Site dossier for bryological interest – Morrone Birkwood SSSI
Archive Report No. 056

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This report was commissioned by SNH as part of the Site Condition Monitoring (SCM) programme to assess the condition of special features (habitats, species populations or earth science interests) on protected areas in Scotland (Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas and Ramsar). Site Condition Monitoring is SNH’s rolling programme to monitor the condition of special features on protected areas, their management and wider environmental factors which contribute to their condition.

The views expressed in the report are those of the contractor concerned and have been used by SNH staff to inform the condition assessment for the individual special features. Where the report recommends a particular condition for an individual feature, this is taken into account in the assessment process, but may not be the final condition assessment of the feature. Wider factors, which would not necessarily be known to the contractor at the time of the monitoring, are taken into consideration by SNH staff in making final condition assessments.

Access permission was obtained from all those owning and managing the site.
Site Dossier

Site name: Morrone Birkwood SSSI

SNH area: Grampian


Site description: The lower, northern slopes of the site are relatively east-angled and have a mosaic of mire and flush areas with stands of birch on the higher ridges. Above this is a band of birch woodland with much juniper on steeper, better drained ground, with local areas of scree and low crags and a series of calcareous flushes. Within the upper part of the woodland and on the steep slopes immediately above there are bands of metamorphosed limestone and calcareous schists, again with some base-rich flushes and areas of scree and crag. Above this the underlying rocks are acidic and there are large areas of wind-clipped heath and mire and low crags with patches of scree.

Bryophyte communities: The bryophyte communities on the site are those associated with the woodland, the heath, the mires, the flushes and the crags.

Woodland: The woodland floor bryophytes are luxuriant but stands are largely dominated by common, robust, pleurocarpous species like Hylocomium splendens, Rhytidiadelphus triquetrus, Pleurozium schreberi, Thuidium tamariscinum, often with hummocks of Sphagnum capillifolium, more rarely Sphagnum russowii and locally Ptilium crista-castrensis. Where there are some rocks the flora becomes more diverse and includes Dicranum fusescens, various species of Racomitrium and the liverworts Barbilophozia hatcheri, Scapania gracilis, Scapania aspera and Tritomaria quinquedentata. The epiphytic flora on the birch and juniper is rather poor with just common species like Ulota crispa, Frullania tamarisci, Hypnum cupressiforme, Hypnum andoi and Isothecium myosuroides.

Heath: The heathland bryophytes are also not very diverse with Hylocomium splendens being the dominant bryophyte species, usually with Pleurozium schreberi, Hypnum jutlandicum and on more open ground Campylopus introflexus and Pohlia nutans.

Mires: Mire areas are common at Morrone, particularly below the woodland but also locally higher up. The higher areas of mire tend to be very acid and are usually associated with drainage lines and typical species here include Sphagnum denticulatum, Sphagnum fallax, Sphagnum capillifolium, Sphagnum palustre. Flatter areas of mire have similar species but Sphagnum capillifolium and Sphagnum papillosum are usually more prominent. The lower areas of mire, developed in the basins in the undulating moraine are more diverse and, with the influence of the flushes that run through them, have a good range of Sphagnum species, including Sphagnum fuscum, Sphagnum magellanicum, Sphagnum teres, Sphagnum contortum and Sphagnum platyphyllum.

Flushes: Run-off from the calcareous strata higher up the hill gives a series of rich flushes that run across the site both within and below the woodland and, at the western end, just above the woodland. Within the mire areas these flushes usually have an abundance of species like Scorpidium scorpioides, Drepanoclados revolvens, Campylium stellatum var stellatum, Blindia acuta and Aneura pinguis. The steeper and more stony flushes higher up have large stands of Palustriella commutata var commutata as well, usually with Leiocolea bantriensis, Bryum pseudotriquetrum, Jungermannia exertifolia ssp. cordifolia, Gymnostomum aeruginosum, Fissidens osmundoides and more locally Philonotis calcarea and...
Melesia uliginosa. Nationally rare and scarce species here include Barbilophozia quadriloba, Cinclidium stygium, Amblyodon dealbatus and Tayloria lingulata, Leiocolea gilmannii, Harpanthus flotovianus and Tritomaria polita have been recorded here in the past. More acidic flushes occur higher on the hill, usually with Sphagnum denticulatum, Dicranella palustris, Scapania undulata and Scapania uliginosa.

Craggs and scree: The more acid crags on the higher slopes are rather dull having only a range of common species like Racomitrium lanuginosum, Racomitrium heterostichum, Dicranum fuscescens, Diplophyllum albicans and Marsupella emarginata. In the higher scree there are some interesting species like Tetralophozia setiformis and Grimmia incurva. The line of limestone and calcareous schist across the site at mid height has crags and scree with a much more diverse flora. Common species here include Tortella tortuosa, Ctenidium molluscum, Ditrichum gracile, Fissidens dubius, Distichium capillaceum, Neckera complanata, Orthothecium intricatum as well as the woodland floor species. There are also good populations of calcicoles like Grimmia torquata, Scapania aspera, Plagiobryum zieri, Didymodon ferrugineus, Leiocolea alpestris, Racomitrium canescens, and much rarer plants like Encalypta rhaptocarpa and Stegania latifolia. Other rarities recorded here in the past include Leiocolea heterocolpos, Scapania cuspiduligera, S. gymnostomophila and Jungermannia polaris.

Bryophyte features of interest: The site notification describes the flora at Morrone as "unusually diverse ....including 280 vascular plant species and 187 bryophytes". This is an extremely good total of bryophytes from a relatively small area and that alone is of considerable interest.

Apart from an undated field card with no recorders name and with about 100 species recorded, there is no source for this figure of 187 within the site scientific file but most of these species will have been recorded during the field meeting of the British Bryological Society in 1964. Further species were added by a second BBS meeting here in 1996 but these records may not have been passed on to SNH. There is an impressive list of Red Data Book and nationally scarce species from the SSSI:

**Red data book**

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbilophozia quadriloba</td>
<td>(LR,nt)</td>
</tr>
<tr>
<td>Jungermannia polaris</td>
<td>(LR,nt)*</td>
</tr>
<tr>
<td>Leiocolea gilmannii</td>
<td>(LR,nt)*</td>
</tr>
<tr>
<td>Scapania gymnostomophila</td>
<td>(LR,nt)*</td>
</tr>
<tr>
<td>Stegania latifolia</td>
<td>(LR,nt)</td>
</tr>
<tr>
<td>Tayloria lingulata</td>
<td>(Endangered)*</td>
</tr>
</tbody>
</table>

**Nationally scarce**

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harpanthus flotovianus</td>
<td>*</td>
</tr>
<tr>
<td>Jungermannia subelliptica</td>
<td></td>
</tr>
<tr>
<td>Leiocolea heterocolpos</td>
<td>*</td>
</tr>
<tr>
<td>Odontoschisma elongatum</td>
<td></td>
</tr>
<tr>
<td>Scapania cuspiduligera</td>
<td></td>
</tr>
<tr>
<td>Tritomaria polita</td>
<td>*</td>
</tr>
<tr>
<td>Amblyodon dealbatus</td>
<td></td>
</tr>
<tr>
<td>Cinclidium stygium</td>
<td></td>
</tr>
<tr>
<td>Didymodon ferrugineus</td>
<td></td>
</tr>
<tr>
<td>Encalypta rhaptocarpa</td>
<td></td>
</tr>
<tr>
<td>Grimmia incurva</td>
<td></td>
</tr>
<tr>
<td>Racomitrium canescens</td>
<td></td>
</tr>
<tr>
<td>Schistidium trichodon</td>
<td></td>
</tr>
<tr>
<td>Sphagnum platyphyllum</td>
<td></td>
</tr>
</tbody>
</table>

*not seen since 1964

In addition the RDB species Dicranum elongatum (Critically Endangered) was recorded from Morrone on the 1964 meeting, the last British record, but it is not clear...
whether the site was within the SSSI. It has been searched for since without success.

The main features of interest that give this long list are 1) the flushed mires on the lower part of the site, 2) the calcareous stony flushes and 3) the calcareous crags.

Distribution of features of interest:

1) The flushed mires: All of these mires are on the lower undulating moraine area in the northern part of the site and occur in basins where base-rich water from the calcareous rocks above drains through the mire. There is considerable variation in the frequency of the more base-tolerant species, the best areas tending to be towards the top of the slope. The main area for these flush mires is outlined in yellow on the map.

2) The calcareous stony flushes: A series of these flushes extends across the site from east to west, essentially occurring below the line of calcareous rocks which outcrop on the steeper lower slopes. The area in which the flushes are concentrated is outlined in green on the map. Most of the flushes have the common indicator species but the rarer species all seem to occur in the higher, western area around Coire nam Muc and this is where all the monitoring sites are.

3) The calcareous crags: The beds of metamorphosed limestone and calcareous schist seem to run in a rising band across the site from east to west but only form significant outcrops in the four areas outlined in blue on the map. Of these, the crags at NO142904 and at 126893 are limestone while the other two seem to be calcareous schist. *Stegonia latifolia* only occurs on the two limestone crags.

Monitoring:

1) The flushed mires: Species of interest here include a number of *Sphagnum* species that are tolerant of base-rich conditions. The list of indicator species here should include *Sphagnum teres, Sphagnum contortum, Sphagnum warnstorfii* and the nationally scarce *Sphagnum platyphyllum* which occur in and alongside the flushes which run through the mire, often with species like *Scorpidium scorpoides* and *Drepanocladus revolvens*. Away from the flushed areas there are hummocks of *Sphagnum fuscum* and patches of *Sphagnum magellanicum*. See monitoring sites 1 and 6.

2) The calcareous stony flushes: Common indicator species here are *Palustriella commutata var commutata, Leiocolea bantriensis, Campylium stellatum var stellatum, Blindia acuta, Fissidens osmundoides, Aneura pinguis, Philonotis calcarea* and *Bryum pseudotriquetrum*. More critical species include *Odontoschisma elongatum, Meesia uliginosa, Amblyodon dealbatus, Cinclidium stygium* and *Barbilophozia quadriloba*. In the past other rare species recorded from this habitat include *Leiocolea gilmanii, Tritomaria polita, Harpanthus flotovianus* and *Taylora lingulata*.

3) The calcareous crags: There is a very diverse bryophyte flora on these crags but useful indicator species are *Distichium capillaceum, Encalypta streptocarpa, Plagiobryum zieri, Grimmia torquata, Ditrichum gracile, Orthothecium intricatum, Leiocolea bantriensis, Preissia quadrata* and *Scapania aspera*. Less common species include *Apometzgeria pubescens, Cololejeunea calcarea, Encalypta rhahtocarpa, Didymodon ferrugineus, Leiocolea alpestris, Tortula subulata*. Rarer species here would include *Orthothecium rufescens, Schistidium trichodon, Stegonia*
latifolia (see monitoring site 5) and Scapania aequiloba. Rarities recorded in this habitat in the past include Scapania gymnostomophila, Scapania cuspiduligera and Jungermannia polaris. There is a small stand of Stegonia latifolia on the limestone crag above the viewpoint near the E margin of the site at NO142904 which needs monitoring.

Site condition:

1) The flushed mires: Favourable. The mire area would appear to be in good condition and a number of interesting species have good populations here. Stands of Sphagnum teres, Sphagnum contortum and particularly the nationally scarce Sphagnum platyphyllum are frequent and indicate continuous flushing with base-rich water from above. The hummocks of Sphagnum fuscum usually tend to indicate a relatively undisturbed mire.

2) The calcareous flushes: Favourable. Despite the fact that the several interesting species that have been recorded from this habitat at Morrone were not found during this monitoring exercise, the continued presence of a number of rare species suggests that the habitat is in good condition. It is probable that a more complete survey would find these species. One worry expressed by the BBS field meeting was over the exclosure area where it is possible that regeneration of the woodland has been detrimental to the flushes here. Limited observation during this survey suggests that this worry is justified but that most of the better flushes are outside of this area.

3) The calcareous crags: Favourable. These crags have an excellent range of species including some rarities. The population of Stegonia latifolia here is rather small but has obviously persisted for a very long time. There is a tiny population of Stegonia latifolia on the crag above the viewpoint at NO142904 and this gives some cause for concern. Encroachment by trees may affect the lower crags but populations of most species seem to persist and the higher limestone crags are very exposed and are unlikely to suffer from this problem.

Management:

In terms of management for bryophytes, the most pressing concern is the area in the east of the SSSI from which grazing animals are excluded. Total exclosure of grazing is almost always bad news for bryophytes, particularly those species of flushes and screes which prefer an open aspect. The increase in litter-fall, in humidity, in leachate from the trees and shading all have an effect which changes the balance of the bryophyte community. One has to question what the management objective of the exclosure is and whether this could be achieved without damaging the bryophyte and probably the vascular plant communities.

Morrone is a nationally important bryophyte site and is in need of a full survey of the bryophytes so that site condition monitoring in the future has a firm base from which to make an assessment of change.
Fig 1. Map of the Morrone Birkwood SSSI showing the areas with features of bryophyte interest. September 2002.
Monitoring Site 1: Area of flushed mire with *Sphagnum* platyphyllum, *Sphagnum fuscum* and *Sphagnum magellanicum*.

**Grid reference:** NO1342.9060

**Location:** In a basin in the mire area just N of the fence-line and SE of a prominent ridge with birch trees.

**Date:** 18th September, 2002

**Surveyor:** Gordon Rothero

![Photo 1.1. Morrone Monitoring site 1; area of flushed mire showing the location of stands of Sphagnumplatyphyllum, Sphagnumfuscum and Sphagnum magellanicum. September 2002.](image)

The photo was taken from the SE by a group of birch trees at NO1345.9058.

**Notes:** Though not easily seen in the photo there are flushes running through the mire from stony areas above (one is shown) and there are quite calcareous usually having patches of *Scorpidium scorpioides*, *Drepanocladus revolvens*, *Campylium stellatum* var *stellatum* and occasionally *Drepanocladus cossonii*. 
Monitoring site 2: Calcareous stony flush with stands of *Palustriella commutata* var *commutata*, *Philonotis calcarea* and *Meesia uliginosa*.

Grid reference: NO1283.8959

Location: An open stony flush with hummocks within the birch/juniper woodland in Coire nam Muc.

Date: 18th September, 2002

Surveyor: Gordon Rothero

Photo 2.1. *Morrone* monitoring site 2 viewed from just below the flush, looking due south. September, 2002.

Notes: The photo shows the patches of *Palustriella commutata* var *commutate*, *Philonotis calcarea* and hummocks in the flush with *Meesia uliginosa*, usually growing through *Fissidens osmundoides*. Other associated species in the flush are *Leiocolea bantriensis*, *Aneura pinguis*, *Scapania aequiloba*, *Riccardia latifrons*, *Preissia quadrata*, *Bryum pseudotriquetrum*, *Ctenidium molluscum*, *Rhizomnium punctatum* and *Blindia acuta*.
**Monitoring site 3:** Stony calcareous flush with populations of the nationally scarce mosses *Amblyodon dealbatus* and *Cinclidium stygium*.

**Grid reference:** NO1280.8945

**Location:** Above the woodland in Coire nam Muc there is a line of calcareous crags running out to the NW ridge of Morrone, gradually increasing in stature to the west. At the E-most end of these and running from an isolated birch down to near the top of the woodland is this stony flush

**Date:** 18th September, 2002

**Surveyor:** Gordon Rothero

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Photo 3.1. Morrone monitoring site 3 viewed from below, showing the location of stands of *Amblyodon dealbatus* and *Cinclidium stygium*. September, 2002.

The picture was taken from just above the upper line of juniper and shows the isolated birch tree and the low broken calcareous crags above.
Photo 3.2. Morrone monitoring site 3. Location of stands of *Amblyodon dealbatus* (peg 3) and *Cinclidium stygium* (flags 1&2) in the flush. September 2002.

Photo 3.3. Morrone monitoring site 3, Flag 1 Cinclidium stygium is sparsely scattered in the area outline. September 2002

Photo 3.5. Morrone monitoring site 3, Flag 12 *Cinclidium stygium* is sparsely scattered in the area outlined. September 2002.

**Notes:** Other species occurring with *Amblyodon dealbatus* and *Cinclidium stygium* in the flush are *Leiocolea bantriensis*, *Palustriella commutata* var *falcata*, *Preissia quadrata*, *Bryum pseudotriquetrum*, *Fissidens osmundoides*, *Pellia endiviifolia*, *Fissidens adianthoides*, *Riccardia latifrons*.

*Amblyodon dealbatus* is easily confused in the field with *Melesia uliginosa* which also occurs in this flush and has similar large sporophytes, but careful examination of the leaves will enable the plants to be separated. There may well be other stems of *Amblyodon dealbatus* in the flush, where all of the hummocks seemed to provide suitable habitat.

*Cinclidium stygium* is very sparsely scattered in the two hummocks shown and certainly occurs elsewhere in the flush. It grows intimately mixed with other bryophytes here and an exhaustive search would do much damage to the other vegetation.
**Monitoring site 4**: Calcareous flush with a large population of the RDB species *Barbilophozia quadriloba*.

**Grid reference**: NO1276.8938

**Location**: Above the woodland towards the western side of Coire nam Muc is a line of broken calcareous crags, gradually increasing in size to the W. At the east end of these crags a tiny burn flows over the crags giving a small waterfall. This flush occurs below this small waterfall.

**Date**: 19th September, 2002

**Surveyor**: Gordon Rothero

Photo 4.1. Morrone monitoring site 4. Location of the stand of *Barbilophozia quadriloba* at the top of the flush just below a small waterfall. September, 2002.
Photo 4.2. Morrone monitoring site 4. Location of the stands of *Barbilophozia quadriloba* at the top of the flush just below a small waterfall. September, 2002.

Photo 4.3. Morrone monitoring site 4. Detail of the location of the pegs marking the stands of *Barbilophozia quadriloba* from the E side of the flush. September 2002.


**Notes:** Other species present in the flush include *Distichium capillaceum*, *Sanionia uncinata*, *Dichodontium pellucidum*, *Rhizomnium punctatum*, *Calliergonella cuspidata*, *Plagiomnium ellipticum*, *Philonotis fontana*, *Scapania undulata*, *Ditrichum gracile*, *Plagiochila porelloides*, *Cratoneuron filicinum* and *Ctenidium molluscum*.

Other smaller stands of *Barbilophozia quadriloba* will certainly occur in this flush. The stand at peg 3 was by far the largest and is right by the waterfall hence the rather poor photo.
**Monitoring site 5**: A stand of *Stegonia latifolia* on an exposed limestone crag.

**Grid reference**: NO1270.8929

**Location**: On the W side of Coire nam Muc at about mid height there is a line of NW-facing, broken, calcareous crags which run W to end on the NW ridge of Morrone close to the boundary of the SSSI. Near the ridge the crags are larger and *Stegonia latifolia* occurs on the ledges of the crags here.

**Date**: 19<sup>th</sup> September, 2002

**Surveyor**: Gordon Rothero

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Photo 5.1. Morrone monitoring site 5, The location of the stand of *Stegonia latifolia* viewed from the area of flat ground to the NW. September 2002.
Photo 5.2. Morrone monitoring site 5. The location of the stand of *Stegonia latifolia* viewed from the base of the steep slope below the crags. The yellow flag marking the stand is just visible. September 2002.

Photo 5.3. Morrone monitoring site 5. Detail of the stand of *Stegonia latifolia* with pegs marking the 8 patches. September 2002.
Photo 5.3. Morrone monitoring site 5. Detail of one patch of *Stegonia latifolia* showing the open, mineral-soil habitat. September 2002.

**Notes:** Other species occurring close to *Stegonia latifolia* include *Encalypta streptocarpa*, *Encalypta rhaptocarpa*, *Bryum pallens* and *Bryoerythrophyllum recurvirostrum*.

Other small patches of *Stegonia latifolia* occur along the crags but the area chosen had the largest number of patches in close proximity.
Monitoring site 6: Flushed mire associated with calcareous stony flushes with large hummocks of *Sphagnum magellanicum* and patches of *Sphagnum* warnstorffii.

Grid reference: NO1301.8981

Location: In the lower wooded part of Coire nam Muc a number of small burns run off the calcareous slopes above onto a flatter area which has a whole suite of stony flushes. Towards the E margin of the current woodland some of these flushes have stands of *Sphagnum* associated with them.

Date: 18th September, 2002

Surveyor: Gordon Rothero


Notes: Associated species in the stony flush are *Blindia acuta*, *Leiocolea bantriensis*, *Gymnostomum aeruginosum*, *Palustriella commutata var commutata*, *Aneura pinguis*, *Bryum pseudotriquetrum*, *Drepanoclados cossonii* and *Fissidens osmundoides*.

The hummocks of *Sphagnum magellanicum* are somewhat atypical as is the habitat but the identification seems to be correct. The patches of *Sphagnum* warnstorffii are usually at the level of the flush and within the hummocks of *Sphagnum magellanicum*. This is an odd and very interesting community.
Bryophyte species list for Morrone NNR

**Mosses**

1. Amblyodon dealbatus  
2. Andreaea mutabilis  
3. Andreaea rupestris  
4. Anoectangium aestival  
5. Anomobryum julaceum  
6. Atrichum undulatum  
7. Aulacomnium androgynum  
8. Aulacomnium palustre  
9. Bartramia ithyphylla  
10. Bartramia pomiformis  
11. Blindia acuta  
12. Brachythecium plumosum  
13. Brachythecium rivulare  
14. Brachythecium rivulare  
15. Bryoerythrophyllum recurvirostrum  
16. Bryum capillare  
17. Bryum pallens  
18. Bryum pseudotriquetrum  
19. Calliergon sarmentosum  
20. Calliergonella cuspidata  
21. Campyliadelphus chrysophyllus  
22. Campylium stellatum var stellatum  
23. Campylopus fragilis  
24. Campylopus introflexus  
25. Campylopus pyriformis  
26. Ceratodon purpureus  
27. Cinclidium stygium  
28. Cratoneuron filicinum  
29. Ctenidium molluscum  
30. Cynodontium bruntonii  
31. Dichodontium pellucidum  
32. Dicranella heteromalla  
33. Dicranella palustris  
34. Dicranella varia  
35. Dicranoweisia crispula  
36. Dicranum bonjeanii  
37. Dicranum fusescens  
38. Dicranum majus  
39. Dicranum scoparium  
40. Didymodon ferrugineus  
41. Distichium capillaceum  
42. Ditrichum gracile  
43. Ditrichum heteromallum  
44. Drepanoclados cossonii  
45. Drepanoclados revolvens  
46. Encalypta rhaptochepala  
47. Encalypta streptocaepala  
48. Entosthodon obtusus  
49. Fissidens adianthoides  
50. Fissidens osmundoides  
51. Fissidens taxifolius  
52. Fontinalis antipyretica
53. Grimmia donniana
54. Grimmia torquata
55. Gymnostomum aeruginosum
56. Hedwigia stellata
57. Homalothecium sericeum
58. Hylocomium splendens
59. Hypnum cupressiforme
60. Hypnum jutlandicum
61. Hypnum lacunosum var. lacunosum
62. Isothecium alopecuroides
63. Isothecium myosuroides
64. Leiocolea alpestris
65. Meesia uliginosa
66. Neckera complanata
67. Orthothecium intricatum
68. Orthothecium rufescens
69. Palustriella commutata var. commutata
70. Palustriella commutata var. falcata
71. Philonotis calcarea
72. Philonotis fontana
73. Plagiobryum zieri
74. Plagiognium elatum
75. Plagiognium ellipticum
76. Plagiognium undulatum
77. Plagiothecium undulatum
78. Pleurozium schreberi
79. Pohlia cruda
80. Pohlia nutans
81. Polytrichum alpinum
82. Polytrichum commune
83. Polytrichum formosum
84. Polytrichum juniperinum
85. Polytrichum piliferum
86. Polytrichum strictum
87. Ptilium crista-castrensis
88. Racomitrium aciculare
89. Racomitrium canescens
90. Racomitrium ericoides
91. Racomitrium fasciculare
92. Racomitrium heterostichum
93. Racomitrium lanuginosum
94. Racomitrium sudeticum
95. Rhytiadielphus loreus
96. Rhytiadielphus squarrosum
97. Rhytiadielphus triquetrus
98. Sanionia uncinata
99. Schistidium trichodon
100. Scorpidium scorpioides
101. Sphagnum angustifolium
102. Sphagnum capillifolium
103. Sphagnum compactum
104. Sphagnum contortum
105. Sphagnum denticulatum
106. Sphagnum fallax
107. Sphagnum fuscum
108. Sphagnum girgensohnii
109. Sphagnum inundatum
110. Sphagnum magellanicum
111. Sphagnum palustre
112. Sphagnum papillosum
113. Sphagnum platyphyllum
114. Sphagnum russowii
115. Sphagnum squarrosum
116. Sphagnum subnitens
117. Sphagnum tenellum
118. Sphagnum teres
119. Sphagnum warnstorffii
120. Splachnum ampullaceum
121. Splachnum sphaericum
122. Stegonia latifolia
123. Tetraphis pellucida
124. Tetraplodon mnioides
125. Thuidium delicatulum
126. Thuidium tamariscinum
127. Tortella tortuosa
128. Tortula subulata var graeffii
129. Ulota crispa
130. Zygodon rupestris

Liverworts
1. Anastrophyllum minutum
2. Aneura pinguis
3. Apometzgeria pubescens
4. Barbilophozia barbata
5. Barbilophozia hatcheri
6. Barbilophozia quadriloba
7. Blepharostoma trichophyllum
8. Calypogeia fissa
9. Calypogeia muelleriana
10. Cephalozia bicuspidata
11. Chiloscyphus polyanthos
12. Cololejeunea calcarea
13. Diplphyllum albicans
14. Frullania tamariscii
15. Gymnomitrion concinnatum
16. Jungermannia atrovirens
17. Jungermannia exsertifolia ssp. cordifolia
18. Jungermannia gracillima
19. Jungermannia subelliptica
20. Kurzia trichoclados
21. Leiocolea alpestris
22. Leiocolea bantriensis
23. Lepidozia reptans
24. Lophocolea bidentata
25. Lophozia incisa
26. Lophozia longidens
27. Lophozia ventricosa
28. Marsupella emarginata
29. Mylia anomala
30. Nardia scalaris
31. Odontoschisma elongatum
32. Odontoschisma sphagni
33. Pellia endiviifolia
34. Plagiochila asplenioides
35. Plagiochila porelloides
36. Preissia quadrata
37. Ptilidium ciliare
38. Ptilidium pulcherrimum
39. Radula complanata
40. Riccardia incurvata
41. Riccardia latifrons
42. Riccardia multifida
43. Riccardia palmata
44. Scapania aequiloba
45. Scapania aspera
46. Scapania gracilis
47. Scapania scandica
48. Scapania uliginosa
49. Scapania undulata
50. Tritomaria quinquedentata