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NEW RECORDS OF BRYOPHYTES FROM CRETE

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A field study led to maquis and phrygana stands of the Irakleion region in Crete revealed 66 bryophyte taxa (12 hepatics and 54 mosses). Of these records one hepatic and four mosses are new to Crete and one moss species is new to Greece. Four of these species are included in the Red Data Book of European Bryophytes (ECCB 1995); three are in the rare (R) and one is in the insufficiently known (K) category. Records of additional rare (1) and insufficiently known (1) taxa for Europe are also provided.

Key words: bryophytes, Crete, maquis

INTRODUCTION

In the spring of 2001 a close to four-week field study was carried out in Crete in maquis and phrygana stands to compare the bryophyte and lichen vegetation of burnt, grazed and seminatural habitats. The floristical results with some new and interesting bryophyte records are published in the paper. According to DÜLL's (1995) checklist of Greek bryophytes, the Cretan bryoflora includes 4 hornworts, 71 liverworts and 248 mosses. Further data of the bryoflora of the island are presented in TURLAND and WILSON (1995) and WERNER (1998).

SITES INVESTIGATED

1. Crete, Irakleion region, Mt Giouchtas at Ano Archanes village; maquis and phrygana on the southeastern-eastern slope of the hill, limestone area, N 35°13'36.1", E 25°08'29.5", 670–740 m a. s. l., 07., 08. and 10.04.2001.

2. Crete, Irakleion region, at Metohi village, southeast of Episkopi, between Sgourokefali and Hohlakies; maquis and phrygana on a northwestern slope, limestone area, N 35°14'27.4", E 25°16'32.8", 450–470 m a. s. l., 11. and 12.04.2001.

3. Crete, Irakleion region, Ida Mts, at Tylissos village; maquis on the eastern slope of Mt Stroumboulos, schist mixed with limestone, N 35°19'51.4", E 25°00'32.1", 475–490 m a. s. l., 19. and 20.04.2001.

4. Crete, Irakleion region, Ida Mts, between Fodele and Sisses; maquis on a north-northeastern slope, schistose area, N 35°23'15.3", E 24°56'07.7", 140 m a. s. l., 23. and 24.04.2001.

5. Crete, Irakleion region, Ida Mts, after Ajia Pelagia village at the intersection to Achlada; maquis on a northeastern slope, schistose area, N 35°24'22.1", 24°59'24.4", 230 m a. s. l., 25.04.2001.

6. Crete, Irakleion region, Ida Mts, Ano Asites; maquis and phrygana on a northeast-eastern slope, sandstone area, N 35°10'53.8", E 24°58'52.5", 710–785 m a. s. l., 22. and 26.04.2001.

RESULTS

A total of 66 bryophyte taxa (12 hepatics and 54 mosses) were collected in the sites investigated (see Appendix). One hepatic and four mosses are proved to be new to Crete. One moss species is new to Greece. Four of the 66 taxa are included in the Red Data Book of European Bryophytes (ECCB 1995); three are in the rare (R) and one is in the insufficiently known (K) category. Records of additional rare (1) and insufficiently known (1) taxa for Europe are also provided. The specimens are deposited in the Bryophyte Herbarium of the Hungarian Natural History Museum (BP).

Hepaticae

Fossombronia husnotii Corb. – Sites 1, 2, 4, 5. – It is an oceanic-Mediterranean species. This hepatic is new to Crete. It is known from Greece from the Aegean Islands and northeastern Greece (DÜLL 1995). It seems to be not rare in the maquis and phrygana stands in Crete, it was found in several sites. Usually it is mixed in the patches of other bryophytes including *Trichostomum brachydontium, Cephaloziella baumgartneri* and *Southbya tophacea.*

Musci

Bryum ruderale Crundw. et Nyh. – Site 6. – Being a suboceanic element (DÜLL 1985), this species is new to Crete. It is known from Greece only from the Aegean Islands (DÜLL 1995). One small patch of it was found on bare soil surface in a burnt phrygana stand.

Ephemerum recurvifolium (Dicks.) Boul. – Site 2. – This sub-Mediterranean species is new to Greece, but also known from the Balkan (former Yugoslavia, Bulgaria, Romania) and Turkey. It is included in the Red Data Book of European Bryophytes (ECCB 1995) in the rare (R) category. A few individuals were spotted scattered among other bryophytes such as *Trichostomum brachydontium, Fossombronia caespitiformis, Dicranella howei.*

Ephemerum sessile (Bruch) C. Muell. – Site 5. – This suboceanic element is new to Crete. It is known from Greece from Patmos and the Delos islands (DÜLL 1995) and is included in the Red Data Book of European Bryophytes (ECCB 1995) in the rare (R) category. Scattered individuals were found on bare soil surface and

among other bryophytes including *Scleropodium touretii, Trichostomum brachydontium, Didymodon vinealis, Bryum caespiticium.*

Fissidens algarvicus Solms – Site 4. – Known as an oceanic-Mediterranean species, it is new to Crete. Other known localities in Greece are in Rhodos and northeastern Greece (DÜLL 1995). It is included in the Red Data Book of European Bryophytes (ECCB 1995) as insufficiently known species (K). Scattered individuals were found among *Trichostomum brachydontium* and it was accompanied by other *Fissidens* species, such as *F. taxifolius, F. bryoides.*

Fissidens ovatifolius Ruthe ex Limpr. – Site 4. – It is a Mediterranean-suboceanic species, known from Greece from Crete and the Pindos Mts. It is included in the Red Data Book of European Bryophytes (ECCB 1995) in the rare (R) category. Few individuals of this species were found accompanied by *Rhynchostegiella tenella* var. *litorea* and *Scleropodium touretii.*

Funaria pulchella Philib. – Site 3. – Being an oceanic-Mediterranean-montane species, this moss is new to Crete. Records are known from Greece from Rhodos, the Ionian Islands and Sterea Ellas (DÜLL 1995). A few individuals were found associated with *Trichostomum brachydontium, Dicranella howei, Pottia commutata.*

Gyroweisia reflexa (Brid.) Schimp. – Site 3. – It is an oceanic-Mediterranean species having several records from all over Greece. It is included in the Red Data Book of European Bryophytes (ECCB 1995) as insufficiently known species (K). Several patches were found in a maquis stand.

Weissia levieri (Limpr.) Kindb. – Sites 1, 2, 6. – This is an oceanic-Mediterranean species, which turned to be new to Crete. It is known from Greece only from the Pindos Mts and northeastern Greece (DÜLL 1995). It is included in the Red Data Book of European Bryophytes (ECCB 1995) in the rare (R) category. A few patches of the species were found at three sites. It forms small (1–4 cm^2), dense patches.

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Appendix. List of the taxa found in sites 1–6.

Species/Sites	1	2	3	4	5	6
Hepaticae						
Cephaloziella baumgartneri Schiffn.	1	1	1	0	1	1
Cephaloziella divaricata (Sm.) Schiffn.	0	0	0	1	0	0
Fossombronia angulosa (Dicks.) Raddi	0	1	0	1	1	0
Fossombronia caespitiformis De Not.	0	1	1	1	0	0
Fossombronia husnotii Corb.	1	1	0	1	1	0
Lunularia cruciata (L.) Dum.	1	0	0	0	0	0
Phaeoceros laevis (L.) Prosk.	0	0	0	1	0	0
Riccia bicarinata Hoffm.	1	1	0	0	0	0
Riccia ciliata Hoffm.	0	0	1	0	1	0
Southbya nigrella (De Not.) Henriquez	0	0	1	0	0	1
Southbya tophacea (Spruce) Spruce	0	1	0	1	1	0
Targionia loorberiana K. Müll.	1	0	0	1	0	0
Musci						
Acaulon muticum (Hedw.) C. Muell.	0	0	1	0	0	0
Acaulon triquetrum (Spruce) C. Muell.	1	0	1	0	0	0
Aloina aloides (Schultz) Kindb.	1	1	1	1	0	0
Aloina sp.	1	1	0	0	1	1
Barbula unguiculata Hedw.	1	1	1	1	0	1
Bryum bornholmense Winkelmann et Ruthe	1	0	0	0	0	0
Bryum caespiticium Hedw.	1	1	1	1	1	1
Bryum capillare Hedw.	1	1	1	1	1	1
Bryum radiculosum Brid.	1	0	0	0	1	0
Bryum ruderale Crundw. et Nyh.	0	0	0	0	0	1
Bryum sp.	1	1	0	1	0	1
Cheilothela chloropus (Brid.) Lindb.	1	1	1	1	1	0
Crossidium crassinerve (De Not.) Jur.	0	0	1	0	0	0
Dicranella howei Ren. et Card.	1	1	1	1	1	1
Didymodon fallax (Hedw.) Zander	0	0	0	0	0	1
Didymodon luridus Hornsch.	0	0	0	1	1	1
Didymodon vinealis (Brid.) Zander	1	1	1	1	1	1
Encalypta vulgaris Hedw.	0	0	0	0	0	1
Entosthodon attenuatus (Dicks.) Bryhn	0	0	0	1	0	0
Ephemerum recurvifolium (Dicks.) Boul.	0	1	0	0	0	0
Ephemerum sessile (Bruch) C. Muell.	0	0	0	0	1	0
Fissidens algarvicus Solms	0	0	0	1	0	0
Fissidens bryoides Hedw.	0	0	0	1	0	0
Fissidens incurvus Starke ex Roehl.	1	1	1	1	1	1

Appendix (continued)

Species/Sites	1	2	3	4	5	6
Fissidens limbatus Sull. var. *limbatus*	1	1	1	1	0	0
Fissidens limbatus Sull. var. *bambergeri* (Schimp. ex Milde) Duell	1	1	0	1	1	1
Fissidens ovatifolius Ruthe	0	0	0	1	0	0
Fissidens taxifolius Hedw.	0	0	0	1	0	0
Fissidens viridulus (Sw.) Wahlenb.	0	0	0	0	1	0
Funaria hygrometrica Hedw.	0	0	0	1	0	0
Funaria pulchella Philib.	0	0	1	0	0	0
Grimmia pulvinata (Hedw.) Sm.	1	1	0	0	0	1
Gyroweisia reflexa (Brid.) Schimp.	0	0	1	0	0	0
Gyroweisia tenuis (Hedw.) Schimp.	0	0	0	0	1	1
Homalothecium aureum (Lag.) Robins.	1	1	0	0	0	0
Hypnum cupressiforme Hedw.	0	1	0	1	0	1
Phascum cuspidatum Hedw.	0	0	0	0	0	0
Pleurochaete squarrosa (Brid.) Lindb.	0	1	0	0	0	1
Pottia commutata Limpr.	1	1	1	1	0	1
Pottia davalliana (Sm.) C. Jens.	0	0	0	0	1	0
Pseudocrossidium hornschuchianum (K. F. Schultz) Zander	1	1	0	1	0	0
Rhynchostegiella tenella (Dicks.) Limpr. var. *litorea* (De Not.) Rich. et Wallace	0	0	0	1	1	0
Rhynchostegium megapolitanum (Web. et Mohr) B., S. et G.	1	0	0	1	0	0
Scleropodium touretii (Brid.) L. Koch	1	1	1	1	1	1
Tortella flavovirens (Bruch) Broth.	0	0	1	0	0	0
Tortella nitida (Lindb.) Broth.	1	1	1	0	0	0
Tortula atrovirens (Sm.) Lindb.	1	0	0	0	0	0
Tortula muralis Hedw.	1	0	0	0	0	1
Tortula ruralis (Hedw.) Gaertn., Meyer et Scherb. subsp. *ruralis*	0	0	0	0	0	1
Trichostomum brachydontium Bruch	1	1	1	1	1	1
Weissia condensa (Voit) Lindb.	1	1	1	1	1	0
Weissia controversa Hedw.	1	0	0	0	0	0
Weissia levieri (Limpr.) Kindb.	1	1	0	0	0	1
Weissia sp.	0	1	0	0	0	1

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