



Bryophyte flora of Taebaeksan Mountain National Park in Korea

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ABSTRACT: We investigated the bryophyte flora of Taebaeksan Mountain National Park in Korea by conducting a total of ten field surveys from April of 2017 to October of 2019 at various mountainous sites in the park. During the surveys, we recorded 274 taxa belonging to 68 families, 143 genera, 267 species, 3 subspecies, and 4 varieties. Among these, 92 species were reported as new to the flora of the Taebaeksan Mountains. A checklist based on a study of 990 specimens is provided as well. The most remarkable species were *Sphagnum capillifolium* (Ehrh.) Hedw, *Sphagnum girgensohnii* Russow, *Buxbaumia punctata* P.-C. Chen et X.-J. Li, *Pleuroziopsis ruthenica* (Weinm.) Kindb., *Ptilium crista-castrensis* (Hedw.) De Not., and *Douinia plicata* (Lindb.) Konstant. et Vilnet.

Keywords: bryophyte, flora, mosses, liverworts, Taebaeksan Mountains

The Taebaeksan Mountains are located in the northern part of Korea, southeast of Gangwon-do Province (Taebaek-si, Youngwol-gun, and Jeongseon-gun) and northwest of Gyeongsangbuk-do Province (Bongwha-gun). Since it was designated as a provincial park on 13 May 1989, Taebaeksan Mountain has widened its realm and was designated as the 22nd national park on 12 Dec 2016. The park covers an area of more than 70.052 km². The highest ridges of the mountain are Hambaeksan Mountain in the middle part (1,572 m a.s.l.), Janggunbong in the southern part (1,565 m a.s.l.), and Keumdaebong in the northwestern part (1,418 m a.s.l.). The mountain lies between 128°52'08"–128°59'26"E and 37°03'02"–37°14'34.5"N. The mean annual temperature in the lowland mountain area is 6.6°C, and the annual precipitation is 1,898 mm. The bryophyte flora of the Taebaeksan Mountains was investigated and included in the inventory of mosses and liverworts of the Korean peninsula by Hong (1966) and Choe (1980), but only 15 taxa were reported in these studies. More recently, Papp (2008) reported 144 bryophyte species in the flora of the Taebaeksan Mountains, and Choi (2013) reported

54 species of liverworts and hornworts. Because the bryophyte flora of the Taebaeksan Mountains has never been examined systematically, and only fragmentary floristic data are available, our objective was to describe the bryophytes of Taebaeksan Mountain National Park in as much detail as possible, including their latitudinal distribution and species ecology, as part of compiling a list of the bryophytes of Korea.

Materials and Methods

Field surveys

Our collections were carried out in habitats with a high diversity of bryophytes, such as wet habitats near stream beds, more or less dry rocks, bark of forest trees, and exposed stony fields and shaded cliffs near some mountain tops (Figs. 1, 2). We conducted a total of 10 field surveys from April 2017 to October 2019 at various sites in the park (Table 1).

All specimens were collected in newspaper or acid-free paper, and collection date, geographical coordinates, field herbarium numbers, collector names, preliminary species

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name, substrates, and habitats were recorded in the field. The collected materials were air-dried in the laboratory, and some species were cultivated in the greenhouse. All specimens were deposited in the Jeonbuk National University Herbarium (JNU) and in National Institute of Biological Resources Herbarium (KB).



Fig. 1. The position of Taebaeksan Mountains within Korean Peninsula and the surveyed routes in this study.

Comparison of bryophyte species richness levels and liverwort index

The liverwort index, which is based on the character that liverworts and hornworts tend to prefer more humid conditions than mosses do, was calculated as follows (Nakanishi, 2001):

$$\text{Liverwort index (\%)} = \frac{\text{No. of liverworts} + \text{No. of hornworts}}{\text{Total no. of bryophytes}} \times 100$$

The latitudinal distribution of floristic elements among the liverworts

For the analysis of the distribution characteristics of liverworts, their world distribution was obtained from Lawton (1971), Noguchi (1987, 1988, 1989, 1991, 1994), Gao et al. (1999, 2003), Li et al. (2001, 2007), Wu et al. (2002, 2005, 2011), Hu et al. (2008), and Korean distribution was obtained from Choe (1980), Kim and Hwang (1991), Kim (1991), Bakalin (2010), and Choi (2013).

Results and Discussion

Bryophyte flora

Based on 990 herbarium specimens, we found that the bryophyte flora of the Taebaeksan Mountains includes 274 taxa belonging to 68 families, 143 genera, 267 species, 3 subspecies, and 4 varieties (Table 2). Of these, Bryophyta included 167 taxa (39 families, 93 genera, 163 species, 1 subspecies, and 3 varieties) and Marchantiophyta included 107 taxa (29 families, 50 genera, 104 species, 2 subspecies, and 1 variety). This is equivalent to 28.9% of the 958 bryophyte taxa recorded on the

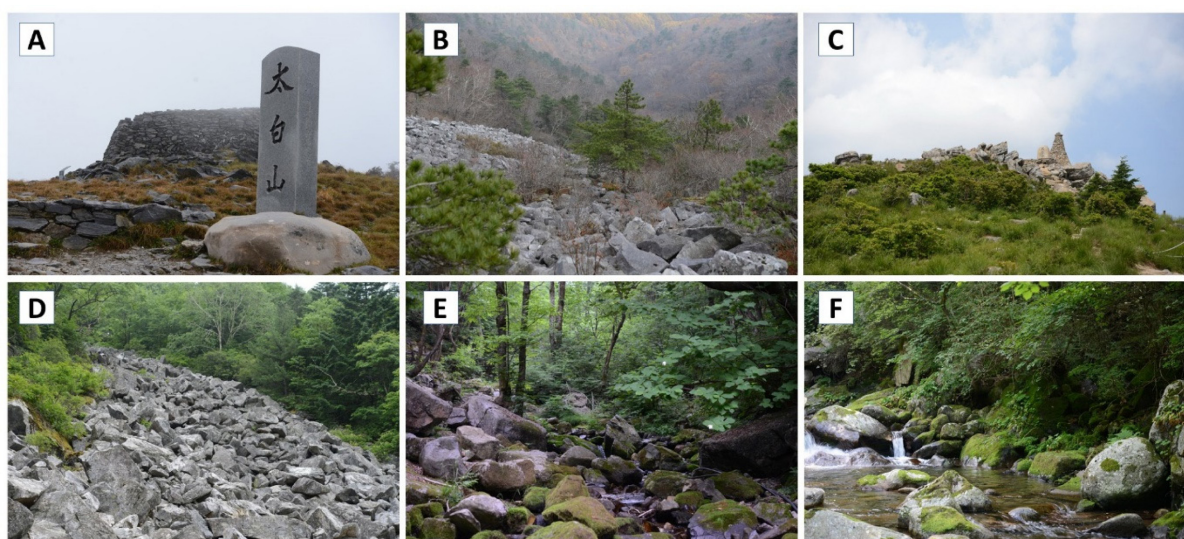


Fig. 2. Habitats of Taebaeksan Mountains. **A.** Top of Taebaeksan Mountain. **B.** Stony slope in Janggunbong. **C.** Top of Hambaeksan Mountain. **D.** Stony slope in Danggol valley. **E.** Danggol valley. **F.** Geomryongso valley.

Table 1. Surveyed locals and dates of Taebaeksan Mountains.

No.	Localities	Dates
1	Geomryongso, Dumoondongjae-Geumdaebong	14–16 Apr 2017
2	Manhangjae-Hambaeksan Mt.	13–14 May 2017
3	Baekcheon valley, Geumcheon valley, Danggol valley and Hambaeksan Mt.	22–25 Jun 2017
4	Hyunbul-temple, Baekcheon valley	7–8 Jul 2017
5	Danggol valley	22–23 Jul 2017
6	Baekcheon valley	2–3 Sep 2017
7	Manhangjae, Hambaeksan Mt.	9–10 Sep 2017
8	Cheonpyeong Bridge, Hwabangjae-Sagilreong and Yuil temple–Janggunbong	14–17 Sep 2017
9	Baedan-temple-Cheonjaedan, Baekcheon valley	28–29 Oct 2017
10	Danggol valley-Janggunbong	5 Oct 2019

Table 2. Summary of bryophyte flora of Taebaeksan Mountains.

	Families	Genera	Species	Subsp.	Var.	Taxa
Bryophyta	39	93	163	1	3	167
Marchantiophyta	29	50	104	2	1	107
Total	68	143	267	3	4	274

Table 3. Comparison of the bryophyte species richness levels and liverwort indexes in other localities and Taebaeksan Mountains.

	Taebaeksan Mt.	Hallasan Mt.	Gayasan Mt.	Deogyusan Mt.	Sobaeksan Mt.
Area (km ²)	70.05	153.33	76.25	231.65	322.01
No. of taxa	274	378	173	311	236
Mosses	167	253	108	184	137
Liverworts	107	125	65	127	99
Liverwort index (%)	39.0	33.1	37.6	40.8	41.9
No. of taxa/area (km ²)	3.91	2.47	2.27	1.35	0.74

Korean peninsula (Lee et al., 2011; Choi, 2013). Among the recorded species, 92 taxa were newly recorded in the Taebaeksan Mountains (Appendix 1). The most numerous species were identified to be 15 taxa of Hypnaceae, followed by 12 taxa of Polytrichaceae, Mniaceae, and Brachytheciaceae (Appendix 1).

Comparison of bryophyte species richness levels and liverwort index

Compared with recently studied bryophyte flora [Deogyusan Mountain (Yoon et al., 2011; Choi et al., 2013), Hallasan Mountain (Yim, 2012), Sobaeksan Mountain (Korea National Park Research Institute, 2016a), and Gayasan Mountain (Korea National Park Research Institute, 2016b)], next to Hallasan Mountain (378 taxa) and Deogyusan Mountain (311 taxa), a large number of species were distributed in Taebaeksan Mountain (274 species), but the largest number of taxa (3.91)

was found in Taebaeksan Mountain when compared with the area. The reason for this was that the Taebaeksan Mountain cover a small area, but include a variety of habitats, such as stony fields, coniferous forests, and small and large valleys. According to the liverwort index, which indicates the degree of humidity in the survey area, Taebaeksan Mountain (39.0%) was found to be relatively wet, and the only areas that were wet than Sobaeksan Mountain (41.9%) and Deogyusan Mountain (40.8%) (Table 3).

The latitudinal distribution of floristic elements among the liverworts

In the analysis of floristic elements based on latitude (Table 4), 25 taxa (23.4%) were found to be temperate, 21 (19.6%) temperate-subtropical, 19 (17.8%) arctic-boreal, 14 (13.0%) boreal temperature, 13 (12.1%) boreal, 8 (7.5%) subtropical, 5 (4.7%) multizonal, and 2 (1.9%) Arctic species (Table 4).

Table 4. The latitude fractional composition in Taebaeksan Mountains with Korean liverworts.

Floristic elements (latitudinal types)	Taxa		Percentages (%)		
	Korea	Taebaeksan Mt.	Korea	Taebaeksan Mt.	Comparison
Arctic	26	2	7.9	1.9	-6.0
Arctic-boreal	48	19	14.6	17.8	+3.2
Boreal	30	13	9.2	12.1	+2.9
Boreal-temperate	30	14	9.2	13.0	+3.8
Temperate	66	25	20.1	23.4	+3.3
Temperate-subtropical	48	21	14.6	19.6	+5.0
Subtropical	66	8	20.1	7.5	-12.6
Multizone	14	5	4.3	4.7	+0.4
Total	328	107	100	100	0

Compared to the distribution characteristics of bryophyte flora of the Korean Peninsula, the bryophyte flora of the Taebaeksan Mountains is characterized by temperate-subtropical taxa (+5.0%), boreal-temperate taxa (+3.8%), temperate taxa (3.3%), arctic-boreal plants (+3.2%), and lowest number of subtropical plants (-12.6%). This may be because of the geographical location of the Taebaeksan Mountains, as well as because the number of boreal and temperate plants in the stony field areas scattered on the Taebaeksan Mountains is increasing.

Comparison with previous studies

The Taebaeksan Mountains were included in the areas investigated by Choe (1980) as part of the inventory of bryophytes of the Korean Peninsula. This author published a manual on Korean Hepaticae which included 15 taxa in the Taebaeksan Mountains (Choe, 1980). Choi (2013) reported 54 species of liverworts and hornworts on the Taebaeksan Mountains. The first survey focused on bryophytes was conducted by the Hungarian researcher Papp (2008) during 13–14 Oct 2005, and he recorded 144 taxa (102 mosses and 42 liverworts) and 13 taxa that were not yet recorded from the Korean peninsula (*Buxbaumia punctata* P.-C. Chen, *Campylium squarulosum* (Besch) Kanda, *Pylaisella polyantha* (Hedw.) Grout, *Polytrichastrum ohioense* (Ren. et Card.) G. L. Smith, *Pohlia prolifera* (Kindb.) Lindb., *Plagiothecium curvifolium* Schlieph., *Warnstorfia exannulata* (Schimp.) Loeske, *Paraleucobryum sauteri* (Bruch et Schimp.) Loeske, *Orthorichum laevigatum* var. *japonicum* Lewinsky, *Isopterygiopsis muelleriana* (Schimp.) Iwats., *Hygrohypnum eugyrium* (Schimp.) Broth., *Cyrto-hypnum tamariscellum* (C. Müll.) Buck, and *Conocephalum salebrosum* Szweykowski). One of these 13 unrecorded taxa (*Buxbaumia punctata*) was identified

on site, and 12 taxa were included in the list of literature records. The literature and survey studies were identified in a total of 274 taxa (mosses 167 and liverworts 107 taxa).

Remarkable species

The most remarkable observed species were *Sphagnum capillifolium* (Ehrh.) Hedw and *Sphagnum girgensohnii* Russow, which are rarely found in Korea, as well as *Buxbaumia punctata* P.-C. Chen et X.-J. Li, which was found only in the Taebaeksan Mountains. Additionally, *Pleuroziopsis ruthenica* (Weinm.) Kindb., *P. crista-castrensis* (Hedw.) De Not., and *Douinia plicata* (Lindb.) Konstant. et Vilnet are rare-growing bryophytes which grow in high-altitude areas (more than 1,000 m) (Fig. 3).

Sphagnum capillifolium (Ehrh.) Hedw.: This species is distributed in Japan (Honshu, Hokkaido), China (Heilongjiang, Inner Mongolia, Shanxi, Yunnan, Tibet), India, The Russian Far East, Europe, North America, South America, and Africa (Gao et al., 1999). In Korea, it was previously recorded only on Jeju Island (Choe, 1980). We found it on a stony field in a coniferous forest between Mangyeongsa Temple and Janggunbong at an elevation of 1,160–1,245 m. This species grows with *Sphagnum girgensohnii* Russ., *Bazzania trilobata* (L.) Gray, and *Schistochilopsis cornuta* (Steph.) Konstant.

Sphagnum girgensohnii Russow: This species is distributed in Japan (Hokkaido, Honshu, Shikoku, and Kyushu), China (Huizhou, Heilongjiang, Inner Mongolia, Jilin, Shaanxi, Sichuan, Yunnan, and Tibet), Nepal, India, Indonesia, Russia, Europe, Greenland, and North America (Gao et al., 1999). In Korea, it was previously recorded in Baekdusan Mountain, Potaesan Mountain, Gwanmobong, Chailbong, Wagalbong, Kumgangsang Mountain, Seoraksan Mountain, Dutasan



Fig. 3. Remarkable species of Taebaeksan Mountains in Korean flora. **A.** *Sphagnum capillifolium* (Ehrh.) Hedw. **B.** *Sphagnum girgensohnii* Russow. **C.** *Buxbaumia punctata* P.-C. Chen et X.-J. Li. **D.** *Pleuroziopsis ruthenica* (Weinm.) Kindb. **E.** *Ptilium crista-castrensis* (Hedw.) De Not. **F.** *Douinia plicata* (Lindb.) Konstant. et Vilnet.

Mountain, Pyeongchang, Hwacheon, and on Jeju Island. We found it on a stony field in a coniferous forest between Mangyeongsa Temple and Janggungbong at an elevation of 1,160–1,245 m. This species grows with *Sphagnum girgensohnii* Russ., *Bazzania trilobata* (L.) Gray, *Schistochilopsis cornuta* (Steph.) Konstant, and *Scapania ampliata* Steph. in a forest of *Thuja koraiensis* Nakai.

Buxbaumia punctata P.-C. Chen et X.-J. Li: This species is distributed only in China (Henan, Shaanxi, Sichuan, Yunnan, and Tibet) (Wu et al., 2005). We found it on the edge of a stony field in a coniferous forest between Mangyeongsa Temple and Janggungbong at an elevation of 1,160–1,245 m. This species grows with *Pleuroziopsis ruthenica* (Weinm.) Kindb., *Douinia plicata* (Lindb.) Konstant. et Vilnet, and *Scapania ampliata* Steph.

Pleuroziopsis ruthenica (Weinm.) Kindb.: This species is distributed in Japan (Hokkaido, Honshu, Shikoku), China (Chongqing, Heilongjiang, Jilin, Liaoning, Sichuan), Far East Russia, and North America (Gao et al., 1999). In Korea, it was previously recorded in Seoraksan Mountain, Jirisan Mountain, Sobaeksan Mountain, Deogyusan Mountain, Hallasan Mountain, Hwacheon, and Pyeongchang. We found it on the edge of a stony field in a coniferous forest in the Danggol Valley, Mangyeongsa Temple. This species grows with *Pogonatum contortum* (Menzies ex Brid.) Lesq. and *Atrichum undulatum* (Hedw.) P. Beauv.

Ptilium crista-castrensis (Hedw.) De Not.: This species is

distributed in Japan (Hokkaido, Honshu), China (Guizhou, Hebei, Heilongjiang, Jilin, Inner Mongolia, Liaoning, Sichuan, Shaanxi, Yunnan, and Tibet), Mongolia, Bhutan, Nepal, Russia, Europe, and North America. In Korea, it was previously recorded in Garigwangsang Mountain, Seoraksan Mountain, Sobaeksan Mountain, Pyeongchang, Cheongsong, and on Jeju Island. We found it on the edge of a stony field in a coniferous forest in the Danggol Valley, Mangyeongsa Temple. This species grows with *Pleuroziopsis ruthenica* (Weinm.) Kindb., *Tritomaria quinqueidentata* (Huds.) H. Buch, *Sphenolobus saxicola* (Schr.) Steph. and *Barbilophozia barbata* (Schreb.) Loeske.

Douinia plicata (Lindb.) Konstant. et Vilnet.: This species is distributed in Japan, China, Far East Russia, and North America. In Korea, it was previously recorded in Seoraksan Mountain, Jirisan Mountain, and Hallasan Mountain. We found it on the edge of the stony field in the Danggol Valley, Janggungbong, and Moonsubong. This species grows with *Pleuroziopsis ruthenica* (Weinm.) Kindb. and *S. ampliata* Steph.

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Conflict of Interest

The authors declare that there are no conflicts of interest.

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Appendix 1. The list of bryophytes in Taebaeksan Mountains.

Taxa	Korean name	Longitudinal type	Latitudinal type	Voucher No.
Bryophyta	선류식물문			
Sphagnaceae	물이끼과			
* <i>Sphagnum capillifolium</i> (Ehrh.) Hedw.	산림물이끼	Multi-areal	Boreal-temperate	Bum 17102536
* <i>Sphagnum girgensohnii</i> Russ.	가는잎물이끼	Circumpolar	Boreal-temperate	Bum 17102531a
Polytrichaceae	솔이끼과			
* <i>Atrichum flavisetum</i> Mitt.	넓은주름솔이끼	Circumpolar	Boreal-temperate	Bum 17041337
* <i>Atrichum rhystophyllum</i> (Müll. Hal.) Paris	아기주름솔이끼	Eastern Asia	Temperate	Bum 17061743
<i>Atrichum undulatum</i> (Hedw.) P. Beauv.	주름솔이끼	Circumpolar	Temperate	Bum 17041317
* <i>Pogonatum contortum</i> (Menzies ex Brid.) Lesq.	그늘들솔이끼	Eastern Asia-American	Temperate	Bum 17092253
<i>Pogonatum inflexum</i> (Lindb.) Lac.	아기들솔이끼	Eastern Asia	Temperate-subtropical	Bum 17061741
<i>Pogonatum spinulosum</i> Mitt.	침들솔이끼	Eastern Asia-American	Temperate-subtropical	Bum 17041334
* <i>Pogonatum urnigerum</i> (Hedw.) P. Beauv.	산들솔이끼	Multi-areal	Multi zone	Bum 17041330
* <i>Polytrichastrum alpinum</i> (Hedw.) G. L. Sm	산솔이끼	Multi-areal	Multi zone	Bum 17092192
* <i>Polytrichastrum formosum</i> (Hedw.) G. L. Sm.	큰솔이끼	Multi-areal	Temperate	Bum 17102540
<i>Polytrichastrum ohioense</i> (Renauld & Cardot) G. L. Sm.	겉솔이끼	Disjunctives	Temperate	Only literature (Papp, 2008)
* <i>Polytrichum commune</i> Hedw.	솔이끼	Multi-areal	Multi zone	Bum 17061781
* <i>Polytrichum juniperinum</i> Willd. ex Hedw.	향나무솔이끼	Multi-areal	Multi zone	Bum 17092248
Tetraphidaceae	네삭치이끼과			
<i>Tetraphis pellucida</i> Hedw.	네삭치이끼	Multi-areal	Boreal-temperate	Only literature (Papp, 2008)
Buxbaumiaceae	담뱃대이끼과			
<i>Buxbaumia aphylla</i> Hedw.	산투구이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)

Appendix 1. Continued.

<i>Buxbaumia punctata</i> P.-C. Chen et X.-J. Li	태백담뱃대이끼	Eastern Asia	Boreal-temperate	Bum 17102514
Diphysciaceae				
<i>Diphyscium fulvifolium</i> Mitt.	보리알이끼	Eastern Asia	Boreal-temperate	Only literature (Papp, 2008)
Drummondiaceae				
* <i>Drummondia sinensis</i> Müll. Hal.	지붕이끼	Asian	Boreal-temperate	Bum 17061766
Grimmiaceae				
* <i>Coscinodon humilis</i> Milde	바위이끼	Disjunctives	Boreal-temperate	Bum 17061857
<i>Grimmia pilifera</i> P. Beauv.	흰털고깔바위이끼	Circumpolar	Boreal-temperate	Bum 17041340
<i>Racomitrium carinatum</i> Cardot	접친민서리이끼	Eastern Asia	Temperate	Only literature (Papp, 2008)
* <i>Racomitrium canescens</i> (Hedw.) Brid.	서리이끼	Circumpolar	Boreal-temperate	Bum 17092249
<i>Racomitrium ericoides</i> (Hedw.) Brid.	누운서리이끼	Circumpolar	Boreal-temperate	Bum 17061813
* <i>Racomitrium fasciculare</i> (Schrad. ex Hedw.) Brid.	민서리이끼	Multi-areal	Multi zone	Bum 17061779
<i>Racomitrium laeteum</i> Besch. & Cardot	산검정서리이끼	Eastern Asia	Temperate	Only literature (Papp, 2008)
* <i>Racomitrium lanuginosum</i> (Hedw.) Brid.	된서리이끼	Multi-areal	Multi zone	Bum 17102549
<i>Schistidium apocarpum</i> (Hedw.) Bruch & Schimp.	고깔바위이끼	Multi-areal	Multi zone	Bum 17041289
Ptychomitriaceae				
* <i>Ptychomitrium fauriei</i> Besch.	주름곰솔이끼	Eastern Asia	Temperate	Bum 17041275
Fissidentaceae				
* <i>Fissidens adianthoides</i> Hedw.	산봉황이끼	Circumpolar	Boreal-temperate	Bum 17102520
<i>Fissidens dubius</i> P. Beauv.	벼슬봉황이끼	Amphioceanic	Tropical-subtropical	Bum 17041319
<i>Fissidens gymnogynus</i> Besch.	작은봉황이끼	Eastern Asia	Temperate	Bum 17102577
<i>Fissidens taxifolius</i> Hedw.	주목봉황이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
* <i>Fissidens teysmannianus</i> Dozy & Molk.	아기봉황이끼	Asian	Tropical-subtropical	Bum 17041272
Ditrichaceae				
<i>Ceratodon purpureus</i> (Hedw.) Brid.	지붕빨간이끼	Multi-areal	Multi zone	Bum 17061764
* <i>Distichium capillaceum</i> (Hedw.) Bruch. & Schimp.	털곰솔이끼	Multi-areal	Multi zone	Bum 17041302
* <i>Ditrichum pallidum</i> (Hedw.) Hampe.	곰솔이끼	Circumpolar	Temperate	Bum 17092149
Bruchiaceae				
* <i>Trematodon longicollis</i> Michx.	두루미이끼	Multi-areal	Multi zone	Bum 17092146
Erpodiaceae				
* <i>Venturiella sinensis</i> (Venturi) Müll. Hal.	나무연지이끼	Eastern Asia-American	Temperate	Bum 17061769
Rhabdoweisiaceae				
<i>Oncophorus crispifolius</i> (Mitt.) Lindb.	곰솔혹이끼	Eastern Asia	Temperate-subtropical	Bum 17061800
<i>Rhabdoweisia crispata</i> (With.) Lindb.	주름꼬마이끼	Multi-areal	Boreal-temperate	Bum 17061762
Dicranaceae				
	포리이끼과			

Appendix 1. Continued.

<i>Dicranella heteromalla</i> (Hedw.) Schimp.	역새이끼	Circumpolar	Boreal-temperate	Bum 17092131
* <i>Dicranum flagellare</i> Hedw.	앞눈꼬리이끼	Circumpolar	Boreal-temperate	Bum 17041342
<i>Dicranum fulvum</i> Hook.	갈색꼬리이끼	Circumpolar	Temperate	Only literature (Papp, 2008)
* <i>Dicranum japonicum</i> Mitt.	꼬리이끼	Eastern Asia	Temperate	Bum 17092184
<i>Dicranum mayrii</i> Broth.	곱슬꼬리이끼	Eastern Asia	Temperate-subtropical	Bum 17061825
* <i>Dicranum nipponense</i> Besch.	큰꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17061789
<i>Dicranum scoparium</i> Hedw.	비꼬리이끼	Circumpolar	Boreal-temperate	Bum 17061826
* <i>Dicranum viride</i> var. <i>hakkodense</i> (Cardot) Takaki	초록꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17102589
<i>Paraleucobryum sauteri</i> (Bruch & Schimp.) Loeske	작은앞꼬리이끼	Disjunctives	Boreal-temperate	Only literature (Papp, 2008)
Leucobryaceae	흰털이끼과			
<i>Brothera leana</i> (Sull.) Müll. Hal.	사자이끼	Asian-American	Boreal-temperate	Bum 17092231
* <i>Dicranodontium denudatum</i> (Brid.) E. Britton	활이끼	Circumpolar	Boreal-temperate	Bum 17092227
<i>Leucobryum glaucum</i> (Hedw.) Aongstr.	흰털이끼	Circumpolar	Temperate	Only literature (Papp, 2008)
* <i>Leucobryum juniperoideum</i> (Brid.) Müll. Hal.	가는흰털이끼	Circumpolar	Temperate	Bum 17061822
Pottiaceae	침꼬마이끼과			
<i>Barbula unguiculata</i> Hedw.	참꼬인이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
<i>Oxystegus tenuirostris</i> (Hook. & Taylor) A. J. E. Sm.	통수염이끼	Multi-areal	Multi zone	Bum 17041344
* <i>Weissia controversa</i> Hedw.	꼬마이끼	Multi-areal	Multi zone	Bum 17061770
* <i>Weissia planifolia</i> Dixon.	납작꼬마이끼	Eastern Asia	Boreal-temperate	Bum 17092147
Bryaceae	참이끼과			
* <i>Brachymenium nepalense</i> Hook.	노란참외이끼	Asian	Temperate-subtropical	Bum 17041282
<i>Rosulabryum capillare</i> (Hedw.) J. R. Spence	뱀밥철사이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
Mniaceae	초롱이끼과			
<i>Mnium lycopodioides</i> Schwägr.	납작맥초롱이끼	Circumpolar	Boreal-temperate	Bum 17041292
<i>Plagiomnium affine</i> (Blandow ex Funck) T. J. Kop.	산덩굴초롱이끼	Disjunctives	Boreal-temperate	Only literature (Papp, 2008)
<i>Plagiomnium cuspidatum</i> (Hedw.) T. J. Kop.	들덩굴초롱이끼	Circumpolar	Boreal-temperate	Bum 17041323
<i>Plagiomnium maximoviczii</i> (Lindb.) T. J. Kop.	덩굴초롱이끼	Asian	Subtropical	Bum 17061754
<i>Plagiomnium vesicatum</i> (Besch.) T. J. Kop.	큰잎덩굴초롱이끼	Eurasian	Temperate	Only literature (Papp, 2008)
<i>Pohlia prolifera</i> (Kindb.) Broth.	흙들수세미이끼	Circumpolar	Boreal-temperate	Bum 17092206
<i>Pohlia wahlenbergii</i> (F. Weber & D. Mohr) A. L. Andrews	철사수세미이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
* <i>Rhizomnium parvulum</i> (Mitt.) T. J. Kop.	논밭초롱이끼	Asian	Boreal	Bum 17102555
<i>Rhizomnium striatulum</i> (Mitt.) T. J. Kop.	줄미선초롱이끼	Asian	Boreal-temperate	Bum 17061763
* <i>Rhizomnium tuomikoskii</i> T. J. Kop.	좁은초롱이끼	Eastern Asia	Boreal-temperate	Bum 17102509

Appendix 1. Continued.

<i>Trachycystis flagellaris</i> (Sull. & Lesq.) Lindb.	털아기초롱이끼	Eastern Asia- American	Boreal-temperate	Bum 17092202
<i>Trachycystis microphylla</i> (Dozy & Molk.) Lindb	아기초롱이끼	Eastern Asia- American	Subtropical	Only literature (Papp, 2008)
Bartramiaceae	구슬이끼과			
<i>Bartramia pomiformis</i> Hedw.	구슬이끼	Circumpolar	Boreal-temperate	Bum 17041299
Orthotrichaceae	선주름이끼과			
<i>Orthotrichum consobrinum</i> Cardot	아기선주름이끼	Eastern Asia	Boreal-temperate	Bum 17041269
<i>Orthotrichum laevigatum</i> J. E. Zetterst. var. <i>japonicum</i> (Z. Iwats.) Lewinsky	돌기선주름이끼	Asian	Temperate	Only literature (Papp, 2008)
<i>Orthotrichum sordidum</i> Sull. & Lesq.	선주름이끼	Eastern Asia- American	Boreal-temperate	Only literature (Papp, 2008)
<i>Ulota crispa</i> (Hedw.) Brid.	금털이끼	Circumpolar	Boreal-temperate	Bum 17092236
Hedwigiaceae	툇이끼과			
<i>Hedwigia ciliata</i> (Hedw.) P. Beauv.	툇이끼	Multi-areal	Multi zone	Bum 17041345
Climaciaceae	나무이끼과			
* <i>Climacium dendroides</i> (Hedw.) F. Weber & D. Mohr	곧은나무이끼	Circumpolar	Boreal-temperate	Bum 17061808
<i>Climacium japonicum</i> Lindb.	나무이끼	Eastern Asia	Boreal-temperate	Bum 17041316
<i>Pleuroziopsis ruthenica</i> (Weinm.) Kindb. ex E. Britton	깃털나무이끼	Eastern Asia- American	Boreal	Bum 17061807
Amlystegiaceae	버들이끼과			
<i>Amblystegium serpens</i> (Hedw.) Schimp.	버들이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
* <i>Campylium chrysophyllum</i> (Brid.) Lange	가는노란변덕이끼	Circumpolar	Boreal-temperate	Bum 17092132
<i>Campylium squarrosulum</i> (Besch. & Cardot) Kanda	젓힌잎변덕버들이끼	Eastern Asia	Boreal-temperate	Only literature (Papp, 2008)
<i>Hygrohypnum eugyrium</i> (Schimp.) Loeske	뿔족시내물이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)
* <i>Sanionia uncinata</i> (Hedw.) Loeske	낮깃털이끼	Multi-areal	Multi zone	Bum 17061784
Calliergonaceae	조릿대이끼과			
<i>Warnstorfia exannulata</i> (Schimp.) Loeske	습지낮깃털이끼	Multi-areal	Multi zone	Only literature (Papp, 2008)
Leskeaceae	고깔검정이끼과			
<i>Claopodium pellucinerve</i> (Mitt.) Best	아기가시이끼	Asian-American	Boreal-temperate	Bum 17041305
* <i>Haplocladium angustifolium</i> (Hampe & Müll. Hal.) Broth.	침작은명주실이끼	Multi-areal	Temperate	Bum 17041336
<i>Hylocomiopsis ovicarpa</i> (Besch.) Cardot	아기호랑꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17061777
<i>Pseudoleskeopsis zippelii</i> (Dozy & Molk.) Broth.	물바위이끼	Asian	Tropical- subtropical	Only literature (Papp, 2008)
Thuidiaceae	깃털이끼과			
* <i>Abietinella abietina</i> (Hedw.) M. Fleisch.	전나무이끼	Circumpolar	Boreal-temperate	Bum 17041286
<i>Boulaya mittenii</i> (Broth.) Cardot	아기방울이끼	Eastern Asia	Boreal-temperate	Bum 17061786
<i>Bryonoguchia molkenboeri</i> (Sande Lac.) Z. Iwats. & Inoue	참깃털이끼	Eastern Asia	Boreal-temperate	Bum 17092133

Appendix 1. Continued.

<i>Fauriella tenuis</i> (Mitt.) Cardot	수염이끼	Eastern Asia	Temperate-subtropical	Bum 17061759
<i>Pelekium pygmaeum</i> (Schimp.) Touw.	그늘깃털이끼	Eastern Asia-American	Temperate	Bum 17041339
<i>Pelekium versicolor</i> (Hornsch. ex Müll. Hal.) Touw	아기깃털이끼	Asian	Tropical-subtropical	Only literature (Papp, 2008)
<i>Rauiella fujisana</i> (Paris) Reimers	걸아기방울이끼	Eastern Asia	Boreal-temperate	Bum 17041271
* <i>Thuidium assimile</i> (Mitt.) A. Jaeger.	털날개깃털이끼	Multi-areal	Multi zone	Bum 17041287
<i>Thuidium cymbifolium</i> (Dozy & Molke.) Dozy & Molke.	물가깃털이끼	Multi-areal	Multi zone	Bum 17041290
<i>Thuidium pristocalyx</i> (Müll. Hal.) A. Jaeger.	푸른깃털이끼	Asian	Tropical-subtropical	Bum 17061819
<i>Thuidium subglaucinum</i> Cardot	큰푸른깃털이끼	Eastern Asia	Temperate	Only literature (Papp, 2008)
Brachytheciaceae	양털이끼과			
* <i>Brachythecium brotheri</i> Paris	큰양털이끼	Eastern Asia	Temperate	Bum 17102498
<i>Brachythecium plumosum</i> (Hedw.) Schimp.	날개양털이끼	Circumpolar	Multi zone	Bum 17102493
<i>Brachythecium populeum</i> (Hedw.) Schimp.	양털이끼	Multi-areal	Temperate	Bum 17041274
<i>Brachythecium reflexum</i> (Starke) Schimp.	가는양털이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)
<i>Brachythecium rivulare</i> Schimp.	물가양털이끼	Circumpolar	Boreal-temperate	Bum 17041276
<i>Brachythecium rutabulum</i> (Hedw.) Schimp.	장백양털이끼	Multi-areal	Multi zone	Bum 17061752
<i>Bryhnia hultenii</i> E. B. Bartram	뿔족화살이끼	Eastern Asia-American	Boreal-temperate	Only literature (Papp, 2008)
<i>Bryhnia novae-angliae</i> (Sull. & Lesq.) Grout	곱슬세모양털이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)
<i>Homalothecium laevisetum</i> Sande Lac.	나뭇가지이끼	Eastern Asia	Tropical-subtropical	Only literature (Papp, 2008)
<i>Myuroclada maximowiczii</i> (G. G. Borshch.) Steere & W. B. Schofield	쥐꼬리이끼	Circumpolar	Boreal-temperate	Bum 17041311
<i>Okamuraea hakoniensis</i> (Mitt.) Broth.	겉양털이끼	Asian	Boreal-temperate	Only literature (Papp, 2008)
<i>Rhynchostegium riparioides</i> (Hedw.) Cardot	물가부리이끼	Circumpolar	Temperate-subtropical	Bum 17041277
Fabroniaceae	가시꼬마이끼과			
<i>Fabronia ciliaris</i> (Brid.) Brid.	긴가시꼬마이끼	Multi-areal	Multi zone	Bum 17061765
Hypnaceae	털깃털이끼과			
* <i>Callicladium haldanianum</i> (Grev.) H. A. Crum	풀이끼	Circumpolar	Boreal-temperate	Bum 17041328
<i>Gollania ruginosa</i> (Mitt.) Broth.	주름사슴뿔이끼	Asian	Boreal-temperate	Bum 17041324
<i>Herzogiella turfacea</i> (Lindb.) Z. Iwats.	누운아기주목이끼	Circumpolar	Boreal-temperate	Bum 17041307
* <i>Homomallium japonico-adnatum</i> (Broth.) Broth.	들쌍끝양털이끼	Eastern Asia	Temperate	Bum 17061852
<i>Hypnum fauriei</i> Cardot	들털깃털이끼	Eastern Asia	Boreal-temperate	Only literature (Papp, 2008)
* <i>Hypnum fujiyamae</i> (Broth.) Paris	황갈털깃털이끼	Boreal-temperate	Boreal-temperate	Bum 17061823
* <i>Hypnum plumaeforme</i> Wilson	털깃털이끼	Disjunctives	Temperate-subtropical	Bum 17061742

Appendix 1. Continued.

<i>Hypnum subimponens</i> ssp. <i>ulophyllum</i> (Müll. Hal.) Ando	낮털깃털이끼	Eastern Asia-American	Temperate	Only literature (Papp, 2008)
* <i>Hypnum tristo-viride</i> (Broth.) Paris	실털깃털이끼	Eastern Asia	Temperate-subtropical	Bum 17061856
<i>Isopterygiopsis muelleriana</i> (Schimp.) Z. Iwats.	북방단지이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)
* <i>Ptilium crista-castrensis</i> (Hedw.) De Not.	타조이끼	Circumpolar	Boreal-temperate	Bum 17061820
* <i>Pylaisia cristata</i> Cardot	벼슬명주이끼	Eastern Asia	Temperate-subtropical	Bum 17061775
<i>Pylaisia polyantha</i> (Hedw.) Schimp.	꽃송이명주이끼	Circumpolar	Boreal-temperate	Only literature (Papp, 2008)
<i>Taxiphyllum aomoriense</i> (Besch.) Z. Iwats.	겹친주목이끼	Eastern Asia	Boreal-temperate	Bum 17041297
* <i>Taxiphyllum taxirameum</i> (Mitt.) M. Fleisch.	주목이끼	Asian-American	Tropical-subtropical	Bum 17041296
Hylocomiaceae	수풀이끼과			
* <i>Hylocomium brevirostre</i> var. <i>cavifolium</i> (Sande Lac.) Nog.	큰비룡수풀이끼	Eastern Asia	Boreal-temperate	Bum 17061832
<i>Hylocomium pyrenaicum</i> (Spruce) Lindb.	비룡수풀이끼	Circumpolar	Boreal-temperate	Bum 17061787
<i>Hylocomium splendens</i> (Hedw.) Schimp.	수풀이끼	Circumpolar	Boreal-temperate	Bum 17061782
* <i>Pleurozium schreberi</i> (Willd. ex Brid.) Mitt.	겉창밭이끼	Circumpolar	Boreal-temperate	Bum 17061834
<i>Rhytidiadelphus squarrosus</i> (Hedw.) Warnst.	겉굵은이끼	Disjunctives	Boreal-temperate	Only literature (Papp, 2008)
<i>Rhytidiadelphus triquetrus</i> (Hedw.) Warnst.	큰겉굵은이끼	Circumpolar	Boreal-temperate	Bum 17061778
Rhytidiaceae	굵은이끼과			
* <i>Rhytidium rugosum</i> (Ehrh. ex Hedw.) Kindb.	굵은이끼	Circumpolar	Boreal-temperate	Bum 17061828
Plagiotheciaceae	산주목이끼과			
<i>Plagiothecium cavifolium</i> (Brid.) Z. Iwats.	둥근산주목이끼	Circumpolar	Boreal-temperate	Bum 17061761
<i>Plagiothecium laetum</i> Schimp.	굽은잎기운삭이끼	Circumpolar	Temperate-subtropical	Bum 17092183
<i>Plagiothecium neckeroideum</i> Schimp.	큰산주목이끼	Multi-areal	Multi zone	Bum 17061809
<i>Plagiothecium nemorale</i> (Mitt.) A. Jaeger.	산주목이끼	Multi-areal	Multi zone	Bum 17061747
Entodontaceae	윤이끼과			
<i>Entodon flavescens</i> (Hook.) A. Jaeger.	가지윤이끼	Asian	Boreal-temperate	Bum 17061860
* <i>Entodon luridus</i> (Griff.) A. Jaeger.	물가윤이끼	Eastern Asia	Boreal-temperate	Bum 17041278,
* <i>Entodon scabridens</i> Lindb.	지이윤이끼	Eastern Asia	Boreal-temperate	Bum 17041335
* <i>Entodon sullivantii</i> (Müll. Hal.) Lindb.	가는윤이끼	Eastern Asia-American	Boreal-temperate	Bum 17041268
Pylaisiadelphaceae	털거울이끼과			
* <i>Brotherella fauriei</i> (Besch. ex Cardot) Broth.	뽕죽거울이끼	Eastern Asia	Temperate-subtropical	Bum 17041309
* <i>Brotherella henonii</i> (Duby) M. Fleisch.	거울이끼	Eastern Asia	Temperate-subtropical	Bum 17061760
* <i>Pylaisiadelpha tenuirostris</i> (Bruch & Schimp.) W. R. Buck	털거울이끼	Eastern Asia-American	Boreal-temperate	Bum 17041267

Appendix 1. Continued.

Leucodontaceae		족제비이끼과		
<i>*Leucodon nipponicus</i> Nog.	뽕족잎족제비이끼	Eastern Asia	Temperate-subtropical	Bum 17041281
<i>Leucodon pendulus</i> Lindb.	긴족제비이끼	Eastern Asia	Boreal	Only literature (Papp, 2008)
Neckeraceae		납작이끼과		
<i>Homalia trichomanoides</i> (Hedw.) Schimp.	윤납작이끼	Circumpolar	Boreal-temperate	Bum 17041288
<i>Neckera konoii</i> Broth.	끝고리납작이끼	Eastern Asia	Boreal-temperate	Only literature (Papp, 2008)
<i>*Neckera fauriei</i> Cardot	초록납작이끼	Eastern Asia	Subtropical	Bum 17102492
<i>Thamnobryum coreanum</i> (Cardot) Nog. & Z. Iwats.	고려대호꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17041286
<i>*Thamnobryum subseriatum</i> (Mitt. ex Sande Lac.) B. C. Tan	대호꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17041321
Lembophyllaceae		호랑꼬리이끼과		
<i>*Dolichomitriopsis diversiformis</i> (Mitt.) Nog.	겉호랑꼬리이끼	Eastern Asia	Boreal-temperate	Bum 17061848
Myuriaceae		새이끼과		
<i>Isoetecium subdiversiforme</i> Broth.	잎맥호랑꼬리이끼	Eastern Asia	Temperate-subtropical	Only literature (Papp, 2008)
Anomodontaceae		명주실이끼과		
<i>*Anomodon abbreviatus</i> Mitt.	산명주실이끼	Eastern Asia	Temperate	Bum 17061795
<i>Anomodon giraldii</i> Müll. Hal.	큰명주실이끼	Eastern Asia	Boreal-temperate	Bum 17041310
<i>*Anomodon longifolius</i> (Schleich. ex Brid.) Hartm.	명주실이끼	Asian	Boreal-temperate	Bum 17041318
<i>*Anomodon minor</i> (Hedw.) Lindb.	푸른명주실이끼	Asian-American	Boreal-temperate	Bum 17061792
<i>Anomodon rugelii</i> (Müll. Hal.) Keissl.	곱슬명주실이끼	Circumpolar	Boreal-temperate	Bum 17041341
<i>*Haplohymenium sieboldii</i> (Dozy & Molke.) Dozy & Molke.	깃털바위실이끼	Eastern Asia	Temperate	Bum 17092173
<i>Haplohymenium triste</i> (Ces.) Kindb.	바위실이끼	Disjunctives	Temperate	Bum 17041283
<i>Haplohymenium pseudotriste</i> (Müll. Hal.) Broth.	꼬마바위실이끼	Amphioceanic	Boreal-temperate	Only literature (Choe, 1980)
<i>Herpetineuron toccoae</i> (Sull. & Lesq.) Cardot	나선이끼	Asian-American	Tropical-subtropical	Bum 17041280
<i>Schwetschkeopsis fabronia</i> (Schwägr.) Broth.	개털이끼	Eastern Asia-American	Temperate	Bum 17041312b
Marchantiophyta		태류식물문		
Marchantiaceae		우산이끼과		
<i>*Marchantia polymorpha</i> L.	우산이끼	multizone	multiarea	Bum 170889
Aytoniaceae		삿갓우산이끼과		
<i>Reboulia hemisphaerica</i> (L.) Raddi ssp. <i>hemisphaerica</i>	삿갓우산이끼	Multiarea (cosmopolitan)	Multizone	Bum 170876
<i>Reboulia hemisphaerica</i> (L.) Raddi ssp. <i>orientalis</i> Schust.	김삿갓우산이끼	Multiarea (cosmopolitan)	Multizone	Only literature (Papp, 2008)
Conocephalaceae		패랭이우산이끼과		
<i>Conocephalum conicum</i> (L.) Underw.	패랭이우산이끼	Circumpolar	Boreal	Bum 170082

Appendix 1. Continued.

<i>Conocephalum japonicum</i> (Thunb.) Grolle	아기패랭이우산이끼	Eastern Asia	Multizone	Only literature (Papp, 2008)
Pelliaceae	물우산대이끼과			
<i>Pellia endiviifolia</i> (Dicks.) Dumort.	가는물우산대이끼	Circumpolar	Boreal	Bum 170602
Calyculariaceae	바위물우산대이끼과			
<i>Calycularia crispula</i> Mitt.	바위물우산대이끼	Circumpolar	Temperate-subtropical	Choi 4472,
Metzgeriaceae	리본이끼과			
<i>Apometzgeria pubescens</i> (Schrank) Kuwah.	털보리본이끼	Circumpolar	Boreal-temperate	Bum 170089a
<i>Metzgeria furcata</i> (L.) Corda	산리본이끼	Circumpolar	Boreal-temperate	Bum 170856
<i>Metzgeria lindbergii</i> Schiffn.	리본이끼	Multiarea (cosmopolitan)	Multizone	Bum 170894
<i>Metzgeria temperata</i> Kuwah.	무성아리본이끼	amphioceanic	Temperate-subtropical	Choi 4430
Aneuraceae	초록우산대이끼과			
<i>Riccardia latifrons</i> (Lindb.) Lindb.	넓은쪽잎이끼	Circumpolar	Arctic-boreal	Only literature (Papp, 2008)
Porellaceae	세줄이끼과			
<i>Porella caespitans</i> var. <i>cordifolia</i> S. Hatt.	침세줄이끼	Asia	Temperate-subtropical	Bum 170880
* <i>Porella chinensis</i> (Steph.) S. Hatt.	덕향세줄이끼	Asia	Temperate	Bum 170086
<i>Porella fauriei</i> (Steph.) S. Hatt.	털세줄이끼	Eastern Asia	Boreal-temperate	Choi 4447
<i>Porella gracillima</i> Mitt.	가는세줄이끼	Asia	Boreal-temperate	Bum 170084
<i>Porella grandiloba</i> Lindb.	큰세줄이끼	Eastern Asia	Temperate-subtropical	Choi 4434
* <i>Porella japonica</i> (Sande Lac.) Mitt.	알꼴세줄이끼	Eastern Asia	Temperate-subtropical	Bum 17009
* <i>Porella stephaniana</i> (C. Massal.) S. Hatt.	동강세줄이끼	Eastern Asia	Temperate	Bum 170093
<i>Porella subobtusa</i> (Steph.) S. Hatt.	끝둔한세줄이끼	Eastern Asia	Temperate-subtropical	Only literature (Choe, 1980)
<i>Porella ulophylla</i> (Steph.) S. Hatt.	주름세줄이끼	Eastern Asia	Temperate-subtropical	Bum 170896
<i>Porella vernicosa</i> Lindb.	가시세줄이끼	Eastern Asia	Temperate-subtropical	Bum 170092
Radulaceae	부채이끼과			
<i>Radula auriculata</i> Steph.	귀부채이끼	Amphipacific	Boreal-temperate	Bum 170605
<i>Radula cavifolia</i> Hampe	큰잎부채이끼	Asia	Tropical-subtropical	Choi 4522
<i>Radula constricta</i> Steph.	무성아부채이끼	Eastern Asia	Boreal-temperate	Bum 170560b
* <i>Radula japonica</i> Gottsche	부채이끼	Eastern Asia	Temperate-subtropical	Bum 170881b
Frullaniaceae	지네이끼과			
<i>Frullania appendiculata</i> Steph.	침지네이끼	Eastern Asia	Temperate-subtropical	Bum 170357a
<i>Frullania davurica</i> Hampe	빨간지네이끼	Asia	Boreal-temperate	Bum 170569a

Appendix 1. Continued.

<i>Frullania inflexa</i> Mitt.	굽은칼지네이끼	Asia	Subtropical	Only literature (Papp, 2008)
<i>Frullania kagoshimensis</i> Steph.	양지네이끼	Eastern Asia	Subtropical	Only literature (Papp, 2008)
<i>Frullania muscicola</i> Steph.	참지네이끼	Asia	Temperate	Bum 170080
<i>Frullania polyptera</i> Tayl.	푸른지네이끼	Asia	Temperate-subtropical	Choi 4142
<i>Frullania schensiana</i> C. Massal.	산지네이끼	Eastern Asia	Temperate-subtropical	Bum 170097
* <i>Frullania taradakensis</i> Steph.	들지네이끼	Eastern Asia	subtropical	Bum 170100
<i>Frullania usamiensis</i> Steph.	우사미지네이끼	Eastern Asia	Temperate	Bum 170098
Lejeuneaceae	작은귀이끼과			
* <i>Cheilolejeunea obtusifolia</i> (Steph.) S. Hatt.	아기사슬이끼	Eastern Asia	Temperate	Bum 170900b
* <i>Cololejeunea longifolia</i> (Mitt.) Benedix	긴귀이끼	Eastern Asia	Temperate-subtropical	Bum 170363
<i>Cololejeunea macounii</i> (Spruce ex Underw.) A. Evans	흑귀이끼	Amphipacific	Temperate-subtropical	Bum 170361b
<i>Cololejeunea subkodamae</i> Mizut.	잔털귀이끼	Eastern Asia	subtropical	Only literature (Papp, 2008)
<i>Lejeunea compacta</i> (Steph.) Steph	일작은귀이끼	Eastern Asia	subtropical	Bum 170357b
<i>Lejeunea japonica</i> Mitt.	작은귀이끼	Eastern Asia	Temperate-subtropical	Bum 170892a
<i>Microlejeunea ulicina</i> (Taylor) Steph.	아기작은귀이끼	Asia-Europe	subtropical	Bum 170565c,
<i>Trocholejeunea sandvicensis</i> Mizut.	둥근귀이끼	Circumpolar	Temperate-subtropical	Bum 170344g
Ptilidiaceae	털잎이끼과			
<i>Ptilidium pulcherrimum</i> (G. Weber) Vainio	털잎이끼	Circumpolar	Boreal	Bum 170368
Neotrichocoleaceae	털이끼과			
<i>Trichocoleopsis sacculata</i> (Mitt.) S. Okamura	가시잎이끼	Eastern Asia	Temperate	Choi 4512
Pseudolepicoleaceae	솔잎이끼과			
<i>Blepharostoma minus</i> Horik.	솔잎이끼	Eastern Asia	Temperate	Bum 170898b
<i>Blepharostoma trichophyllum</i> (L.) Dumort.	산솔잎이끼	Circumpolar	Arctic-boreal	Bum 170597
Herbertaceae	쌍갈고리이끼과			
<i>Herbertus aduncus</i> (Dicks.) Gray	쌍갈고리이끼	Asian-America	Arctic-boreal	Bum 170379
* <i>Herbertus buchii</i> Juslén	왕쌍갈고리이끼	Eastern Asia	Boreal	Bum 170414
Lepidoziaceae	벼슬이끼과			
<i>Bazzania denudata</i> (Torr. ex Lindenb.) Trevis.	산좁벼슬이끼	Eastern Asia	Temperate	Bum 170361a
* <i>Bazzania manczurica</i> Bakalin	만주좁벼슬이끼			Bum 170346
<i>Bazzania parabdental</i> Bakalin	아기좁벼슬이끼	Asian-America	Boreal-temperate	Bum 170378c
<i>Bazzania tricrenata</i> (Wahlenb.) Trevis.	세모좁벼슬이끼	Circumpolar	Arctic-boreal	Bum 170810
<i>Bazzania trilobata</i> (L.) Gray	알뜰좁벼슬이끼	Amphioceanic	Arctic-boreal	Bum 170813
* <i>Kurzia makinoana</i> (Steph.) Grolle	아기솔잎이끼			Bum 170827a
<i>Lepidozia reptans</i> (L.) Dumort.	누운벼슬이끼	Circumpolar	Boreal	Bum 170571

Appendix 1. Continued.

Lophocoleaceae		두끝벼슬이끼과		
<i>Chiloscyphus pallescens</i> (Ehrh. ex Hoffm.) Dumort.	아기물비늘이끼	Circumpolar	Boreal	Only literature (Papp, 2008)
<i>Chiloscyphus polyanthos</i> (L.) Corda	물비늘이끼	Circumpolar	Boreal	Bum 170330
* <i>Heteroscyphus planus</i> (Mitt.) Schiffn.	비늘이끼	Eastern Asia	Subtropical	Bum 170890
<i>Lophocolea bidentula</i> (Nees) Fulford	들두끝벼슬이끼	Amphioceanic	Temperate	Choi 4452
<i>Cryptolophocolea compacta</i> (Mitt.) L. Söderstr.	산두끝벼슬이끼	Eastern Asia	Boreal-temperate	Bum 170088
<i>Lophocolea heterophylla</i> (Schrad.) Dumort.	두끝벼슬이끼	Circumpolar	Boreal	Bum 170358
<i>Lophocolea itoana</i> Inoue	이토두끝벼슬이끼	Eastern Asia	Boreal-temperate	Choi 4442
<i>Lophocolea minor</i> Nees	아기두끝벼슬이끼	Circumpolar	Arctic-boreal	Bum 170413
Plagiochilaceae		날개이끼과		
* <i>Pedinophyllum truncatum</i> (Steph.) Inoue	누운날개이끼	Eastern Asia	Temperate	Bum 170335
<i>Plagiochila fruticosa</i> Mitt.	가지날개이끼	Asian-America	Boreal	Only literature (Papp, 2008)
* <i>Plagiochila ovalifolia</i> Mitt.	둥근날개이끼	Eastern Asia	Temperate-subtropical	Bum 172165
<i>Plagiochila porelloides</i> (Torrey in Nees) Lindenb.	숲날개이끼	Circumpolar	Arctic-boreal	Bum 170407
* <i>Plagiochila sciophylla</i> Nees in Lindenb.	아기날개이끼	Asian	Subtropical	Bum 170864
<i>Xenochila integrifolia</i> (Mitt.) Inoue	세모날개이끼	Eastern Asia	Temperate	Choi 4448
Jamesoniellaceae		가을비늘이끼과		
<i>Crossogyna autumnalis</i> (DC.) Schljakov	가을비늘이끼	Circumpolar	Temperate	Bum 170096
Cephaloziaceae		계발이끼과		
<i>Cephalozia bicuspidata</i> (L.) Dumort.	꽃계발이끼	Multiarea	Arctic-boreal	Only literature (Papp, 2008)
<i>Cephalozia lumulifolia</i> (Dumort.) Dumort.	반달계발이끼	Circumpolar	Arctic-boreal	Bum 170612b
Odontoschismataceae		땡기이끼과		
* <i>Odontoschisma denudatum</i> (Nees) Dumort.	땡기이끼	Circumpolar	Temperate	Bum 170577
<i>Odontoschisma pseudogrosseverrucosum</i> Gradst., Aranda & Vanderp.	잔땡기이끼	Eastern Asia	Temperate	Bum 170827b
Cephaloziellaceae		걸계발이끼과		
<i>Cephaloziella divaricata</i> (Sm.) Warnst.	들걸계발이끼	Circumpolar	Arctic	Bum 170786b
* <i>Cephaloziella hampeana</i> (Nees) Schiffn. ex Leske	산걸계발이끼	Circumpolar	Boreal	Bum 170632a
<i>Cephaloziella microphylla</i> (Steph.) Douin	세모걸계발이끼	Eastern Asia	Temperate	Choi 4407
<i>Cephaloziella spinicaulis</i> Douin	가지걸계발이끼	Asian-America	Temperate	Bum 170874b
Myliaceae		잔비늘이끼과		
* <i>Mylia verrucosa</i> Lindb.	들잔비늘이끼	Eastern Asia	Temperate	Bum 170783a
Scapaniaceae		엄마이끼과		
<i>Diplophyllum taxifolium</i> (Wahlenb.) Dumort.	산긴엄마이끼	Circumpolar	Arctic-boreal	Bum 170620a
<i>Douinia plicata</i> (Lindb.) Konstant. et Vilnet	긴엄마이끼	Amphioceanic	Arctic-boreal	Bum 170375a,
<i>Scapania ampliata</i> Steph.	큰엄마이끼	Eastern Asia	Arctic-boreal	Bum 170390
<i>Scapania apiculata</i> Spruce	뿔족엄마이끼	Circumpolar	Arctic-boreal	Choi 4460
<i>Scapania ciliata</i> Sande Lac.	털엄마이끼	Eastern Asia	Boreal	Bum 170385a

Appendix 1. Continued.

* <i>Scapania integerrima</i> Steph.	들엄마이끼	Eastern Asia	Temperate	Bum 170344f
<i>Scapania parvitexta</i> Steph.	배루카엄마이끼	Eastern Asia	Boreal-temperate	Only literature (Papp, 2008)
<i>Scapania undulata</i> (L.) Dumort.	차주엄마이끼	Circumpolar	Arctic-boreal	Bum 170887
Lophoziaceae		갈래잎이끼과		
<i>Anastrophyllum michauxii</i> (F. Weber) H. Buch	새깃통풀이끼	Circumpolar	Boreal	Bum 170405
<i>Barbilophozia barbata</i> (Schreb.) Loeske	손바닥가는단풍이끼	Circumpolar	Arctic-boreal	Bum 170369a
<i>Lophozia excisa</i> (Dicks.) Konstant. & Vilnet	산중갈래잎이끼	Circumpolar	Arctic-boreal	Bum 170627
<i>Plicanthus birmensis</i> (Steph.) R.M. Schust.	단풍이끼	Eastern Asia	Subtropical-tropical	Bum 170399
* <i>Plicanthus hirtellus</i> (F. Weber) R.M. Schust.	가시단풍이끼	Multiarea	Subtropical-tropical	Bum 170392
* <i>Schistochilopsis cornuta</i> (Steph.) Konstant.	닭벼슬이끼	Eastern Asia	Temperate	Bum 170816
<i>Sphenobolus saxicola</i> (Schrad.) Steph.	등근타래잎이끼	Circumpolar	Arctic	Bum 170847
* <i>Tetralophozia filiformis</i> (Steph.) Urmi	창이끼	Circumpolar	Boreal-temperate	Bum 170579
<i>Tritomaria exsecta</i> (Schmidel ex Schrad.) Schiffn. ex Loeske	은행비늘이끼	Circumpolar	Boreal	Bum 170626b
<i>Triophozia quinquedentata</i> (Huds.) Bakalin	산은행비늘이끼	Circumpolar	Arctic-boreal	Bum 170369b
Calypogeaceae		목걸이이끼과		
* <i>Calypogeia arguta</i> Nees & Mont. ex Nees	아기목걸이이끼	Amphipacific	Temperate	Bum 170344e
<i>Calypogeia azurea</i> Stotler & Crotz	목걸이이끼	Amphipacific	Temperate	Only literature (Papp, 2008)
* <i>Calypogeia neesiana</i> (C. Massal. & Carestia) Müll. Frib.	산기와의이끼	Circumpolar	Arctic-boreal	Bum 170564
* <i>Calypogeia tosana</i> (Steph.) Steph.	들목걸이이끼	Eastern Asia	Temperate	Bum 170830
<i>Metacalypogeia cordifolia</i> (Steph.) Inoue	산목걸이이끼	Eastern Asia	Temperate	Bum 170802
Delavayellaceae		꼭지망울이끼과		
<i>Liochlaena subulata</i> (A. Evans) Schljakov	꼭지망울이끼	Circumpolar	Boreal-temperate	Bum 170561
Solenostomataceae		등근망울이끼과		
* <i>Nardia assamica</i> (Mitt.) Amak.	빨간비늘이끼	Eastern Asia	Arctic-boreal	Bum 170344c
* <i>Plectocolea truncata</i> (Nees) Bakalin	들망울이끼	Eastern Asia	Subtropical-tropical	Bum 170882
Gymnomitriaceae		은비늘이끼과		
<i>Marsupella tubulosa</i> Steph.	양끝통이끼	Circumpolar	Arctic-boreal	Bum 170344b

The nomenclature and arrangement of taxa are followed the system which is proposed by Goffinet et al. (2009) and Söderström et al. (2016) for the mosses and liverworts respectively. Newly recorded species for Taebaeksan Mountains are marked with asterisk (*) in front of taxa.