Plant Collections from Mozambique at the PO Herbarium of the Natural History and Science Museum (U.Porto)

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The Herbarium of the Natural History and Science Museum of the University of Porto (PO Herbarium, Index Herbarium) harbours vast collections of Portuguese territories and Portuguese former colonies' flora. Among these collections, the specimens of Mozambique, were gathered by several collectors. In this work, we studied the specimens brought by two professors from the Faculty of Science of the University of Porto: Américo Pires de Lima and Joaquim dos Santos Júnior.

The curatorship work on the collection carried out in this study involved numbering and producing a database with the data and metadata of each specimen. These are to be made available to the Museum research team and to all those interested in studying these plant specimens.

We obtained a database corresponding to the 802 herbarium specimens of vascular plants, representing 115 different taxa, including Typus specimens (19 taxa). In total, 552 herbarium specimens were unidentified and 21 did not include information on the locality where the plant was collected.

**Taxonomy and SIQAS:**

The two sets of specimens diversify in virtually every aspect, with Pires de Lima’s determined at the percentage of 58%. This collection also includes Typus specimens, and, overall, is in far better conditions considering the Specimen Information Quality Assessment System (SIQAS). However, it is less geographically diverse than Santos Júnior’s collection, which represents the opposite in the SIQAS criteria. The collection is poorly determined (31.2% identified to some taxonomic level vs. 68.8% unidentified), and, so far, only 13% of specimens are identified to species level.

<table>
<thead>
<tr>
<th>Specimen/Criteria</th>
<th>Determination (species) currently valid</th>
<th>Full Date</th>
<th>Defined Location</th>
<th>Ecology</th>
<th>Well documented collector</th>
<th>Criteria/Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO-V69710</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Bad</td>
</tr>
<tr>
<td>PO-V69389</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Weak</td>
</tr>
<tr>
<td>PO-V69390</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Average</td>
</tr>
<tr>
<td>PO-V69394</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Near Perfect</td>
</tr>
</tbody>
</table>

**Methodology:**

1. Inventory and numbering of specimens.
2. Photographic documentation and digitalization of data with georeferencing.
3. Multivariate and descriptive statistical analysis based on the inventory and the taxonomic and ecological characteristics of the specimens.
4. Development of a classification system - Specimen Information Quality Assessment System (SIQAS) - for the quality of the specimens, based on various criteria (categories "bad", "weak", "average" and "near perfect"), considering whether (or not) specimens present the essential information in the following parameters: determination (to the species level) current validity; full date of collection; location of collection defined; ecology and well enounced collector.

The set of specimens gathered by the two botanists present in the PO Herbarium Mozambique collection includes:

- Twelve Typus taxa collected by Professor Pires de Lima – Fabaceae family (10 Typus) followed by Cyperaceae (6 Typus);
- Three different agro-climatic collection locations were found through the classification of (Le Houèreau 2009): Sub-Humid, Equatorial; Sub-Humid, Tropical and Humid, Tropical.
- A wider geographical range in Santos Júnior’s specimens.

**Take-home messages:**

- This study’s importance relies on the fact that Mozambique was the location whose flora was studied most belatedly and from which fewer specimens were gathered among the former Portuguese colonies on the African continent.
- On that account, we hope this study brings attention to these herbaria collections and increases the interest and awareness on its herbarium specimens, documentation and historical aspects.
- PO Herbarium collection is a wide and immensely interesting reservoir of both historical and scientific information with exceptional potential. This vast collection remains greatly understood with a large number of specimens unidentified and in need of taxonomic updating.

**Results and Analyses:**

- Taxonomic diversity of the two sets of specimens of the Mozambique Collection at PO Herbarium (MHN-UP): PL: Pires de Lima’s collection; SJ: Santos Júnior’s collection.

**Acknowledgments:**

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