Bryophytes of the Cyclades, Greece: the Flora of the Island of Andros

Tom Blockeel shows that even a small Mediterranean island can have surprisingly diverse and interesting bryophytes

The Cyclades form one of the 13 floristic regions that botanists use for recording purposes in Greece. These regions were defined for the *Flora Hellenica* project (Strid & Tan, 1997), and are used in the recent checklist of the vascular plants of Greece (Dimopoulos *et al.*, 2013). Five of these regions cover the Aegean Islands (West Aegean, North Aegean, East Aegean, Cyclades, and Crete & Karpathos). Bryologically, some of them are now fairly well known, notably the North and East Aegean and Crete, though some individual islands are still little explored. Düll (2014) has recently published an account of the bryophytes of the Aegean region, and during the past decade I have myself visited Crete and the larger Eastern Aegean islands. The results of these visits are only partially published to date (Blockeel, 2012, 2016; Blockeel & Nieuwkoop, 2016). Of the five Aegean regions the least well known is the Cyclades. According to Düll (2014) only 65 bryophytes have been published for this island group.

In March 2016, therefore, I visited the island of Andros to survey the bryophytes and gain a better knowledge of the Cycladic island flora. Andros is the northernmost of the Cyclades; it is the second largest island of the group, after Naxos, with a maximum length of around 40 km. It is hilly, with several ridges crossing the island, roughly on a SSW-NNE axis. The highest point on the island, Mt Kouvara above the village of Arni, reaches 997 m in altitude, sufficiently high to influence the flora. The bedrock is composed almost entirely of schists. The island contains many springs, typically originating where hard and soft schists come into contact, and it is well watered compared with most other Cycladic islands.

Vegetation

With a long history of human occupation (since the third millennium BC), it is hardly surprising that in all parts of the island the vegetation has been influenced by human activity. Historically much of the land was under pastoral and

◁Fig. 1 (opp. page). View of Andros from Korthi Bay. △Fig. 2 (above). Stream valley at Evrousees, with *Quercus pubescens*. T. Blockeel

agricultural use, and parts of the island are extensively terraced (Fig. 1). However, many formerly cultivated fields have been abandoned and are now colonised by low shrubby vegetation (phrygana). Taller shrubs, including *Arbutus unedo*, heathers *Erica arborea* and *E. manipuliflora*, and myrtle *Myrtus communis*, form macchie in places.

There are few olive groves on Andros. Woodlands are of small extent and scattered. In some places, especially on steep slopes, there is low woodland of evergreen maple *Acer sempervirens* and kermes oak *Quercus coccifera*, and there are some small stands of Holm oak *Quercus ilex*. In the deeper stream valleys plane trees *Platanus orientalis* are common, and occasionally groves of deciduous oak *Quercus pubescens* (Fig. 2). Alder *Alnus glutinosa* occurs along some streams, and remarkably there is a small stand of wet alder woodland near the coast at Vori Bay. On the highest ground there are some thickets of *Pyrus amygdaliformis* and hawthorn *Crataegus monogyna*. There are no native pines. Planted trees include cypresses *Cupressus sempervirens* and, rarely, chestnuts *Castanea sativa*.

Schist rocks are exposed throughout the island, but typically as low crags and boulders. They rarely form large cliffs or rock walls, and although there are some deep valleys, they are not especially precipitous.

The vascular flora numbers around 1055 species (Snogerup *et al.*, 2006). Notable species include a white peony *Paeonia mascula* subsp. *hellenica*, a snowdrop *Galanthus ikariae*, and a purple-black fritillary *Fritillaria ehrhartii*, the latter being widespread on the island.

Habitats for bryophytes

Earthy banks. Pockets of bare stabilised soil that remain moist during winter are often rich in seasonal ephemerals and summer-dormant species. Such habitats occur on rocky banks and slopes (Fig. 3), on old terraces and terrace-walls, and on banks by paths and tracks. Road cuttings may also have rich growths of bryophytes. Hornworts and thallose liverworts are frequently prominent in such places (Fig. 4), along with numerous, often capsule-bearing acrocarpous mosses. Some of characteristic species of this habitat on Andros are listed in Table 1.

▽Fig. 3. Open, stable earth among rocks, above Paleopoli, habitat for thallose liverworts. T. Blockeel

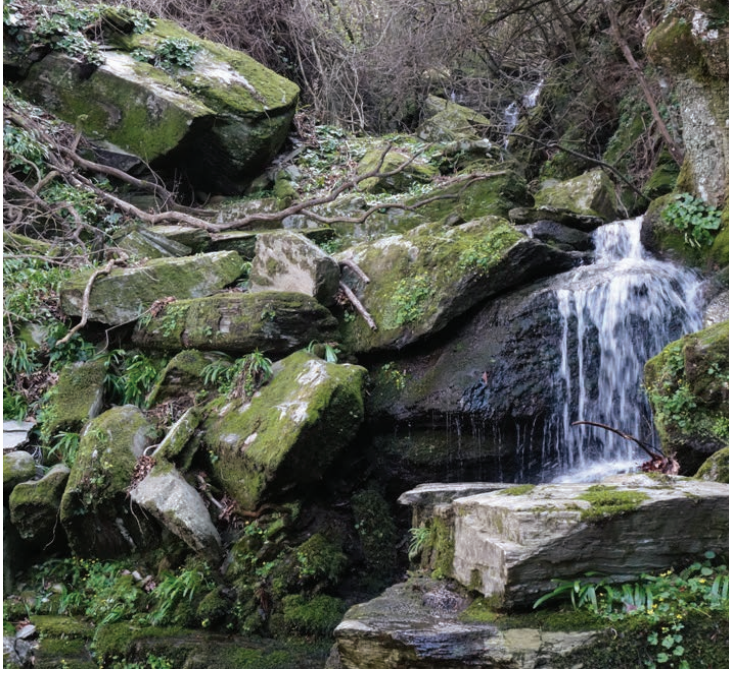
Table 1. Representative species of bare stabilised soil

Hornworts	*Phaeoceros laevis, Phymatoceros bulbiculosus*
Ricciaceae	*Riccia gougetiana, R. marocarpa, R. sommieri, R. nigrella, R. sorocarpa, R. crinita, R. michelii*
Thallose liverworts	*Targionia hypophylla, Mannia androgyna, Oxymitra incrassata, Corsinia corandrina*
Other liverworts	*Fossombronia caespitiformis, Gongylanthus ericetorum*
Funariaceae	*Entosthodon attenuatus, E. obtusus, E. convexus, E. fascicularis, E. duriaei*
Pottiaceae	*Microbryum starckeanum, M. davallianum, Tortula atrovirens, T. cuneifolia, T. solmsii, T. wilsonii, Weissia controversa, W. condensa*
Other acrocarpous mosses	*Pleuridium acuminatum, Cheilothela chloropus, Epipterygium tozeri, Bartramia aprica* (=*B. stricta*)

Stream valleys. Some of the larger stream valleys have running water for all or most of the year, and shade is provided by plane trees and other riparian species, with occasional stands of deciduous oak. Rock outcrops and boulders are frequent. Because of the shade and relatively high humidity a higher proportion of leafy liverworts and pleurocarpous mosses occurs in this habitat. *Mesoptychia* (*Leiocolea*) *turbinata*, *Fissidens taxifolius*, *Trichostomum brachydontium* and *Microeurhynchium pumilum* grow on soil, and *Fossombronia angulosa* is frequent in earthy rock crevices. *Kindbergia praelonga* and *Plagiomnium undulatum* occur in the most humid sites. Shaded rock surfaces often have mats of *Scorpiurium circinatum* and *Rhynchostegiella tubulosa* (this recently described species (Patiño *et al*., 2017) has an almost smooth seta, acuminate leaves and the nerve not normally extending much above mid-leaf). Liverworts on moist rocks include *Lejeunea cavifolia* and, rarely, *Porella cordaeana* and *Radula lindenbergiana*. Drier and lightly shaded rocks are often covered by *Nogopterium* (*Pterogonium*) *gracile*, which is common on Andros, as well as *Grimmia laevigata*, *G. lisae*, *G. meridionalis* and occasionally *Tortella nitida*.

△Fig. 4 (top). *Riccia sommieri,* at the site shown in Fig. 3. T. Blockeel

◁Fig. 5 (bottom). One of the larger crags on the high ground on Mt Kouvara. T. Blockeel

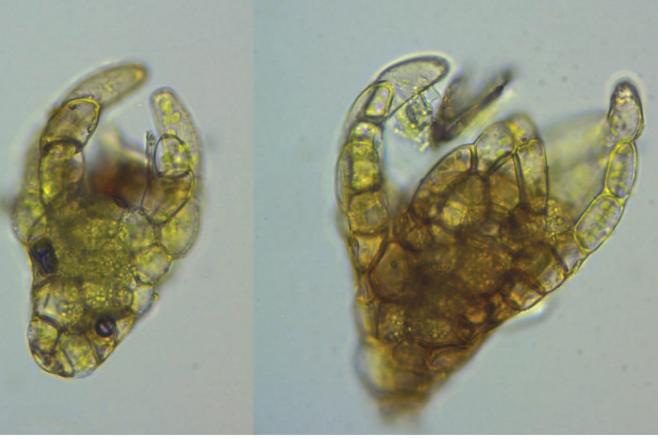


△Fig. 6 (left). *Neckera pumila* on Mt Kouvara. Fig. 7 (right). Habitat of *Asterella africana* near the village of Arni. T. Blockeel

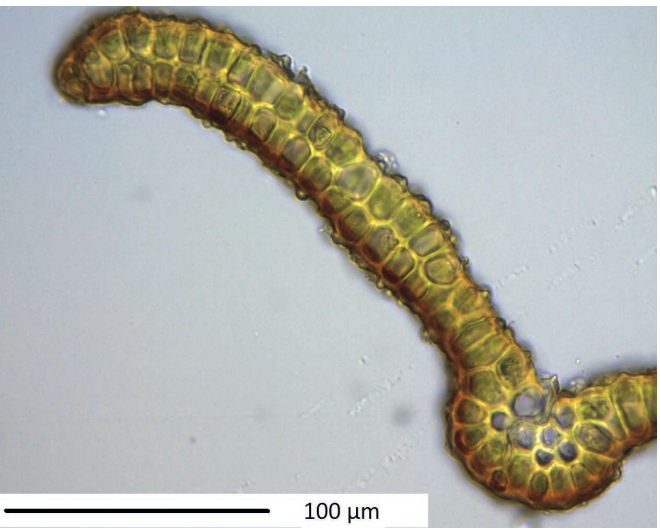
Springs, seepages and stream edges. Wet areas around springs and seepages are mostly of small extent. They are often picked out in season by beds of primroses *Primula vulgaris* subsp. *rubra*. Bryophytes include *Calliergonella cuspidata*, *Bryum pseudotriquetrum* and *Philonotis fontana*. *Bryum gemmiparum* and *B. alpinum* occur where water seeps over rocks, and *Pellia endiviifolia* occurs on wet cliffs. Few of the streams on Andros are permanent and consequently there are few aquatic bryophytes. *Cinclidotus riparius* is one such but it appears to be very rare. Others include *Fontinalis antipyretica* and *Rhynchostegium riparioides*. *Chiloscyphus polyanthos* and *Oxyrrhynchium hians* are found on stones and wet ground at the edges of streams, *Rhynchostegiella teneriffae* on wet rocks (rarely), and *Scorpiurium deflexifolium* on rocks and tree roots. Wet ground by seasonal streams is a habitat for *Archidium alternifolium*.

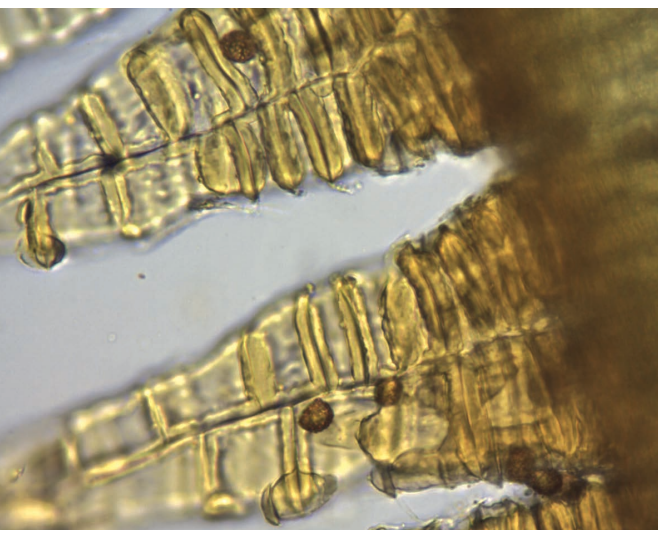
Crags, boulders and stony ground at higher altitudes. Though exposed, the higher hills on Andros are tempered by altitude and at times by cloud cover. Crags and stony ground (Fig. 5) have some characteristic thermophilous bryophytes, such as *Scapania compacta*, *Grimmia decipiens* and *Homalothecium aureum*, but also species with weaker Mediterranean affinities, notably *Cynodontium bruntonii*, *Dicranum scoparium*, *Isothecium myosuroides*, *Pseudotaxiphyllum elegans* and *Racomitrium elongatum*. The presence of *Pseudotaxiphyllum* was unexpected, as *P. elegans* is otherwise known from Greece only from three sites on the northern mainland. It was found sparsely on Andros, in a recess on a crag, but with characteristic axillary branchlets. *Antitrichia curtipendula* is also present, sometimes creeping abundantly through low shrubs. *Frullania tamarisci* occurs on rock faces but also extends to lower altitudes.

Epiphytes. At lower altitudes epiphytes are largely confined to sheltered valleys, where species include *Frullania dilatata*, *Orthotrichum diaphanum*, *O. lyellii*, *O. tenellum*, *Habrodon perpusillus*, *Homalothecium meridionale* and *Leucodon sciuroides*. In the thorn-tree thickets on high ground there are somewhat richer communities. Notable is *Neckera pumila* (Fig. 6), which is frequent on Mt Kouvara and occasionally forms luxuriant patches, presumably benefitting from cloud-cover in season. Other epiphytes are in smaller quantity: *Metzgeria furcata*, *Radula complanata*, *Dicranoweisia cirrata*, *Orthotrichum striatum*, *O. scanicum* and *Zygodon rupestris*.



△Fig. 8 (left). Bulibils of *Bryum gemmiferum*, from Blockeel 45/237. T. Blockeel. △Fig. 9 (right). *Campylopus brevipilus* on Mt Kourvara. T. Blockeel.





△Fig. 10 (above). Leaf section of *Orthotrichum bistratosum*, showing largely bistratose lamina, from Blockeel 45/156. △Fig. 11 (below). Peristome teeth of *Orthotrichum bistratosum*, from Blockeel 45/156. T. Blockeel.

Results

A full summary of the species recorded is shown in Appendix 1. Table 2 shows the total number of taxa:

Table 2. Counts of taxa recorded by the author on Andros

Hornworts	2
Liverworts – complex thalloid	17
Liverworts – simple thalloid & leafy	16
Mosses – acrocarps	88
Mosses – pleurocarps	28
Total	**151**

Two of the recorded species, *Tortula freibergii* and *Bryum gemmiferum*, are new to Greece. Fuller details of these and three other noteworthy records are given below.

Asterella africana: Andros: steep gully SW of Arni, 37°50'52"N, 24°50'15"E, ca 570m alt., on wet rocks in steep wooded stream gully, 20 March 2016, TLB 45/203, *conf.* D.G. Long; valley south of Remata, 37°51'19"N, 24°50'05"E, ca 280 m alt., on shaded rock face in wooded stream gully, 23 March 2016, TLB 56/266. This species was recently found in western Crete (Blockeel, 2012), at the time a substantial eastwards extension of its geographical range. Its habitat on Andros is shown in Figure 7. The new records suggest that it may be an under-recorded species. It is easily overlooked as *Reboulia hemisphaerica*.

Bryum gemmiferum: Andros: valley south-west of Vourkoti, 37°51'13"N, 24°52'44"E, ca 700 m alt., on soft inclined rock surface at edge of stream, 22 March 2016, TLB 45/237. *B. gemmiferum* has not been reported previously from Greece, but is doubtless under-recorded. Axillary bulbils from the Andros plants are illustrated in Figure 8.

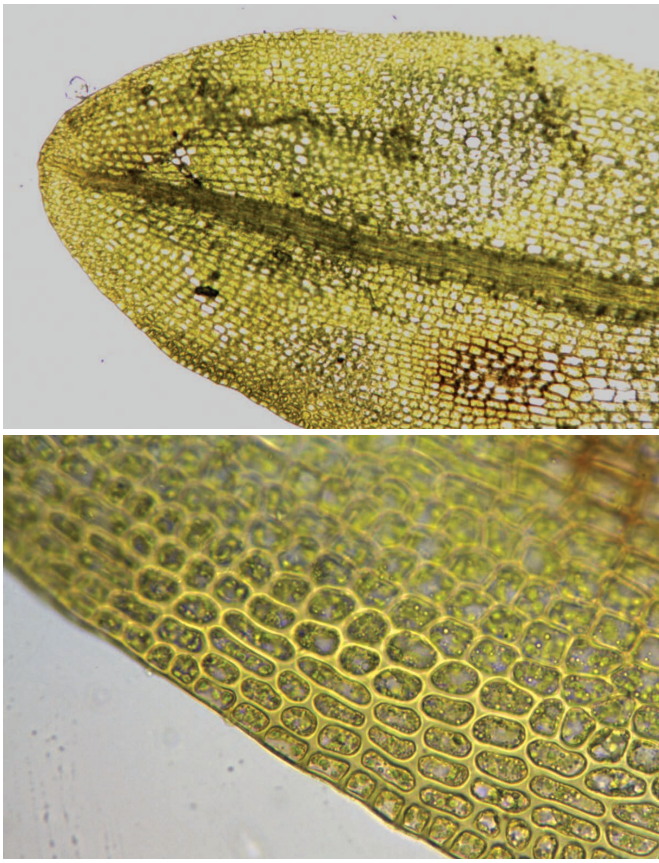
Campylopus brevipilus: Andros: Mt Kouvara, above Arni, 37°50'51"N, 24°51'07"E, ca 940 m alt., on exposed soil among roots of low shrub, 23 March 2016, TLB 45/248. The specimen from Andros is very close morphologically to material recently found on the island of Lesbos, differing only in its poorly developed hair-points. Ventral stereids are present in the nerve. The record from Lesbos is described and discussed in detail by Blockeel & Nieuwkoop (2016). Figure 9 shows the species *in situ* on Andros. Before its discovery in the Aegean area, its easternmost localities were in N Italy and the island of Pantelleria near Sicily.

Orthotrichum bistratosum: Andros: above Arni, near the chapel of the Panagia, 37°51'24"N, 24°51'25"E, ca 830 m alt., on schist rock on exposed hillside, 20 March 2016, TLB 45/156. This is a segregate species of the *Orthotrichum cupulatum* group, recognised by its bistratose leaves and thickened cross-walls (trabeculae) of the outer peristome teeth (Figures 10 and 11). It has recently been reported from mainland Greece for the first time by Kiebacher & Lüth (2016).

Tortula freibergii: Andros: valley south-west of Vourkoti, 37°51'21"N, 24°52'59"E, ca 660 m alt., on small boulder at edge of stream, 22 March 2016, TLB 45/235. *T. freibergii* has a fragmented distribution is western Europe and its easternmost known localities were previously in Italy and Sicily. Morphologically it can show some introgression with *T. solmsii*, but the Greek specimen has the classic characters of *T. freibergii*: leaves with rounded apices and nerve ceasing below the apex (Fig. 12), cells of leaf lamina smooth, and leaf margins with an ill-defined border, the outermost row of cells often shorter than the inner (Fig. 13). Its habitat is shown in Figure 14.

Acknowledgements

My thanks are due to David Long and Jan Kučera for confirming the identities of *Asterella africana* and *Didymodon sicculus* respectively.



△Fig. 12, top. Upper part of leaf of *Tortula freibergii,* from Blockeel 45/235. Fig. 13, bottom. Marginal leaf cells of *Tortula freibergii*, from Blockeel 45/235. T. Blockeel

△Fig. 14. Habitat of *Tortula freibergii* near Vourkoti. Tom Blockeel

References

Blockeel, T. L. (2012). Notes on the bryophytes of the schistose valleys of western Crete, including *Asterella africana* new to Greece, and an assessment of the conservation status of *Rhamphidium purpuratum* and *Jungermannia handelii*. *Journal of Bryology* 34: 292–296.

Blockeel, T. L. (2016). The mosses *Aschisma carniolicum*, *Campylostelium strictum* and *Timmiella flexiseta* on the Eastern Aegean Islands, new to Greece, and a second locality for *Syntrichia latifolia*. *Herzogia* 29: 52–58.

Blockeel, T. L. & Nieuwkoop, J. A. W. (2016). The bryophyte flora of Lesbos, Greece. *Herzogia* 29: 1–34.

Dimopoulos, P., Raus, Th., Bergmeier, E., Constantinidis, Th., Iatrou, G., Kokkini, S., Strid, A. & Tzanoudakis, D. (2013). *Vascular plants of Greece: An annotated checklist*. Berlin: Botanic Garden and Botanical Museum Berlin-Dahlem, and Athens: Hellenic Botanical Society.

Düll, R. (2014). *A survey of the bryophytes known from the Aegean islands*. Jena: Weissdorn-Verlag.

Hodgetts, N. G. (2015). *Checklist and country status of European bryophytes – towards a new Red List for Europe*. Irish Wildlife Manuals 84. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Hugonnot, V. (2010.) Towards an improved understanding of the taxonomy of *Riccia ciliata* Hoffm. (Marchantiopsida: Ricciaceae). *Journal of Bryology* 32: 300–303.

Kiebacher, T. & & Lüth, M. (2016). *Orthotrichum bistratosum* (Schiffn.) J.Guerra [new to Greece]. In: L.T. Ellis, ed. New national and regional bryophyte records, 49. *Journal of Bryology*, 38: 334.

Müller, F. (2014). *Bartramia aprica* – the correct name for the Mediterranean and western North American species historically recognized as "*Bartramia stricta*". *Herzogia* 27: 211–214.

Patiño J., Hedenäs L., Dirkse G., Ignatov M., Papp B., Müller F., Gonzalez-Mancebo J.M. & Vanderpoorten A. (2017). Species delimitation in the recalcitrant moss genus *Rhynchostegiella* (Brachytheciaceae). *Taxon*, 66: 293-308.

Snogerup, S., Snogerup, B., Stamatiadou, E., Bothmer, R. & v. Gustafsson, M. (2006). Flora and vegetation of Andros, Cyclades, Greece. *Annales Musei Goulandris* 11: 85–270.

Strid, A. & Tan, K. (eds.) (1997). *Flora Hellenica. Vol. 1*. Königstein: Koeltz Scientific Books.

Tom L. Blockeel

9 Ashfurlong Close, Sheffield S17 3NN.
e Tblockeel@aol.com

Appendix 1

The following list itemises all the bryophytes recorded during the visit in March 2016, with the exception of a few specimens that have not been satisfactorily identified. The numbers refer to localities and collections. Localities are numbered 1 to 30 and are described in Table 3. Collection numbers are given in parentheses and refer to specimens in the author's personal herbarium. The number of collections is not an indication of the frequency of individual species. Names follow Hodgetts (2015), except that the genus *Bryum* is retained in a broad sense, and *Bartramia aprica* is used as the correct name for the moss formerly called *B. stricta* in Europe (Müller, 2014).

Liverworts and Hornworts

Asterella africana: 18 (45/203); 29 (45/266)
Cephaloziella divaricata: 17 (45/176)
Chiloscyphus polyanthos: 17 (45/164); 26 (45/234)
Conocephalum conicum s.str.: 3 (45/059)
Corsinia coriandrina: 1 (45/028); 30 (45/267)
Fossombronia angulosa: 5 (45/079); 14 (45/144)
Fossombronia caespitiformis subsp. *caespitiformis*: 4 (45/066); 15 (45/206)
Frullania dilatata: 5 (45/071); 29 (45/262); 29 (45/265)
Frullania tamarisci: 6 (45/094); 17 (45/173)
Gongylanthus ericetorum: 5 (45/076); 5 (45/070)
Lejeunea cavifolia: 6 (45/086); 14 (45/140)
Lophocolea heterophylla: 6 (45/087)
Lunularia cruciata: 6 (45/106)
Mannia androgyna: 1 (45/022)
Mesoptychia turbinata (*Leiocolea turbinata*): 6 (45/093)
Metzgeria furcata: 14 (45/135); 16 (45/162)
Oxymitra incrassata: 2 (45/043)
Pellia endiviifolia: 24 (45/227)
Phaeoceros laevis: 5 (45/069); 25 (45/230)
Phymatoceros bulbiculosus: 6 (45/098); 7 (45/114); 25 (45/230)
Porella cordaeana: 16 (45/187)
Radula complanata: 28 (45/252)
Radula lindenbergiana: 18 (45/198)
Reboulia hemisphaerica: 3 (45/062); 11 (45/128)
Riccia crinita (*Riccia ciliata sensu* Hugonnot, 2010): 22 (45/223)
Riccia crystallina: 10 (45/124)
Riccia gougetiana: 3 (45/063)
Riccia macrocarpa: 22 (45/222)
Riccia michelii: 20 (45/214) [Several other similar *Riccia* specimens were collected varying substantially in size and development of cilia. These have proved to be difficult to name using the existing literature; *R. michelii* belongs to a problematic complex of species whose taxonomy remains uncertain.]
Riccia nigrella: 1 (45/021); 29 (45/257)
Riccia sommieri: 2 (45/042); 2 (45/046)
Riccia sorocarpa: 2 (45/041)
Scapania compacta: 14 (45/141); 17 (45/170)
Sphaerocarpos texanus: 15 (45/190)
Targionia hypophylla s.lat.: 1 (45/016); 1 (45/029); 18 (45/204)

Mosses

Aloina aloides: 15 (45/191)
Antitrichia curtipendula: 17 (45/178); 28 (45/253)
Archidium alternifolium: 2 (45/037)
Barbula convoluta var. *convoluta*: 6 (45/100)
Barbula unguiculata: 15 (45/196)
Bartramia aprica (*B. stricta*, *B. rosamrosiae*): 3 (45/052); 22 (45/218)
Brachythecium rutabulum: 17 (45/185)
Bryum alpinum: 2 (45/038)
Bryum argenteum: 1 (45/017)
Bryum capillare: 5 (45/077)
Bryum donianum: 11 (45/126a); 16 (45/189); 25 (45/232)
Bryum gemmiferum: 10 (45/124); 26 (45/237)
Bryum gemmilucens: 10 (45/124)
Bryum gemmiparum: 16 (45/155)
Bryum pseudotriquetrum: 11 (45/127)
Bryum torquescens: 21 (45/216)
Calliergonella cuspidata: 3 (45/050); 27 (45/240)
Campylopus brevipilus: 28 (45/248)
Ceratodon purpureus: 28 (45/246)
Cheilothela chloropus: 2 (45/047)
Cinclidotus riparius: 14 (45/137)
Cratoneuron filicinum: 3 (45/048)
Cynodontium bruntonii: 28 (45/244); 17 (45/176)
Dialytrichia mucronata: 14 (45/139)
Dicranella howei: 15 (45/193); 6 (45/101 *p.p.*)
Dicranoweisia cirrata: 17 (45/167)
Dicranum scoparium: 17 (45/179)
Didymodon nicholsonii: 16 (45/158)
Didymodon sicculus (det. J Kučera): 10 (45/119)
Didymodon fallax: 4 (45/068); 8 (45/116)
Didymodon insulanus: 3 (45/055); 11 (45/125); 27 (45/242)
Didymodon luridus: 15 (45/148)
Didymodon vinealis: 6 (45/113); 15 (45/195); 30 (45/270)
Entosthodon attenuatus: 2 (45/045b); 5 (45/082); 14 (45/134)
Entosthodon convexus: 5 (45/070); 15 (45/197); 27 (45/243); 30 (45/271)
Entosthodon duriaei: 19 (45/211)
Entosthodon fascicularis: 6 (45/097)
Entosthodon obtusus: 2 (45/045a)
Epipterygium tozeri: 11 (45/126b); 25 (45/231)
Eucladium verticillatum: 16 (45/154); 19 (45/212)
Fabronia pusilla: 2 (45/030)
Fissidens incurvus: 5 (45/081)

▷**Table 3, opposite.** Description of collecting localities. Co-ordinates indicate the approximate start and end points of each site.

Fissidens ovatifolius: 6 (45/101 *p.p.*)
Fissidens taxifolius: 5 (45/080); 6 (45/084)
Fissidens viridulus: 3 (45/053); 19 (45/209)
Fontinalis antipyretica: 26 (45/233)
Funaria hygrometrica: 10 (45/120)
Grimmia decipiens: 17 (45/168); 17 (45/171); 28 (45/247)
Grimmia laevigata: 1 (45/019); 17 (45/183)
Grimmia lisae: 1 (45/018); 5 (45/075); 6 (45/095); 6 (45/111); 17 (45/186); 26 (45/239)
Grimmia meridionalis: 6 (45/112)
Grimmia pulvinata: 3 (45/054)
Gymnostomum calcareum (incl. *G. lanceolatum*): 9 (45/117); 19 (45/213)
Gymnostomum viridulum: 4 (45/067); 15 (45/205)
Habrodon perpusillus: 14 (45/145); 29 (45/258)
Homalothecium aureum: 16 (45/157); 17 (45/184); 28 (45/250)
Homalothecium meridionale: 3 (45/058) [Other specimens lacking sporophytes could only be referred to *H. sericeum* s.lat.: 6 (45/089); 16 (45/152)]
Hypnum cupressiforme: 6 (45/096); 17 (45/174)
Isothecium myosuroides: 17 (45/177)
Kindbergia praelonga: 6 (45/092)
Leptodon smithii: 14 (45/146)
Leucodon sciuroides: 6 (45/099)
Microbryum davallianum: 4 (45/065)
Microbryum starckeanum: 10 (45/123); 19 (45/207)
Microeurhynchium pumilum: 6 (45/083); 14 (45/136)
Neckera pumila: 16 (45/160); 28 (45/251)
Nogopterium (*Pterogonium*) *gracile*: 2 (45/033)
Orthotrichum affine: 18 (45/200)
Orthotrichum bistratosum: 16 (45/156)
Orthotrichum diaphanum: 2 (45/036); 5 (45/072)
Orthotrichum lyellii: 6 (45/090); 16 (45/161)
Orthotrichum rupestre: 15 (45/149)
Orthotrichum scanicum: 17 (45/165)
Orthotrichum striatum: 16 (45/163)
Orthotrichum tenellum: 6 (45/088); 22 (45/219)
Oxyrrhynchium hians: 12 (45/131); 24 (45/226)
Phascum cuspidatum var. *piliferum*: 2 (45/034)
Philonotis fontana: 28 (45/249)
Plagiomnium undulatum: 12 (45/130); 18 (45/201)
Plagiothecium nemorale: 17 (45/172)
Pleuridium acuminatum: 5 (45/078); 24 (45/229)
Pogonatum aloides: 17 (45/169)
Pohlia melanodon: 10 (45/121); 24 (45/228)
Polytrichum juniperinum: 13 (45/147)
Polytrichum piliferum: 17 (45/180)
Pseudotaxiphyllum elegans: 28 (45/245)
Racomitrium elongatum: 28 (45/254)
Rhynchostegiella tubulosa Patiño & Hedenäs: 1 (45/024); 6 (45/108); 22 (45/221)
Rhynchostegiella teneriffae: 3 (45/060)
Rhynchostegium riparioides: 3 (45/061)
Scleropodium touretii: 3 (45/057)
Scorpiurium circinatum: 2 (45/032); 6 (45/102); 18 (45/202); 29 (45/264)
Scorpiurium deflexifolium: 6 (45/107); 14 (45/138)
Scorpiurium sendtneri: 29 (45/261)
Syntrichia princeps: 16 (45/153)
Syntrichia laevipila: 5 (45/073); 29 (45/260)
Syntrichia ruralis (incl. *S. calcicola*): 16 (45/159); 17 (45/181)
Thamnobryum alopecurum: 16 (45/188); 17 (45/175)
Timmiella barbuloides: 19 (45/210); 29 (45/263)
Tortella flavovirens: 21 (45/215)
Tortella nitida: 6 (45/110); 14 (45/143); 16 (45/150)
Tortella (*Pleurochaete*) *squarrosa*: 6 (45/109); 16 (45/151)
Tortula atrovirens: 1 (45/020); 30 (45/268)
Tortula canescens: 22 (45/217)
Tortula caucasica (*T. modica*): 10 (45/122)
Tortula cuneifolia: 1 (45/027); 15 (45/194)
Tortula freibergii: 26 (45/235)
Tortula marginata: 19 (45/208); 22 (45/220)
Tortula muralis: 1 (45/023); 1 (45/026); 26 (45/238)
Tortula solmsii: 23 (45/225); 29 (45/256); 29 (45/259b)
Tortula wilsonii: 19 (45/207)
Trichostomum crispulum: 2 (45/040); 14 (45/142)
Trichostomum brachydontium: 2 (45/035); 6 (45/085); 11 (45/129); 27 (45/241)
Weissia condensa: 6 (45/104); 27 (45/242); 29 (45/259a) [these specimens are referred to *W. condensa* but are somewhat intermediate between this species and *W. brachycarpa*, with spores mostly 16-18 µm and costa mostly 55-70 µm wide]
Weissia controversa: 1 (45/025); 15 (45/192); 30 (45/269)
Zygodon rupestris s.str.: 5 (45/074); 6 (45/105); 17 (45/166)

Site No	Locality Detail	Habitat
1	Track SE and SSE of Ano Aprovatou, 37°49'54"N, 24°48'58"E – 37°49'55"N, 24°48'58"E, 350–410 m	rocky banks and old terraces by path
2	SE of Ano Aprovatou, 37°49'41"N, 24°49'46"E – 37°49'37"N, 24°50'06"E, 410–570 m	steep rocky slope with streams and rivulets; Acer sempervirens and *Quercus coccifera* woodland
3	SE of Ano Aprovatou, above Paleopoli, 37°49'28"N, 24°50'11"E – 37°49'32"N, 24°50'15"E, 510–570 m	stream gullies and slopes with schist rocks
4	Frousei, SW of Palestou, 37°55'45"N, 24°44'14"E – 37°55'49"N, 24°44'16"E, ca 290 m	roadside banks
5	Near Agios Stathis chapel, Frousei, SW of Palestou, 37°55'53"N, 24°44'46"E – 37°55'48"N, 24°44'50"E, 250–275 m	banks and streamside in small valley with Platanus orientalis
6	Frousei, near Palestou, 37°55'55"N, 24°44'55"E – 37°56'37"N, 24°45'51"E, 150–240 m	rocky stream valley and old terraces, with *Platanus orientalis* and *Nerium oleander*
7	Near Kato Varidi, 37°56'51"N, 24°45'49"E, ca 135 m	stony bank by path in stream valley
8	Near Palestou, 37°56'46"N, 24°45'06"E, ca 175 m	road verge
9	Frousei, SW of Palestou, 37°56'06"N, 24°44'25"E, ca 305 m	roadside bank
10	Vori Bay, 37°54'01"N, 24°52'15"E – 37°54'01"N, 24°52'34"E, 10–20 m	alder woodland, marsh and disturbed ground in coastal bay
11	Near Vourkoti, 37°51'24"N, 24°53'09"E, ca 670 m	wet schist rock bank by roadside in upland valley
12	Strapouries, 37°50'09"N, 24°54'18"E – 37°50'09"N, 24°54'17"E, ca 360–370 m	spring and water channel in village
13	Above Strapouries, on route to Evrouses, 37°50'15"N, 24°54'09"E – 37°50'24"N, 24°54'07"E, ca 460–480 m	stony fields by path
14	Evrouses valley, SW of Apikia, 37°50'26"N, 24°54'03"E – 37°50'23"N, 24°53'43"E, 440–480 m	wooded stream valley with *Platanus orientalis* and *Quercus pubescens*
15	Arni village, 37°51'25"N, 24°50'38"E – 37°51'25"N, 24°50'33"E, 450–510 m	paths and roadside banks in village
16	Above Arni, near the chapel of the Panagia, 37°51'29"N, 24°51'22"E – 37°51'10"N, 24°51'20"E, 790–850 m	open ground with scattered rocks, stream and thorn thickets
17	Mt Kouvara, above Arni, 37°51'09"N, 24°51'29"E – 37°51'06"N, 24°51'15"E, 820–950 m	open ground with rocks, crags and thorn thickets
18	Gullies SW of Arni, 37°50'53"N, 24°50'18"E – 37°50'52"N, 24°50'15"E, 550–570 m	steep rocky stream gullies with trees
19	Piso Meria and vicinity, 37°44'38"N, 24°55'34"E – 37°44'27"N, 24°54'46"E, ca 250–270 m	rocky banks and terrace walls by path
20	By track to monastery of Panagia Tromarchiani, SW ofPiso Meria, 37°44'13"N, 24°54'32"E, ca 260 m	phrygana on rocky bank
21	Korthi Bay, 37°45'59"N, 24°57'16"E – 37°45'58"N, 24°57'15"E, ca 15 m	sandy coastal slope
22	Dipotamata ravine, SW of Syneti, 37°48'12"N, 24°56'11"E – 37°47'57"N, 24°56'18"E, 310–360 m	deep stream valley with *Platanus orientalis*; open rocky banks
23	Above and NW of Kochilos, 37°47'36"N, 24°56'17"E, ca 460 m	road cutting
24	South and SW of Mesa Vouni, 37°47'07"N, 24°55'14"E – 37°47'35"N, 24°55'45"E, 480–540 m	wet ground by stream under *Salix*; old terrace walls
25	West of Exo Vouni, 37°47'40"N, 24°55'33"E – 37°47'38"N, 24°55'37"E, 480–490 m	steep roadside bank
26	Valley south-west of Vourkoti, 37°51'23"N, 24°53'03"E – 37°51'17"N, 24°52'50"E, 660–690 m	upland stream valley with open rocky banks
27	Above Arni, near the chapel of the Panagia, 37°51'11"N, 24°51'22"E – 37°51'18"N, 24°51'27"E, 840–860 m	upland turfy bank by track
28	Mt Kouvara, above Arni, 37°50'54"N, 24°51'15"E – 37°50'26"N, 24°50'31"E, 910–950 m	open ground with rocks, low crags, seepages and thorn thickets
29	Valley south of Remata, 37°51'40"N, 24°50'10"E – 37°51'19"N, 24°50'05"E, 220–300 m	wooded stream valley with *Platanus orientalis* and *Quercus pubescens;* trackside banks
30	Ammolochos, 37°55'51"N, 24°46'22"E – 37°55'55"N, 24°46'11"E, 410–500 m	roadside bank