THE MEDITERRANEAN IN A CLOSET: BOTANY COLLECTIONS AT THE HERBARIUM OF THE NATURAL HISTORY AND SCIENCE MUSEUM OF THE UNIVERSITY OF PORTO
The Herbarium of the Natural History and Science Museum of the University of Porto (MHNC-UP) (registered in the Index Herbariorum as PO Herbarium) is an active collection in continuous growth that contains about 100,000 herbarium specimens of fungi, lichens, algae, bryophytes, pteridophytes and vascular plants.

The history of botany at Porto University is inseparable from the origins of the first specimens of bryophytes and lichens collected by Isaac Newton in 1848, in mainland Portugal. The majority of specimens of PO Herbarium were collected in Portugal, but this collection also includes a General Herbarium with specimens from countries worldwide obtained through a versatile exchange policy during the last three centuries.

PO botanical collections have been used in the context of systematics, taxonomy and chorology studies, but also within the framework of applied science such as bioindication, biomonitoring, and biodeterioration, or in-depth studies of ecophysiology and molecular genetics. These collections were considered in many publications, including the first Portuguese and Iberian Floras, dating back to 1914 to the latest publications describing new taxa for Science in 2019.

The highlights of the herbarium Mediterranean collections

<table>
<thead>
<tr>
<th>Biological Group</th>
<th>Spain</th>
<th>Portugal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bryophytes</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Lichens</td>
<td>246</td>
<td>248</td>
<td>494</td>
</tr>
<tr>
<td>Vascular Plants</td>
<td>568</td>
<td>105</td>
<td>673</td>
</tr>
<tr>
<td>Total</td>
<td>828</td>
<td>370</td>
<td>1208</td>
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</tbody>
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The most emblematic biota from Mediterranean regions represent taxa at both: Lichens
- *Cladonia cristatella* var. *pruinosa* (Grev.) Nybg. (exsiccati: Cladonietta Unostratigra (Cent. exsiccati: *Cladonia Unostratigra*)); Algae
- *Jaworinia autumnalis* (L.) Köll. Kranz); Bryophytes
- *Campylopus tamariscinus* (Brid.) Brid. (exsiccati: *Campylopus tamariscinus*).

Environmental change research

“What drives the insolvency of a sparse-dispersed plant, Campanulopsis introfusa (Nevd.) Brid?”

How will the predicted invasion pattern of C. introfusa be affected by future climate changes?

Only climatic variables

Regional and local predictors

Community ecology, composition and distribution patterns

River bryophyte communities of Mediterranean Europe

- Mediterranean-river streams have high seasonal flow variability and experience seasonal drought. Bryophyte communities are particularly interesting for monitoring water quality and ecological state in Mediterranean-river streams since they are sessile perennial and long-lived organisms.
- We found that bryophyte assemblages reflect primarily a drought and jet gradient with addition of an altitudinal gradient.
- Water and summer precipitation were major drivers of community composition and distribution.
- Geographical variables, such as pH and Ca, were also identified as one the top predictors of community distribution, which was a novelty for large-scale studies.

Biogeography and forest conservation

Mediterranean Oaks (Quercus L.)

- Distribution of past extent areas (percent of annual mean effective area periods: 1990, 1990/2000, and the general right), and current distribution of habitat (p) is available and in open access.