

Bryophytic flora of *Sphagnum magellanicum* Brid. mires from Tierra del Fuego National Park (Ushuaia, Argentina)

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Bryological studies were carried out in three mires of *Sphagnum magellanicum* raised bogs from the National Park of Tierra del Fuego (Ushuaia, Argentina): LN (Laguna Negra, 54° 50' S, 68° 35' W); LP ("Laguna Pequeña", 54°50' S 68°30' W) and LT (Lapataia, 54°51' S 68°35' W).

The main goal of this study is to improve the knowledge about the bryophytic flora, including ecological and biogeographic taxa information, because papers on bryophytes in *S. Magellanicum* mires are scarce, especially in Tierra del Fuego, where most of the references are from Chile and Subantarctic Islands (Hassel *et al.*, 2009) and recent bryological studies have shown that the Subantarctic Magellanean region is a hotspot of bryophyte diversity worldwide (Rozzi *et al.*, 2006).



A total of 92 floristic relevés (square plots of 0.50x0.50m² each) were done. Sampling points were distributed at random in four different environmental units, in accordance with mires heterogeneity and microtopography.

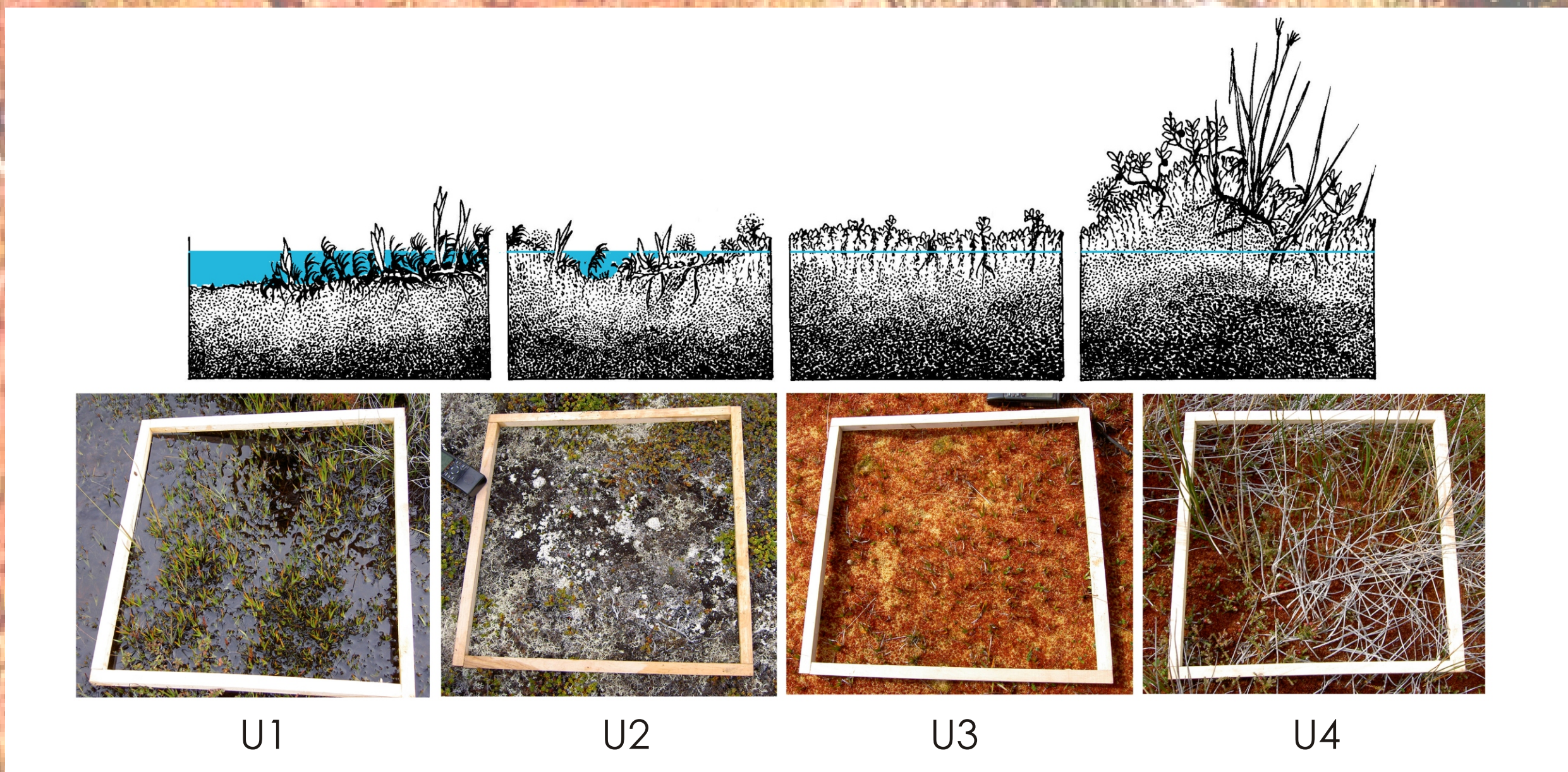
The environmental units were established on the basis of plant cover and water table level as follows:

U1- Permanently flooded areas, dominated by the Juncaginaceae *Tetroncium magellanicum* Willd.

U2- Flat or nearly flat areas with abundant lichens, *S. magellanicum* degraded or scarce and water table close to the soil surface.

U3- Dense carpets of *S. magellanicum*, with the water table close to the soil surface.

U4- Hummocks of *S. magellanicum* with vascular plants and water table under the soil surface.



The bryophytic flora was very similar in the three mires. We have identified a total of 23 liverworts species (Table 1) and 17 moss species (Table 2). The frequencies for each environmental unit reflect the species ecological preferences. Small hollows and seasonally flooded plains (environmental unit U2) are the places with highest bryophytic richness, especially when *S. magellanicum* is degraded, scarce or absent. On the contrary the lowest value for mosses corresponds to dense carpets of *S. Magellanicum*.

Most of the species have a Subantarctic distribution. It is remarkable the high number of endemisms of the Magellanean sector among the liverworts, whereas the majority of mosses have a wide distribution.



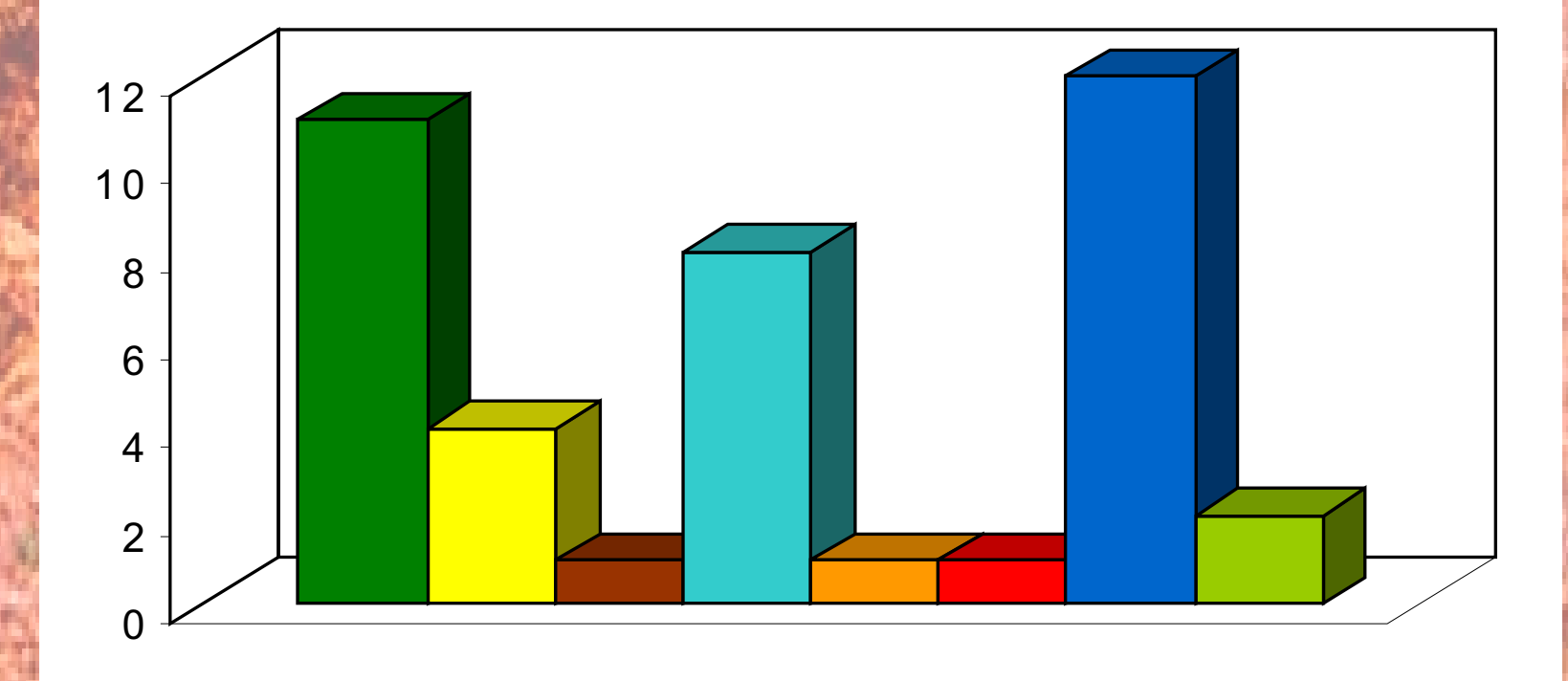
Table 1

	Fr-T	Fr-U1	Fr-U2	Fr-U3	Fr-U4
<i>Riccardia pallidivirens</i> (Steph.) Evans	47,3	78,6	31,3	66,7	24,3
<i>Cephalozia pleniceps</i> (Austin) Lindb.	30,1	42,9	12,5	50	21,6
<i>Blepharidophyllum densifolium</i> (Hook) Angstr.	28	32,1	25	38,3	24,3
<i>Pseudocephalozia quadriloba</i> (Steph.) Schust.	28	7,1	43,8	75	21,6
<i>Metahygrobiella chilensis</i> Engel & Schust.	25,8	10,7	25	50	29,7
<i>Adelanthus linderbergianus</i> (Lehm.) Mitt.	24,7	3,6	56,3	25	27
<i>Calypogeia sphagnicola</i> (Arn. & Perss.) Wstf & Lske.	23,7	0	18,8	41,7	37,8
<i>Lepidozia laevifolia</i> (Hook. f. & Tayl.) Gf & N	22,6	10,7	43,8	16,7	24,3
<i>Leptoscyphus chilensis</i> (De Not.) Haessel	19,4	17,9	31,3	8,3	18,9
<i>Hyalolepidozia bicuspidata</i> (Mass.) S. Arnell ex Grolle	15,1	14,3	25	8,3	13,5
<i>Pseudoleptocolea quadrilacinata</i> (Sulliv.) Full. & Tayl.	12,9	10,7	43,8	8,3	2,7
<i>Kurzia setiformis</i> (De Not.) Engel & Schust	9,7	0	18,8	33,3	5,4
<i>Cephalozia varians</i> (Gott.) Steph	7,5	21,4	0	0	2,7
<i>Leptoscyphus antarcticus</i> (C. Massal.) Solari	5,4	3,6	6,3	8,3	5,4
<i>Clandarium clandestinum</i> (Mont.) Schust.	4,3	0	12,5	16,7	0
<i>Acrobolbus achrophyllus</i> (Hook. f. & Tayl.) Steph.	3,2	3,6	6,3	0	2,7
<i>Chiloscyphus humilis</i> (Hook. f. & Tayl.) Hässel	3,2	3,6	6,3	8,3	0
<i>Cephalozia pulcherrima</i> Schust.	3,2	0	12,5	8,3	0
<i>Cephalozia byssacea</i> (Roth.) Wstf.	2,2	3,6	0	0	2,7
<i>Paracromastigium subsimplex</i> (Steph.) Fulf. & J. Tayl.	2,2	0	12,5	0	0
<i>Ptilidium ciliare</i> (L.) Hampe	1,1	3,6	0	0	0
<i>Termona quadripartitum</i> (Hook.) Mitt.	1,1	0	6,3	0	0
<i>Leptoscyphus huidobroanus</i> (Mont.) Gottsche	1,1	0	0	8,3	0
Species number	23	16	19	17	16

Table 2

	Fr T	Fr U1	Fr U2	Fr U3	Fr U4
<i>Sphagnum magellanicum</i> Brid.	93,6	88,9	85,7	100	100
<i>Dicranoloma subimponens</i> (Card.) Broth.	31,5	100	35,7	8,3	13,9
<i>Limprichtia revolvens</i> (Sw.) Loeske	16,3	50	42,9	0	0
<i>Warnstorfia sarmentosa</i> (Wahlenb.) Hedenäs	16,3	77,8	7,1	0	0
<i>Chorisodontium aciphyllum</i> (Hook. f. & Wilson) Broth.	10,9	16,7	14,3	0	13,9
<i>Sphagnum fimbriatum</i> Wilson & Hook.	8,7	27,8	21,4	0	0
<i>Polytrichum juniperinum</i> Hedw. var. affine (Funck) Brid.	5,4	0	21,4	0	5,6
<i>Breutelia integrifolia</i> (Tayl.) Jaeg.	3,3	0	0	16,7	2,8
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn., Mey. & Scherb	3,3	0	0	8,3	5,6
<i>Neomeesia paludella</i> (Besch.) Deguchi	3,3	0	14,3	0	2,8
<i>Campyllum polygamum</i> (Schimp.) Lange & Jensen	2,3	0	0	0	5,6
<i>Hennediella heimii</i> (Hedw.) R.H. Zander	2,3	0	14,3	0	0
<i>Tayloria dubyi</i> Broth.	2,3	0	0	0	5,6
<i>Sphagnum falciculatum</i> Besch.	2,3	11,1	0	0	0
<i>Acrocladium auriculatum</i> (Mont.) Mitt.	1,1	5,6	0	0	0
<i>Warnstorfia exannulata</i> (Schimp.) Loeske	1,1	0	7,1	0	0
<i>Racomitrium laevigatum</i> (Mitt.) Jaeg.	1,1	5,6	0	0	0
Species number	17	9	10	4	9

Geographical elements



- Magellanean sector:**
Liverworts: *Metahygrobiella chilensis*, *Leptoscyphus antarcticus*, *Leptoscyphus chilensis*, *Leptoscyphus huidobroanus*, *Kurzia setiformis*, *Paracromastigium subsimplex*, *Pseudoleptocolea quadrilacinata* and *Riccardia pallidivirens*.
Mosses: *Neomeesia paludella*, *Racomitrium laevigatum*, *Tayloria dubyi*.
- Sectors Magellanean - Kerguelen**
Liverworts: *Blepharidophyllum densifolium*, *Clandarium clandestinum* and *Hyalolepidozia bicuspidata*.
Mosses: *Breutelia integrifolia*.
- Sectors Magellanean - Australasian**
Liverworts: *Cephalozia pulcherrima*.
- Sectors Magellanean-Kerguelen-Australasian:**
Liverworts: *Acrobolbus achrophyllus*, *Cephalozia varians*, *Chiloscyphus humilis*, *Lepidozia laevifolia* and *Termona quadripartitum*.
Mosses: *Acrocladium auriculatum*, *Chorisodontium aciphyllum* and *Dicranoloma subimponens*.
- Sector Magellanean and N of South America**
Liverworts: *Pseudocephalozia quadriloba*.
- Magellanean sector and North Hemisphere**
Mosses: *Sphagnum falciculatum*.
- Subantarctic Zone and North Hemisphere**
Liverworts: *Cephalozia pleniceps*, *Adelanthus linderbergianus*, *Calypogeia sphagnicola*, *Cephalozia byssacea* and *Ptilidium ciliare*.
Mosses: *Hennediella heimii*, *Limprichtia revolvens*, *Polytrichum juniperinum*, *Sphagnum fimbriatum*, *Warnstorfia exannulata*, *Warnstorfia sarmentosa* and *Campyllum polygamum*.
- Cosmopolitan**
Mosses: *Bryum pseudotriquetrum* and *Sphagnum magellanicum*.

Among the recorded species *Cephalozia pulcherrima* Schust. has a considerable interest, because it is a new record for South America. Likewise, *Leptoscyphus huidobroanus* (Mont.) Gotts. and *Cephalozia byssacea* (Roth.) Wstf. are new records for the Argentinean Tierra del Fuego Province.

