

Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXVIII. New Guinea *Philonotis* (Bryophyta, Bartramiaceae) revisited; collections made by B.O. van Zanten in 1968

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Koponen, T. 2019: Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXVIII. New Guinea *Philonotis* (Bryophyta, Bartramiaceae) revisited; collections made by B.O. van Zanten in 1968. – *Acta Bryolich. Asiatica* 8: 9–24. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received July 2, 2018, accepted March 6, 2019

In New Guinea, the genus *Fleischerobryum* Loeske has one species, *F. longicolle* (Hampe) Loeske, and the genus *Philonotis* Brid. eight: *P. asperifolia* Mitt., *P. calomicra* Broth. in Schum. & Lauterb., *P. hastata* (Duby) Wijk & Margad., *P. laii* T.J. Kop., *P. mollis* (Dozy & Molck.) Mitt., *P. runcinata* Müll.Hal. ex Ångstr., *P. secunda* (Dozy & Molck.) Bosch & Sande Lac., and *P. thwaitesii* Mitt. B.O. van Zanten's specimens enlarge the knowledge of habitats and substrates of *Philonotis* of the Central Highlands of Papua New Guinea. *Philonotis etessei* Broth & Par., *P. hamata* E.B. Bartram, *P. novoguineensis* Reimers, *P. pilifera* Dixon ex E.B. Bartram, *P. setosa* Broth. & Paris, *P. viridifolia* E.B. Bartram and *P. vescoana* (Besch.) Paris are synonymized with *P. asperifolia*, and *P. mollis* var. *simplicicaulis* Zanten with *P. laii*. The taxonomy of all taxa is discussed with references to illustrations and a revised key to the *Philonotis* of New Guinea is presented.

Key words: Bryophyta, *Fleischerobryum*, habitats, Indonesia, Musci, nomenclature, ranges, substrates, taxonomy

Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXIX. Splachnaceae, Splachnobryaceae and addition to Bryaceae (Bryophyta)

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Koponen, T. 201: Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXIX. Splachnaceae, Splachnobryaceae and addition to Bryaceae (Bryophyta). – *Acta Bryolich. Asiatica* 8: 25–40. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Aug. 14, 2018, accepted March 8, 2019

In Western Melanesia, the Splachnaceae is represented by three species of *Tayloria* Schimp. and one of *Tetraplodon* Bruch & Schimp: *Tayloria longiseta* E.B. Bartram, *T. novo-guinensis* E.B. Bartram and *T. octoblepharum* (Hook.) Mitt., and *Tetraplodon mnioides* (Hedw.) Bruch & Schimp. Splachnobryaceae comprise four species of *Splachnobryum* Müll.Hal. in the area: *S. limbatum* D.H. Norris & R.H. Zander, *S. novae-guineae* Broth., *S. obtusum* (Brid.) Müll.Hal. and *S. oorschotii* (Sande Lac.) Müll.Hal. *Pohlia drummondii* (Müll.Hal.) A.L. Andrews in Grout, *P. prolifera* (Kindb.) Lindb. ex Arnell and *Tayloria novo-guinensis* are new additions to the flora of Papua New Guinea and *Splachnobryum obtusum* is new to the Solomon Islands. The taxonomy of the taxa is discussed and the ranges given, and they are placed in the groups of floristic elements. The classification of the families Bryaceae, and Mniaceae is discussed.

Key words: Bryophyta, distribution, Indonesia, monophyly, moss, morphological characters, nomenclature, paraphyly, *Pohlia*, range, Solomon Islands, *Splachnobryum*, *Tayloria*, taxonomy, *Tetraplodon*, West Irian

Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXX. *Cheilolejeunea* and *Drepanolejeunea*, with contributions to *Ceratolejeunea*, *Cololejeunea*, *Diplasiolejeunea*, *Lejeunea*, *Leptolejeunea*, *Metalejeunea* and *Microlejeunea* (Lejeuneaceae, Marchantiophyta)

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Pócs, T., Mizutani, M. & Koponen, T. 2019: Bryophyte flora of the Huon Peninsula, Papua New Guinea. LXXX. *Cheilolejeunea* and *Drepanolejeunea*, with contributions to *Ceratolejeunea*, *Cololejeunea*, *Diplasiolejeunea*, *Lejeunea*, *Leptolejeunea*, *Metalejeunea* and *Microlejeunea* (Lejeuneaceae, Marchantiophyta). – *Acta Bryolich. Asiatica* 8: 41–84. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received March 27, 2019, accepted May 30, 2019

A first hepatic checklist for Western Melanesia (Papua New Guinea, West Irian of Indonesia and Solomon Islands) (Grolle & Piippo 1984) listed 14 species in the genus *Cheilolejeunea* and 17 in the genus *Drepanolejeunea*. The number of species is here raised to 21 in *Cheilolejeunea* and to 26 (+ one variety) in *Drepanolejeunea*. *Cheilolejeunea streimannii*, *C. xanthocarpa*, *Drepanolejeunea dactylophora* and *D. yunnanensis* are recorded as new to Western Melanesia and to Papua New Guinea, and *D. longicornua* to Solomon Islands. New records are added to the hitherto poorly known species of *Cheilolejeunea* and *Drepanolejeunea*. *Lejeunea meyeniana* (= *Cheilolejeunea meyeniana*) is synonymized with *C. trapezia*. The taxonomy of some species is discussed. The altitudinal ranges of the species reported and some of them are summarized in altitudinal graphs for Huon Peninsula. The species are divided into floristic elements. The habitats of most of the species are in wet montane rainforests at 1000–3000 m. They were

collected mostly on leaves of trees and bushes and have limited ranges in Western Melanesia. Only a few taxa came from tree trunks, twigs or logs. Some of them grow at lower elevations in the zone of lowland rainforest at 0–1000 m and the lower part of montane rainforests (–2000 m). They have wider, either Asian or East Malesian, or even pantropical ranges. A few taxa grow at high altitudes near the tree limit and these tend to be endemic to New Guinea. Contributions to the genera of *Ceratolejeunea*, *Cololejeunea*, *Diplasiolejeunea*, *Lejeunea*, *Leptolejeunea*, *Metalejeunea* and *Microlejeunea* include first records of *Lejeunea mizutanii*, *Lejeunea reinerae*, *Leptolejeunea vitrea* and *Microlejeunea lunulatiloba* to Western Melanesia and Papua New Guinea, and first records of *Metalejeunea cucullata* and *Microlejeunea filicuspis* to Solomon Islands.

Key-words: epiphyte, hepatic, Indonesia, liverwort, new combination, nomenclature, Papua New Guinea, provincial checklist, ranges, Solomon Islands, taxonomy, Western Melanesia, West Irian

Bryophyte flora of Hunan Province, China 26. Bartramiaceae (Bryophyta)

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Koponen, T. 2019: Bryophyte flora of Hunan Province, China 26. Bartramiaceae (Bryophyta). – *Acta Bryolich. Asiatica* 8: 85–103. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Dec. 23, 2018, accepted March 7, 2019

In Hunan Province of China, three genera of the family *Bartramiaceae* occur: *Bartramia* Hedw. (2 species), *Fleischerobryum* Loeske (1 species) and *Philonotis* Brid. (8 species). *Bartramia halleriana* Hedw. and *B. pomiformis* Hedw. are holarctic taxa with wide ranges and rare in Hunan. *Fleischerobryum longicolle* (Hampe) Loeske is a warm temperate to subtropical taxon ranging from the Himalayas to Japan in east and New Guinea in south. *Philonotis falcata* (Hook.) Mitt. occurs in Africa, has several localities in SW Asia and is common from the Himalayas to Japan. *Philonotis hastata* (Duby) Wijk & Margad. ranges from the Pacific to Australia, SE Asia and Africa, and is possibly pansubtropical. *Philonotis bartramioides* (Griff.) D.G. Griffin & W.R. Buck, *P. laii* T.J. Kop., *P. lancifolia* Mitt., *P. mollis* (Dozy & Molk.) Mitt., *P. secunda* (Dozy & Molk.) Bosch & Sande Lac. and *P. thwaitesii* Mitt. are temperate to subtropical SE Asiatic taxa. *Fleischerobryum longicolle* and *Philonotis secunda* are new to Hunan. *Philonotis fontana* (Hedw.) Brid. and *P. turneriana* (Schwägr.) Mitt. are excluded from the flora of Hunan. Key to the genera and species is given, illustrations useful in identification listed and taxonomy discussed. Altitudinal ranges in Hunan are illustrated and ranges in China and total ranges summarized. The taxa are grouped into four floristic elements: Pansubtropical (1 species), holarctic, continuously or discontinuously circumpolar, boreal to temperate element (2 species), southeast Asiatic temperate – meridional element (3 species), and southeast Asiatic meridional to subtropical element (5 species). The naming of these groups is based on their ranges in continental SE Asia and in New Guinea.

Key words: *Bartramia*, China, *Fleischerobryum*, Hunan, nomenclature, *Philonotis*, ranges, substrates, taxonomy

Bryophyte flora of Hunan Province, China 27. Polytrichaceae (Bryophyta)

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Hyvönen, J. & Koponen, T. 2019: Bryophyte flora of Hunan Province, China 27. Polytrichaceae (Bryophyta). – *Acta Bryolich. Asiatica* 8: 105–124. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received March 28, 2019, accepted April 30, 2019

In the Hunan Province of China, the family Polytrichaceae is represented by three genera: *Atrichum* Hedw. with four species, *Pogonatum* P. Beauv. with nine, and *Polytrichum* with two species. *Atrichum yakushimense* (Horik.) Mizut., *Pogonatum dentatum* (Brid.) Brid. and *P. nudiusculum* Mitt. are reported from Hunan for the first time. The floristic affinities and ranges of the taxa are discussed. *Atrichum angustatum* (Brid.) Bruch & Schimp., *Pogonatum dentatum*, *P. urnigerum* (Hedw.) P. Beauv., *Polytrichum commune* Hedw. and *P. formosum* Hedw. are circumpolar species of the northern hemisphere. *Atrichum crispulum* Schimp. ex Besch. is disjunct between eastern North America and southeast Asia, and the rest of the species belong to the Southeast Asian temperate to meridional (warm temperate) element. *Pogonatum cirratum* (Sw.) Brid. subsp. *cirratum*, *P. cirratum* subsp. *fuscatum* (Mitt.) Hyvönen, *P. neesii* (Müll.Hal.) Dozy and *P. spinulosum* Mitt. can be described as Himalayan – Japanese in their their distribution. *Atrichum subserratum* (Harv. & Hook. f.) Mitt., *Pogonatum fastigiatum* Mitt., *P. nudiusculum* and *P. proliferum* (Griff.) Mitt. are Sino – Himalayan, and *Atrichum yakushimense* Sino – Japanese. All taxa occur in areas with primary vegetation but are also successful in colonizing man-made habitats and substrates such as road- and trail-sides. *Pogonatum neesii* seems to be the most common species on such sites in Hunan and can be considered as fairly common. *Atrichum angustatum* and *Pogonatum spinulosum* are rather rare, and the other species are rare or very rare with only a few specimens in the material studied. The altitudinal ranges of many taxa are much lower in Hunan than reported previously from China.

Additions to Chinese moss flora (Pottiaceae): *Barbula seramensis*, *Trichostomum dubium* and *T. criotum* from Yunnan and *T. tortelloides* from Sichuan and Yunnan

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Sollman, P. & Koponen, T. 2016: Additions to Chinese moss flora (Pottiaceae): *Barbula seramensis*, *Trichostomum dubium* and *T. criotum* from Yunnan and *T. tortelloides* from Sichuan and Yunnan. – *Acta Bryolich. Asiatica* 8: 125–128. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Dec. 23, 2018, accepted March 7, 2019

Four species of the moss family Pottiaceae are recorded as new to China. *Barbula seramensis* H. Akiyama, *Trichostomum dubium* Thér. and *T. criotum* R.H. Zander were collected in Yunnan province and *T. tortelloides* (Broth. & Dixon) R.H. Zander from Yunnan and Sichuan provinces. The details of the habitats and substrates of the finds are provided and the taxonomy of the species shortly discussed.

Key words. Bryophyta, China, *Chionoloma*, Musci, new records

The genus *Fleischerobryum* Loeske, with the status of *F. macrophyllum* Broth. (Bryophyta, Bartramiaceae)

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Koponen, T. 2019: The genus *Fleischerobryum* Loeske, with the status of *F. macrophyllum* Broth. (Bryophyta, Bartramiaceae). – *Acta Bryolich. Asiatica* 8: 129–138. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Dec. 24, 2018, accepted March 8, 2019

Fleischerobryum Loeske is a genus with two species, *F. longicolle* (Hampe) Loeske and *F. macrophyllum* Broth. The genus differs from related *Philonotis* Brid. by its elongated capsule with a long gradually tapering neck. The gametophytic differences are the larger size and different sequence of mammillae/papillae on leaf cells. *Fleischerobryum longicolle* has a wide range from the Himalayas in the west to Japan in the east with southernmost localities in New Guinea. It grows in wet habitats, preferably on rocks with trickling water, on stones in streams and in waterfalls. Only three specimens of *F. macrophyllum* could be confirmed, two specimens from the Philippines and one specimen from Taiwan, China. *F. eurybrochis* Renauld & Cardot and *F. wallisii* (Müll.Hal.) Loeske, are listed as excluded taxa. Descriptions, discussion on taxonomy, illustrations of *F. macrophyllum* and range map of *F. longicolle* are provided.

Key words: Bhutan, China, Japan, India, Indonesia, Korea, Nepal, New Guinea, nomenclature, SE Asia, Philippines, range, Sikkim, taxonomy, Yunnan

Notes on *Philonotis* (Bartramiaceae, Bryophyta). 16. *Philonotis yezoana*, a discontinuously holarctic moss from Sikkim, India and Yunnan, China

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Koponen, T., Long, D.G. & Shevock, J.R. 2019: Notes on *Philonotis* (Bartramiaceae, Bryophyta). 16. *Philonotis yezoana*, a discontinuously holarctic moss, from Sikkim, India and Yunnan, China. – *Acta Bryolich. Asiatica* 8: 139–144. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Dec. 22, 2018, accepted March 8, 2019

Philonotis yezoana Besch. & Cardot, first described from Japan and Korea, was later found from western and eastern North America and the Russian Far East, and recently recorded to Europe from Finland. The first finds from Central Asia in the Sino-Himalayan region, from Sikkim in India and from Yunnan Province of China are reported here. *Philonotis yezoana* occurs in more or less oceanic sectors of boreal and temperate bioclimatic zones on the east or west coasts of the continents. The macro- and microclimatic conditions in the sites of the new finds agree with the humid habitat ecology of *P. yezoana*.

Key words. Bioclimatic vegetation zones, China, Europe, habitats, Japan, Korea, moss, North America, range, Russia, substrate

On the identity of *Herbertus aduncus* (Dicks.) Gray, a taxonomic update

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Sun, Y. & He, X. 2019: On the identity of *Herbertus aduncus* (Dicks.) Gray, a taxonomic update. – *Acta Bryolich. Asiatica* 8: 145–161. ISSN 1016-6181. ISBN 978-952-67464-5-6.

Received Dec. 28, 2018, accepted March 12, 2019

The taxonomy of *Herbertus aduncus* (Dicks.) Gray has a chaotic history and taxonomic ambiguities of the species have remained to this day. In order to delimit *H. aduncus* and solve taxonomic problems morphological variation of this species and the closely related *H. borealis* Crundw., *H. buchii* Juslén, *H. delavayi* (Steph.) Steph., *H. dicranus* (Taylor ex Gottsche, Lindenb. & Nees) Trevis., *H. kurzii* (Steph.) H.A. Mill., *H. longifissus* Steph., *H. norenius* D.G. Long, D. Bell & H.H. Blom, and *H. stramineus* (Dumort.) Trevis. were studied based on a large number of herbarium specimens, and phylogenetic analysis of the genus was performed based on two chloroplast DNA regions *psbA*, *trnL-F*, and one nuclear region ITS1-2. We show that the gametophytic characters currently used for delimiting *Herbertus aduncus* and the related species largely overlap and these characters most likely are affected by the environmental conditions. Our hypothesis of phylogeny does not support the independent species status of all the related species studied. Therefore, we synonymize *H. borealis*, *H. buchii*, *H. delavayi*, *H. dicranus*, *H. kurzii*, *H. longifissus*, *H. norenius*, and *H. stramineus* under *H. aduncus*. Consequently, the geographical range of *H. aduncus* is extended to South-east Asia, Africa and Oceania. Our results suggest that variation observed in morphological characters that most likely are greatly affected by the environmental conditions should be used cautiously in taxonomy in order to avoid taxonomic inflation.

Key words: *Herbertaceae*, Jungermanniopsida, liverwort, Marchantiophyta, morphology, phylogeny, taxonomy