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CONTRIBUTION TO THE LICHEN FLORA OF PORTUGAL. LICHENS FROM SERRA DE S. MAMEDE NATURAL PARK

Beitrag zur Flechtenflora von Portugal. Flechten aus dem Naturpark Serra de S. Mamede

by

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Key words: floristics, lichens, Portugal.
Schlagwörter: Floristik, Flechten, Portugal.

Summary: A floristic study has been carried out on the lichens of Serra de S. Mamede in Central Portugal. A total of 64 localities was investigated. This paper reports a list of 220 species. The lichen flora of the survey area is characterised by several oceanic or suboceanic lichens.

Zusammenfassung: Im Naturpark Serra de S. Mamede wurde an 64 Lokalitäten eine Untersuchung über die Flechtenflora durchgeführt. Der vorliegende Artikel listet 220 Arten auf. Die Flechtenflora des Gebietes zeichnet sich durch das Auftreten von ozeanischen und subozeanischen Flechten aus.

Introduction

After the "golden period" of Portuguese lichenology, with SAMPAIO and COUTINHO in the early part of this century, later followed by TAVARES, only a few studies were carried out, mainly on the Algarve and in the northern part of the country. The aim of this study, carried out in one of the lichenologically least known areas of Portugal, is to contribute to the knowledge of the Portuguese lichen flora. The survey area, a CORINE biotope, is located at 39 30' - 39 05' N and 7 30'- 7 05' E, in the east of central Portugal (Alentejo), along the Spanish border. This natural park has an area of 31750 ha and is the highest mountain range south of the Tagus, with elevation ranging between 350 and 1025 m.

The geological substratum is predominantly granite and schist, with

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quartzite on the outcrops, resembling the back of a pre-historic animal (FEIO & ALMEIDA 1980). Climatically, the area has a humid mesomediterranean climate (DAVEAU 1977; 1985). According to ALCOFORADO (1982) this area can be considered an Atlantic "island" immersed in a mediterranean climatic region, which can be explained by the action of the Serra de S. Mamede as a condensation barrier. Climatically, it differs from the surrounding areas, showing higher humidity and precipitation. A complex physiography and a marked climate diversity have allowed a high floral diversity, ranging from mediterranean to atlantic oak-forest, and a rich and interesting cryptogamic flora, with species endemic to the Iberian Peninsula and several communities of well-developed *Lobarion*, mainly on *Quercus pyrenaica*.

Data and methods

The data for the present study consist of 220 species collected in 64 localities of the natural park, on a great diversity of substrates, including quartzite rocks and the bark of six phorophytes *(Castanea sativa, Olea europaea Quercus pyrenaica, Q. robur, Q. rotundifolia* and *Q. suber)*.

A further data source utilised for ecological and phytogeographic interpretations are the indicator values and phytogegraphic diagnoses proposed by WIRTH (1980). Nomenclature follows NIMIS (1993) and, for the species not included in this work, CLAUZADE & ROUX (1985). All the specimens are preserved in the LISU herbarium.

Floristic list

Acarospora hilaris (DUF.) HUE.
Amandinea punctata (HOFFM.) COPPINS & SCHEID.
Aspicilia caesiocinerea (NYL.) ARNOLD
Aspicilia cinerea (L.) KÖRBER
Aspicilia contorta (HOFFM.) KREMPELH. s. lat.
Aspicilia intermutans (NYL.) ARNOLD
Bacidia rubella (HOFFM.) MASSAL.
Bryoria fuscescens (GYELNIK) BRODO & D. HAWKSW.
Buellia badia (FR.) MASSAL.
Caloplaca carphinea (FR.) JATTA
Caloplaca cerina (HEDW.) TH. FR.
Caloplaca conglomerata (BAGL.) JATTA
Caloplaca crenularia (WITH.) LAUND.
Caloplaca erythrocarpa (PERS.) ZW.
Caloplaca ferruginea (HUDS.) TH. FR.
Caloplaca flavescens (HUDSON) LAUND.
Caloplaca holocarpa (ACH.) WADE
Caloplaca sarcopisioides auct.
Caloplaca xantholyta (NYL.) JATTA
Candelaria concolor (DICKSON) B. STEIN
Candelariella reflexa (NYL.) LETTAU
Candelariella vitellina (HOFFM.) MÜLL. ARG.
Candelariella xanthostigma (ACH.) LETTAU
Catapyrenium boccanum (SERVÍT) BREUSS
Catapyrenium sp.
Cetraria chlorophylla (WILLD.) VAINIO

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Cetraria merrilii Du Rietz
Chrysothrix candelaris (L.) Laund.
Cladonia coccifera (L.) Willd.
Cladonia coniocraea auct.
Cladonia fimbriata (L.) Fr.
Cladonia firma (Nyl.) Nyl.
Cladonia furcata (Hudson) Schrad.
Cladonia macilenta Hoffm.
Cladonia pyxidata (L.) Hoffm.
Cladonia rangiformis Hoffm.
Cladonia uncialis (L.) Wigg. ssp. *uncialis*
Coelocaulon aculeatum (Schreb.) Link
Coelocaulon crespoae Barreno et Vasquez
Coelocaulon muricatum (Ach.) Laundon
Collema furfuraceum (Arnold) Du Rietz
Collema nigrescens (Hudson) DC.
Collema subflaccidum Degel.
Collema subnigrescens Degel.
Degelia plumbea (Lightf.) P. Jörg. & P. James
Dendriscocaulon umhausense (Auersw.) Degel.
Diploschistes actinostomus (Ach.) Zahlbr.
Diploschistes scruposus (Schreb.) Norm.
Ephebe lanata (L.) Vainio
Evernia prunastri (L.) Ach.
Hypocenomyce stoechadiana Abbassi Maaf et Roux
Hypogymnia farinacea Zopf.
Hypogymnia physodes (L.) Ach.
Hypogymnia tubulosa (Schaer.) Hav.
Koerberia biformis Massal.
Lasallia hispanica (Frey) Sancho & Crespo
Lasallia pustulata (L.) Mérat
Lecanora campestris (Schaer.) Hue
Lecanora carpinea (L.) Vainio
Lecanora cenisia Ach.
Lecanora gr. subfusca
Lecanora gangaleoides Nyl.
Lecanora muralis (Schreb.) Rabenh.
Lecanora orosthea (Ach.) Ach.
Lecanora pallida (Schreb.) Rabenh.
Lecanora rupicola (L.) Zahlbr.
Lecanora polytropa (Hoffm.) Rabenh.
Lecanora strobilina (Sprengel) Kieffer
Lecanora subcarnea (Liljebl.) Ach.
Lecidea fuliginosa Taylor
Lecidea fuscoatra (L.) Ach.
Lecidella elaeochroma (Ach.) Choisy
Lepraria latebrarum (Ach.) Sm.
Leprocaulon microscopicum (Vill.) D. Hawksw.
Leproloma membranaceum (Dickson) Vainio
Leptogium brebissonii Mont.
Leptogium burgessii (L.) Mont.
Leptogium corniculatum (Hoffm.) Minks
Leptogium furfuraceum (Harm.) Sierk
Leptogium gelatinosum (With.) Laund.
Leptogium lichenoides (L.) Zahlbr.
Lobaria amplissima (Scop.) Forss.
Lobaria pulmonaria Hoffm.
Lobaria scrobiculata (Scop.) DC.
Massalongia carnosa (Dickson) Körber
Micarea peliocarpa (Anzi) Coppins & R. Sant.
Mycobilimbia fusca (Massal.) Haf. & V. Wirth
Nephroma laevigatum Ach.
Nephroma tangeriense Werner
Normandina pulchella (Borr.) Nyl.
Ochrolechia balcanica Vers.
Ochrolechia pallescens (L.) Massal.
Ochrolechia parella (L.) Massal.
Ochrolechia subviridis (Höeg) Erichsen

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Ochrolechia tartarea (L.) MASSAL.
Ochrolechia turneri (SM.) HASSELROT
Pachyphiale arbuti (BAGL.) ARNOLD
Pannaria conoplea (ACH.) BORY
Pannaria ignobilis ANZI
Pannaria mediterranea TAVARES
Pannaria rubiginosa (ACH.) BORY
Pannaria sampaiana TAVARES
Parmelia borreri (SM.) TURN.
Parmelia caperata (L.) ACH.
Parmelia carporrhizans TAYLOR
Parmelia conspersa (ACH.) ACH.
Parmelia elegantula (ZAHLBR.) SZAT.
Parmelia exasperata DE NOT.
Parmelia glabra (SCHAER.) NYL.
Parmelia glabratula (LAMY) NYL.
Parmelia glabratula ssp. *fuliginosa* (DUBY) LAUND.
Parmelia loxodes NYL.
Parmelia mougeotii D. DIETR.
Parmelia omphalodes (L.) ACH.
Parmelia protomatrae GYELNIK
Parmelia pulla ACH. s. lat.
Parmelia quercina (WILLD.) HALE
Parmelia saxatilis (L.) ACH.
Parmelia soredians NYL.
Parmelia subaurifera NYL.
Parmelia subrudecta NYL.
Parmelia sulcata TAYLOR
Parmelia taractica KREMPELH.
Parmelia tiliacea (HOFFM.) ACH.
Parmelia tinctina MAHEU et GILLET
Parmeliella testacea P. M. JÖRG.
Parmotrema chinense (OSBECK) HALE et AHTI
Parmotrema reticulatum (TAYLOR) CHOISY
Parmotrema stuppeum (TAYLOR) HALE
Peltigera canina (L.) WILLD.
Peltigera collina (ACH.) SCHRAD.
Peltigera horizontalis (HUDSON) BAUMG.
Peltigera membranacea (ACH.) NYL.
Peltigera praetextata (SOMMERF.) ZOPF
Pertusaria albescens (HUDSON) CHOISY & WERNER
Pertusaria amara (ACH.) NYL.
Pertusaria amarescens NYL.
Pertusaria caesioalba (FLOT.) NYL.
Pertusaria coccodes (ACH.) NYL.
Pertusaria coronata (ACH.) TH. FR.
Pertusaria flavida (DC.) LAUND.
Pertusaria hemisphaerica (FLÖRKE) ERICHSEN
Pertusaria hymenea (ACH.) SCHAER.
Pertusaria leucostoma MASSAL.
Pertusaria pertusa v. *rupestris* (DC.) DALLA TORRE & SARNTH.
Pertusaria pseudocorallina (LILJEBL.) ARNOLD
Pertusaria slesvicensis ERICHSEN
Phaeophyscia orbicularis (NECKER) MOBERG
Phlyctis argena (SPRENG.) FLOTOW
Physcia adscendens (FR.) H. OLIVIER
Physcia aipolia (HUMB.) FÜRNROHR
Physcia caesia (HOFFM.) FÜRNROHR v. *caesia*
Physcia caesia v. caesiella (B. DE LESD.) CLAUZ. & ROUX
Physcia hispidula (ACH.) ESSL.
Physcia semipinnata (GMELIN) MOBERG
Physcia tenella (SCOP.) DC.
Physconia distorta (WITH.) LAUND.
Physconia enteroxantha (NYL.) POELT
Physconia muscigena v. *bayeri* (NADV.) POELT
Physconia perisidiosa (ERICHSEN) MOBERG
Physconia servitii (NADV.) POELT
Physconia subpulverulenta (SZAT.) POELT
Physconia venusta (ACH.) POELT
Physma omphalarioides (ANZI) AR-

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NOLD
Placynthium nigrum (HUDSON) GRAY
Platismatia glauca (L.) W. CULB. & C. CULB.
Polychidium muscicola (SWARTZ) GRAY
Protoparmelia badia (HOFFM.) HAF.
Pseudevernia furfuracea (L.) ZOPF
Psoroma hypnorum (VAHL) GRAY
Pyrenopsis triptococca NYL.
Ramalina calicaris (L.) RÖHL.
Ramalina canariensis STEINER
Ramalina capitata (ACH.) NYL.
Ramalina capitata v. *digitellata* (NYL.) NIMIS
Ramalina capitata v. *protecta* (MAGNUSSON) NIMIS
Ramalina farinacea (L.) ACH.
Ramalina fastigiata (PERS.) ACH.
Ramalina fraxinea (L.) ACH.
Ramalina implectens NYL.
Ramalina pusilla DUBY
Rhizocarpon geographicum (L.) DC
Rhizocarpon lecanorinum ANDERS
Rhizocarpon macrosporum RÄSÄNEN
Rhizocarpon obscuratum (ACH.) MASSAL.
Rhizocarpon oportense (VAINIO) RÄSÄNEN
Rinodina atrocinerea (HOOKER) KÖRBER
Rinodina aspersa (BORR.) LAUND.
Rinodina beccariana BAGL. v. *beccariana*
Rinodina capensis HAMPE.
Rinodina confragosa (ACH.) KÖRBER
Xanthoria parietina (L.) TH. FR.
Rinodina exigua (ACH.) GRAY
Rinodina isidioides (BORR.) H. OLIVIER
Rinodina sophodes (ACH.) MASSAL.
Sarcogyne clavus (DC.) KREMPELH.
Schismatomma decolorans (SM.) CLAUZ. & VEZDA
Scoliciosporum umbrinum (ACH.) ARNOLD
Solenopsora candicans (DICKSON) STEINER
Sphinctrina leucopoda NYL.
Sphinctrina turbinata (PERS.) DE NOT.
Squamarina cartilaginea (WITH.) P. JAMES
Sticta limbata (SM.) ACH.
Strigula mediterranea ETAYO
Teloschistes chrysophthalmus (L.) TH. FR.
Tephromela atra (HUDS.) HAF.
Thelopsis rubella NYL.
Trapelia involuta (TAYLOR) HERTEL
Toninia sedifolia (SCOP.) TIMDAL
Trapeliopsis wallrothii (SPRENG.) HERTEL & G. SCHNEIDER
Umbilicaria crustulosa (ACH.) FREY
Umbilicaria grisea HOFFM.
Umbilicaria nylanderiana (ZAHLBR.) MAGNUSSON
Umbilicaria polyphylla (L.) HOFFM.
Umbilicaria polyrrhiza (L.) FR.
Umbilicaria spodochroa (HOFFM.) DC.
Usnea articulata (L.) HOFFM.
Usnea ceratina ACH.
Usnea esperantiana CLERC
Usnea rubicunda STIRTON

Results

The wide diversity of habitats leads to a particularly rich lichen flora, with a total of 220 species, including several interesting lichens such as *Cetraria merrillii*, *Lasallia hispanica*, found between 650 and 900 m, *Physconia muscigena* v. *bayeri*, *Ph. subpulverulenta*, *Rinodina aspersa*, *Strigula mediterranea* and *Thelopsis*

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rubella. New to Portugal are *Pachyphiale arbuti* and *Umbilicaria nylanderiana*.

The phytogeographic analysis shows the predominance of wide-ranging species, distributed from the boreal to the mediterranean zone. Relevant is the consistent set of species with a more or less atlantic, or suboceanic distribution, whose occurrence is due to the high air humidity of the survey area. Among them we can cite *Leptogium brebissonii, L. burgessii, Nephroma tangeriense, Pachyphiale arbuti*, several *Pannaria*-species, *Ramalina implectens*, etc.

The ecological analysis shows a predominance of hygrophytic rather than xerophytic species, which is related with the regional climate as well. Within the park, the number of hygrophytic and skiophytic species tends to increase from south to north, which agrees with the main macroclimatic trend, and also with elevation, the number of hygrophytic and skiophytic species being higher at low elevations.

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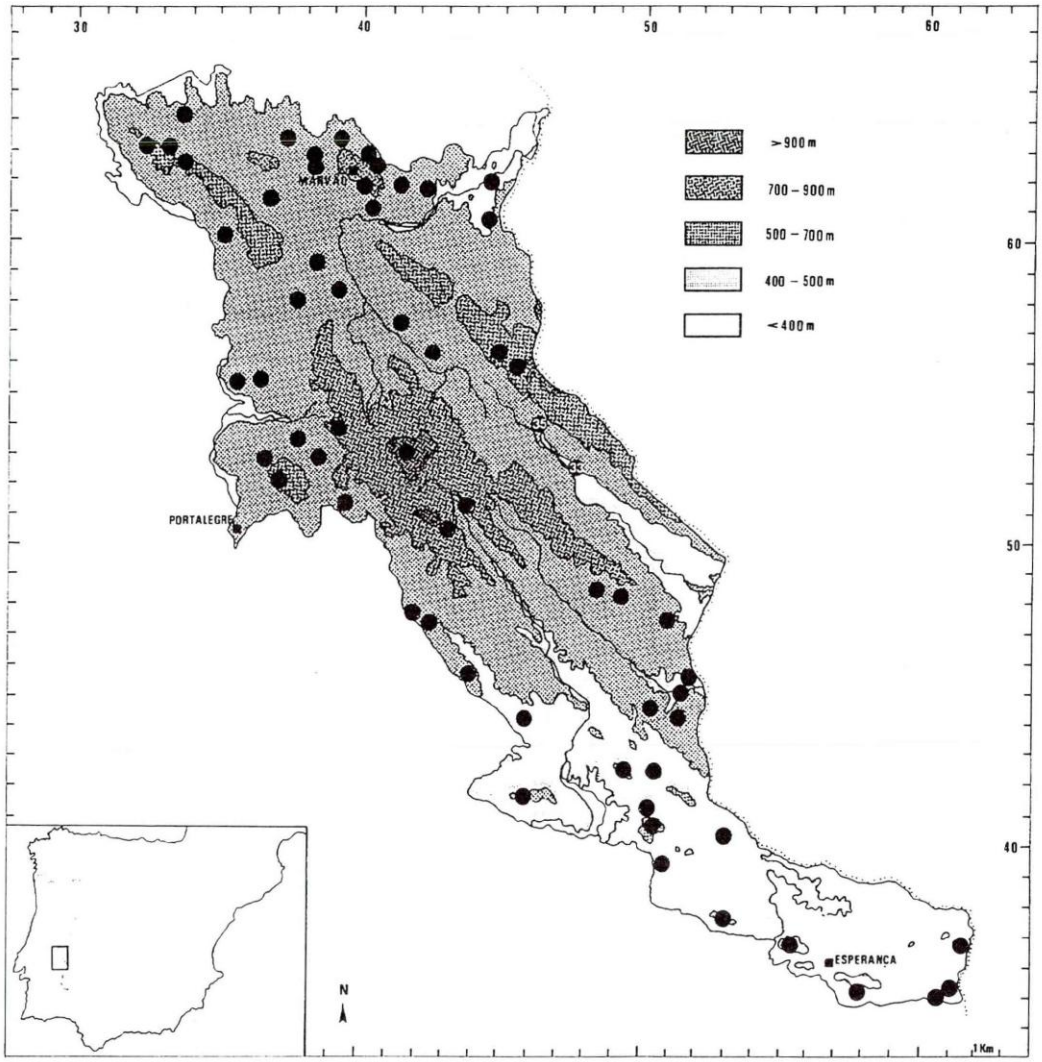


Fig. 1 - Map of the survey area, with sampling location.

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