

New Bryological Data from the Balearic Islands

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Abstract – New Bryological Data from the Balearic Islands. Chorological data on 40 bryophytes from the Balearic Islands are presented. The presence within the Balearic archipelago of the following mosses is reported for the first time: *Didymodon nicholsonii* Culm., *Ditrichum crispatisimum* (Müll.Hal.) Paris, *Neckera besseri* (Lobarz.) Jur., *Orthotrichum rupestre* Schwägr., *O. stramineum* Brid., *Phascum cuspidatum* Hedw. var. *retortifolium* J.Guerra & Ros, *P. piptocarpum* Durieu & Mont., *Pottia pallida* Lindb., *Pseudoleskea incurvata* (Hedw.) Loeske, *Schistidium elegantulum* H.H.Blom subsp. *elegantulum* and *Weissia squarrosa* (Nees & Hornsch.) Müll. Hal. Additionally, 22 taxa are new records for some of the islands, with 7 being amended.

Mosses / floristics / chorology / Balearic Islands

Resumen – Se aportan datos corológicos para 40 briófitos de las Islas Baleares. Los siguientes musgos constituyen una novedad para el archipiélago balear: *Didymodon nicholsonii* Culm., *Ditrichum crispatisimum* (Müll.Hal.) Paris, *Neckera besseri* (Lobarz.) Jur., *Orthotrichum rupestre* Schwägr., *O. stramineum* Brid., *Phascum cuspidatum* Hedw. var. *retortifolium* J.Guerra & Ros, *P. piptocarpum* Durieu & Mont., *Pottia pallida* Lindb., *Pseudoleskea incurvata* (Hedw.) Loeske, *Schistidium elegantulum* H.H.Blom subsp. *elegantulum* and *Weissia squarrosa* (Nees & Hornsch.) Müll.Hal. Por otra parte, 22 taxones son nuevas citas para alguna de las islas y 7 corresponden a correcciones.

Musgos / florística / corología / Islas Baleares

INTRODUCTION

Floristic knowledge of the bryophyte flora of the Balearic Islands has been greatly increased since the time of the last check-list (Vives, 1976b), due to several floristic additions (Vives, 1979; Cros, 1982; Cros & Rosselló, 1984; Casas & Brugués, 1983; Rosselló, 1981, 1984, 1985, 1986, 1987; Blockeel & Crundwell, 1987; Rita & Rosselló, 1989; Puche & Rosselló, 1993; Werner, 1995; Stern, 1997; Sáez *et al.*, 1998; Cano *et al.*, 2001). Despite these contributions, the study of unexplored areas may be necessary in order to add new findings and to refine insular distributions for many overlooked species. We present the main chorological results based on the revision of herbarium specimens (principally BCB), as well as exten-

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sive fieldwork throughout all of the Balearic Islands. Eleven taxa are new records for the whole archipelago (their names are printed in bold face italics and denoted with a double asterisk) and another 22 taxa are unrecorded in certain islands (name in bold face italics denoted with a single asterisk). Taxa that should be excluded from the Balearic Islands are written in italics (denoted with a double asterisk for exclusion from the whole archipelago, or with a single when referring only to certain islands). We have followed an alphabetical sequence for genera and species. Localities are specified with a 1 km or 10 km grid UTM reference. Comments, mainly chorological, are presented for certain taxa. In addition, we usually indicate the first record of the species for each island. Nomenclature follows Casas (1991) and authors' names have been abbreviated according to Brummit & Powell (1992).

RESULTS

**Aloina rigida* (Hedw.) Limpr.

Menorca: Cala Galdana, 31SEE82, 10 m, on calcareous soil, 1974, *Koppe* (BCB 49047). — Previously recorded in Mallorca (*Koppe*, 1965) and Eivissa (Casas, 1966).

**Barbula convoluta* Hedw. var. *sardoa* Schimp.

Cabrera: L'Enciola, 31SDD9331, 70 m, on sandy calcareous soil, 2000, *Sáez* (BCB 51043). — This variety was previously known for Mallorca (Nicholson, 1907), Menorca (Casas & Brugués, 1983) and Eivissa (Casas, 1966).

**Bryum alpinum* With.

Menorca: Binisarmenya, Maó, 31SFE01, 50 m, on acid sandstone, 1952, *Montserrat* (BCB 48139). — Previously recorded in Mallorca (Rosselló, 1985).

**Bryum radiculosum* Brid.

Menorca: Cap de Cavalleria, 31TEE93, on calcareous soil, 1978, *Álvarez* (BCB 825) (Casas & Brugués, 1983 *sub B. caespiticium* Hedw.). **Formentera:** Cap de Barbaria, 31SCC68, 100 m, on sandy calcareous soil, 1978, *Cros* (BCB 22659). — This species was recorded in Mallorca (Rodríguez, 1875), Eivissa (Blockeel & Crundwell, 1987) and Cabrera (Vives 1976a).

**Cheilothela chloropus* (Brid.) Lindb.

Menorca: Ciutadella 31SEE72, on bare depressed flats flooded in winter, 1951, *Montserrat* (BCB 46536). — Previously recorded in Mallorca (Nicholson, 1907). According to Casas *et al.* (1985) is found dispersed throughout the south and east of the Iberian Peninsula, though rarer in the east, for which only a single locality is known, in Valencia.

**Didymodon acutus* (Brid.) K.Saito

Eivissa: Torrent de l'Escalonada, 31SCD74, on calcareous soil, 1978, *Cros* (BCB 21171). Cala Pou des Lleó, 31SCD72, on calcareous soil, 1978, *Cros* (BCB 21139) (*Cros*, 1982 *sub D. vinealis* (Brid.) Zander). — Reported for Mallorca (Nicholson, 1907) and Menorca (Casas & Brugués, 1983).

**Didymodon luridus* Hornsch. ex Spreng.

Eivissa: Cala sa Caleta, 31SCD5503, 10 m, on calcareous soil, 1978, Cros (BCB 21145). — Previously reported for Mallorca and Menorca (Knoche, 1921).

***Didymodon nicholsonii* Culm.

Mallorca: Lluc, Escorca, 31SDE90, 600 m, 1969 *Koppe* (BCB 49746), *Koppe*, (1965) *sub Barbula sinuosa* (Wils.) Braithw.; Sa Calobra, torrent de Pareis, Escorca, 31SDE81, 5 m, 1994, *Abts* (BCB 49805).

**Didymodon rigidulus* Hedw.

Menorca: Son Carla, 1969, *Koppe* (BCB 49742). — Previously known for Mallorca (*Koppe*, 1965).

***Ditrichum crispatisimum* (Müll.Hal.) Paris

Mallorca: Es Puig Tomir, Escorca, 31SDE9310, 1000 m, on shaded limestone rocks on northern exposures, 1993, *Sáez* (BCB 51773). — Found within the Iberian Peninsula at altitudes over 500 m, on rocks or calcareous soil, often in the same localities as *D. flexicaule* (Schimp.) Hampe; the latter species is found in certain localities in the sierra de Tramuntana in Mallorca (*Rosselló*, 1985).

**Eurhynchium hians* (Hedw.) Sande Lac.

Eivissa: Cala d'Aubarca (BCB 21185) (Cros, 1982) is *Rhynchostegium megapolitanum* (F. Web. & W. Mohr) Schimp. — This species is known for Mallorca only (*Koppe*, 1965).

**Eurhynchium praelongum* (Hedw.) Schimp.

Eivissa: Cala d'Aubarca, (BCB 21177); Torrent de l'Escalonada (BCB 21170) (Cros, 1982); both specimens are, in fact, *E. stokesii*. — At present, this species is known for Mallorca only (Knoche, 1921).

**Eurhynchium stokesii* (Turner) Schimp.

Menorca: Es Parc, Mercadal, 31TEE93, 50 m, on calcareous soil, 1989, *Rosselló* (BCB 36802). — Previously known for Mallorca (Knoche, 1921) and Eivissa (Casas, 1966).

**Fissidens bryoides* Hedw.

Formentera: Far de la Mola, 31SCC78, 100 m, on calcareous soil, 1978, *Cros* (BCB 21094); Pla del Rei, 31SCC67, 55 m, on calcareous soil, 1978, *Cros* (BCB 21104). — This species has been found recently in Mallorca (Cano *et al.*, 2001).

***Fissidens exilis* Hedw.

This species was reported for Formentera by Cros (1982). The voucher specimen: Pla del Rei (BCB 21108) corresponds to *F. viridulus* (Sw.) Wahlenb.

**Fissidens incurvus* Starke ex Röhl

Cabrera: L'Enciola, 31SDD9331, 70 m, on shaded calcareous rocks, 2000, *Sáez*, (BCB 51780). — With this report the species is now known for all the Balearic Islands.

**Fissidens viridulus* (Sw.) Wahlenb.

Menorca: Punta Prima, Sant Lluís 31SFE00, on calcareous soil, 1969, *Koppe* (BCB 50327); Maó, 31SFE01, 1969, *Koppe* (BCB 50329); El Grao, 31SFE02, 1969, *Koppe* (BCB 50328); Fornells 31TEE93, 1969, *Koppe* (BCB 50331). **Formentera:** Pla del Rei, 55 m, 31SCC67, on calcareous soil, 1978, *Cros* (BCB 21108) (Cros, 1982 *sub F. exilis* Hedw.). **Cabrera:** L'Enciola, 31SDD9331, 70 m, on shady calcareous rocks,

2000, Sáez (BCB 51049). — This species was previously known for Mallorca (Nicholson, 1907) and Eivissa (Blockeel & Crundwell, 1987).

**Funariella curviseta* (Schwägr.) Sergio

Cabrera: Sa Bella Mirada, 31SDD9532, 120 m, on shady calcareous soil in scrub, 2000, Sáez (BCB 51775); L'Enciola, 31SDD9331, 70 m, on calcareous soil, 2000 Sáez (BCB 51776). — This species is common in Mallorca (Vives, 1976b) and was also reported for Menorca (Rodríguez, 1875), and for Eivissa (Rosselló, 1987).

**Hypnum cupressiforme* Hedw.

Cabrera: Es Clot des Guix, 31SDD9634, 80 m, on shady calcareous soil in a *Pinus halepensis* wood, 2000, Sáez (BCB 51050). — Rodríguez (1875) reported this species for Mallorca and Menorca, and Cros (1982) for a single locality in Eivissa.

***Neckera bessiari* (Lobarz.) Jur.

Mallorca: Puig Major de son Torrella, Escorca, 31SDE80, 1360 m, on shaded calcareous rocks on northern exposures, 1978, Cros (BCB 51781). — Relatively frequent in the northeast Iberian Peninsula in oak groves, on *Buxus sempervirens* and less commonly on calcareous rocks in humid mountainous zones, at altitudes of between 1000-1500 m (Casas, 1999). The fact of finding this species on rocks in Mallorca may be considered a rarity.

***Orthotrichum rupestre* Schwägr.

Mallorca: Puig Major de Son Torrella, canal del Morro d'en Pelut, Escorca, 31SDE8207, 1270 m, on trunk of *Acer opalus* subsp. *granatense*, 1998, Sáez (herb. Univ. Autónoma Madrid).

***Orthotrichum stramineum* Hornst. ex Brid.

Mallorca: Puig Major de Son Torrella, canal del Morro d'en Pelut, Escorca, 31SDE8207, 1270 m, growing on trunk of *Acer opalus* subsp. *granatense*, 1998, Sáez (herb. Univ. Autónoma Madrid). — This species is rare in the east of the Iberian Peninsula, where it is exclusively located within the mountainous oak groves of Els Ports and Montserrat.

***Phascum cuspidatum* Hedw. var. *retortifolium* J. Guerra & Ros

Mallorca: Cala Millor, 31SED38, 200 m, on sandy calcareous soil, 1971, *Koppe* (BCB 49062). — This variety of *P. cuspidatum* is known in the south of the Iberian Peninsula and Argelia (Guerra *et al.*, 1991), where it grows on dry and stony siliceous soils. The specimen from Mallorca was collected on calcareous soil.

***Phascum piptocarpum* Durieu & Mont.

Formentera: Far de Formentera, 31SCC78, 80 m, on calcareous soil, 1987, Cros (BCB 51305). — Indicated for the first time on the Iberian Peninsula in Granada (Guerra *et al.*, 1991), it has since been found in other localities in the east of the peninsula on saline or chalk-rich soils, sometimes together with *P. curvicolle* Hedw.

***Polytrichum piliferum* Hedw.

This species was erroneously reported for Menorca by Rosselló & Pujadas (1992). The voucher specimen, Es Canum, Rosselló (BCB 50972), corresponds to *Campylopus brevipilus* Bruch ex Schimp. a species that has been recently recorded in a single locality in Menorca (Cros, 2001).

**Pottia crinita* Bruch & Schimp.

Mallorca: Salobrar de Campos, 31SDD95, 5 m, Rosselló (BCB 34691). — The species was previously known for Menorca only (Rodríguez, 1904; voucher specimen not studied).

**Pottia davalliana* (Sm.) C.E.O.Jensen

Formentera: Far de Formentera 31SCC78, 80 m, on calcareous soil, growing with *P. starkeana*, 1987, *Cros* (BCB 22656). **Cabrera:** Sa Bella Mirada, 31SDD9532, 120 m, on shady calcareous soil in scrub, 2000, *Sáez* (BCB 51777). — *Koppe* (1965) and *Blockeel & Crundwell* (1987) reported this species for Mallorca and Eivissa, respectively.

***Pottia pallida* Lindb.

Mallorca: Entre s'Arenal i Can Pastilla, Palma, 31SDD7875, 2 m, on bare depressed clayey flats flooded in winter, 1995, *Sáez* (BCB 53254).

**Pottia recta* (With.) Mitt.

Formentera: Far de Formentera, 31SCC78, 80 m, 1987, *Cros* (BCB 22661). **Cabrera:** L'Enciola, 31SDD9331, 70 m, on sandy calcareous soil in scrub, 2000, *Sáez* (BCB 51054). — Previously reported for Mallorca (*Koppe*, 1965) and Menorca (*Casas & Brugués*, 1983).

***Pseudoleskea incurvata* (Hedw.) Loeske

Mallorca: Es Puig Tomir, Escorca, 31SDE9310, 1050 m, on shady calcareous rocks on northern exposures, 2000, *Sáez* (BCB 51782). — The specimens agree fairly well with *P. incurvata* as defined and keyed in *Lawton* (1957), although the plant size is unusually small.

**Pterygoneurum ovatum* (Hedw.) Dixon

Eivissa: Ses Salines, 31SCD50, 10 m, on bare calcareous soil, 1987, *Cros* (BCB 22634). — This is the second report of the species for the Balearic Islands, after its discovery by *Koppe* (1965) in Mallorca.

**Rhynchostegiella curviseta* (Brid.) Limpr.

Menorca: Biniatrum (BCB 5013); Ferreries (BCB 5014) (*Casas & Brugués*, 1983), these specimens are, in fact, *R. litorea*; the Font Rodones de Dalt collection (BCB 5012, *Casas & Brugués*, 1983), corresponds to *R. tenella* (*Dicks.*) *Limpr.* **Eivissa:** Cala d'Aubarca, 31SCD52, 150 m, 1978 (BCB 21178) (*Cros*, 1982), this specimen is *R. tenella*. **Formentera:** Far de la Mola (BCB 21093) (*Cros*, 1982). This specimen was confused with *R. litorea*. — At present *R. curviseta* is known for Mallorca only (*Nicholson*, 1907).

**Rhynchostegiella litorea* (De Not.) Limpr.

Formentera: Far de la Mola, 31SCC78, 100 m, on shady calcareous soil, 1978, *Cros* (BCB 21093), *Cros* (1982) *sub R. curviseta*. (Brid.) *Limpr.*

With this report, the species is now known for all the Balearic Islands, with the exception of Cabrera.

**Rhynchostegium riparioides* (Hedw.) Cardot

Eivissa: Torrent del Buscastell, 31SCD52, on calcareous rocks, 1918, *Gros* (BCB 31509). — *Nicholson* (1907) and *Rodríguez* (1875) reported this species for Mallorca and Menorca respectively.

***Schistidium elegantulum* H.H.Blom subsp. *elegantulum*

Mallorca: Cala Millor 31SED38, 1971, *Koppe* (BCB 50498); Lluc, Escorca, 31SDE90, 600 m, 1962, *Koppe* (BCB 50497, *Koppe*, 1965 *sub S. apocarpum* (Hedw.) *Bruch & Schimp.* var. *piligerum* De Not.). — After the revision of the Balearic specimens of *S. apocarpum* complex kept at BCB, *Blom* (1996) recognized the following taxa: *S. crassipilum* H.H.Blom, *S. brunescens* *Limpr.* subsp.

brunescens, *S. elegantulum* subsp. *wilsoni* H.H.Blom and *S. singarense* (Schimp.) Laz.

**Scleropodium touretii* (Brid.) L.F.Koch

Cabrera: Es Clot des Guix, 31SDD9634, 70 m, on shady calcareous soil in a *Pinus halepensis* forest, 2000, Sáez (BCB 51778). — With this report the species is now known for all the Balearic Islands.

**Weissia brachycarpa* (Nees & Hornsch.) Jur.

Cabrera: L'Enciola, 31SDD9331, 70 m, on sandy calcareous soil in scrub, 2000, Sáez (BCB 51774). — Recorded in Mallorca (Koppe, 1965) and Menorca (Rodríguez, 1875).

***Weissia rostellata* (Brid.) Lindb.

This species was reported for Menorca by Casas & Brugués (1983). The voucher specimen Fornells (BCB 2881) corresponds to *W. controversa* Hedw.

***Weissia squarrosa* (Nees & Hornsch.) Müll.Hal.

Menorca: Ferreries, 31SEE82, 1978, Brugués (BCB 2880) (Casas & Brugués, 1983 sub *W. hedwigii* Crum).

***Zygodon conoideus* (Dicks.) Hook. & Taylor

This species has been recently reported for northern Mallorca by Stern (1997). The voucher specimens (Mallorca, S'Albufera, between track and canal Sa Siurana, 1994, Stern, herb. Parc Natural Albufera; S'Albufera, Sa Siurana, W of Tower hide, bark of dead *Ulmus*, 1994, Stern, herb. Parc Natural Albufera) are, in fact, *Z. rupestris* Schimp. ex Lorentz.

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