spruceanthus mamillilobulus* (Herzog) Verd. (Wang *et al.*, 2015)
415. *Spruceanthus olivaceus* (Hook.f. & Taylor) X.Q.Shi *et al.* (Miller *et al.,* 1983 as *Archilejeunea olivacea* (Hook.f. & Taylor) Steph.)
416. *Spruceanthus planiusculus* (Mitt.) X.Q.Shi *et al.* (Hattori, 1951 as *Archilejeunea mariana* (Gottsche) Steph., Miller *et al.*, 1983 as *Spruceanthus marianus* (Gottsche) Mizut.)
417. *Spruceanthus polymorphus* (Sande Lac.) Verd. (Pócs *et al.,* 1967; Miller *et al.*, 1983)
418. *Spruceanthus semirepandus* (Nees) Verd.
419. *Spruceanthus sulcatus* (Nees) Gradst.
420. *Syzygiella autumnalis* (DC.) K.Feldberg *et al.* (present study)
421. *Thysananthus comosus* Lindenb.
422. *Thysananthus retusus* (Reinw. *et al.*) B.M.Thiers & Gradst. (Miller *et al.*, 1983 as *T. planus* Sande Lac.)
423. *Thysananthus spathulistipus* (Reinw. *et al.*) Lindenb.
424. *Trichocolea pluma* (Reinw. *et al.*) Mont.
425. *Trichocolea tomentella* (Ehrh.) Dumort.
426. *Tuyamaella angulistipa* (Steph.) R.M.Schust. & Kachroo
427. *Tuyamaella hattorii* Tixier (Tixier, 1962, 1970a, 1973b; Bonner, 1989)
428. *Tuyamaella jackii* (Steph.) Tixier (Tixier, 1973b)
429. *Tuyamaella molischii* (Schiffn.) S.Hatt. var. *molischii*
430. *Zoopsis liukiuensis* Horik. (Grolle & Piippo, 1984)

DISCUSSION

A total of 301 species (including 5 hornworts and 296 liverworts) were listed in the most recent comprehensive liverwort and hornwort checklist of the country (Bakalin & Nguyen, 2016). Bakalin & Nguyen (2016)'s checklist, however, lacked a number of species and infraspecific taxa recorded from Vietnam (eg., *Acromastigum echinatum* (Gottsche) A.Evans, *Cololejeunea yakusimensis* (S.Hatt.) Mizut., *Leptolejeunea latifolia* Herzog, *Schistochila sciurea* (Nees) Schiffn., *Solenostoma appressifolium* (Mitt.) Váňa & D.G.Long, *Tuyamaella hattorii* Tixier, *Zoopsis liukiuensis* Horik., etc.) and some accepted names were synonyms (eg., *Bazzania sandei* (Steph.) Schiffn., *Cololejeunea bichiana* Tixier, *Leptolejeunea radiata* Steph., *Pycnolejeunea convexifolia* (Mitt.) Steph., etc.) or erroneous records (eg., *Cololejeunea horikawana* (S.Hatt.) Mizut., *C. papillosa* (K.I.Goebel) Mizut., *Mastigolejeunea recondita* (Steph.) Mizut., *Porella striatus* (Lehm. & Lindenb.) Nees, etc.). The present paper presents 100 new records of liverworts and hornworts and raises the total species number of species to 430 (except for 23 infraspecific taxa), but the records of several narrow-distribution species, eg., *Spruceanthus olivaceus* (Hook.f. & Taylor) X.Q.Shi *et al., Schiffneriolejeunea cumingiana* (Mont.) Gradst. and *Radula aneurismalis* (Hook.f. & Taylor) Gottsche *et al.*, may be doubtful. Additional fieldwork may yield further taxa new to Vietnam. Indeed, a number of common Asiatic liverwort genera (eg., *Anastrophyllum* (Spruce) Steph, *Barbilophozia* Loeske, *Blepharostoma* (Dumort.) Dumort., *Calycularia* Mitt., *Diplophyllum* (Dumort.) Dumort., *Gymnocolea* (Dumort.) Dumort., *Targionia* L., *Wiesnerella* Schiffn.) have not yet been found in Vietnam and several rare liverworts known from the Chinese part of the border areas of China and Vietnam, such as *Cheilolejeunea gaoi* R.L.Zhu *et al.* and *Vitalianthus guangxianus* R.L.Zhu *et al.* (Zhu & So, 2003; He *et al.*, 2012; Ye *et al.*, 2015), are expected to be found in the country. A taxonomic revision of *Cololejeunea* in Vietnam, the largest liverwort genus in the country (79 species in the present checklist), is urgently needed.

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