DIGITISING HISTORICAL BOTANICAL COLLECTIONS FROM A PHYTODIVERSITY HOT SPOT

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Taxonomy provides the foundation to understand biodiversity and such derived biological disciplines as biogeography, ecology and evolution. Specimens are the faithful custodians of taxon identity, contributing the fundamental proofs for solving systematic issues. The preservation of scientific collections and their availability for study over time has been an everlasting concern of scientists. The Thessaloniki Aristotle University (TAU) Herbarium currently holds about 50,000 plant specimens collected mainly from Greece from the beginning of 19th century. It comprises historical specimens collected up to the first half of the 20th century (before World War II) by important botanists such as Th. von Heldreich, who described seven new plant genera and over 700 species, V. Tun-tas, Ch. Leonis, and D. Zaganiaris. The latter, in his "Herbarium Macedonicum", recorded 4,000 plant taxa, collected from the northern part of the country. Our effort is to digitise the TAU Herbarium, facing the challenges and getting ahead the limitations related to the effective mobilization and sharing of collections information from small herbaria and with limited resources. Digitisation will serve not only taxonomic, biodiversity conservation, and educational purposes, but also will reveal the historical and socio-political aspects, under which the immense plant diversity of Greece was assessed. We have set up a pre-digitisation process which includes nomenclature checking and annotation (where needed), imaging, data transcription, and incorporation of all the information linked to the specimens in a database confronting with modern biodiversity information management requirements, such as the Darwin Core biodiversity metadata Standard, in order to be made publicly accessible and interoperable. Priority will be given to the historical collections, since the evaluation and digitisation of the old specimens may provide valuable information about the past species distribution and habitats. This work aims to trigger a discussion around the challenges of the digitization and the importance of small Herbaria.

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KEYWORDS: Greece, TAU Herbarium, historical collections, digitalisation

ORTHID DIVERSITY WITHIN HERBARIUM CROATICUM SENSU STRICTO AND HERBARIUM IVO AND MARIJA HORVAT COLLECTIONS

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Following the recent trend in herbaria, digitisation of collections within Herbarium Croaticum (ZA) and Herbarium Ivo and Marija Horvat (ZAHO) has initiated in 2015. With over 200,000 herbarium specimens, ZA Collection is the oldest and the largest herbarium collection in Croatia, while the ZAHO Collection stores as many as 78,000 specimens. Digitised collections allow public access to such information via herbarium-based databases (virtual herbaria), which makes them more broadly useful and improves scientific research. In our study, a large collection of orchids was chosen for digitisation. Our aims were to digitise the collection of orchids and analyse the related herbarium sheets to provide the taxonomical, spatial and temporal data and, finally, estimate the average time required to digitise one herbarium sheet. Prior to digitising, we verified the taxonomy of our specimens, revealed synonyms and specified the hybrids. Plant material was cleaned, dusted, translocated and mounted with pH neutral adhesive tape to new format of herbarium sheets adequate for scanning, on which the herbarium labels were also glued. Herbarium sheets were scanned using the inverted Epson Expression 11000XL Pro A3 scanner, to produce image files with tiff extension, with resolution of 300 dpi. Finally, high resolution images, together with the metadata of digital herbarium, were uploaded and published in Flora Croatica Database, as well as in ZA & ZAHO Virtual Herbarium. Analysis revealed that the collection of orchids within Herbarium Croaticum sensu stricto contains 1373 herbarium sheets, belonging to 92 taxa, including 15 subspecies and 4 hybrids. Two orchid holotypes and two isotypes have been found. Within ZAHO Collection 553 sheets were found, belonging to 47 taxa. The majority of both collections originates from Croatia and neighboring countries (Slovenia, Serbia, Bosnia and Herzegovina, Italy, FYROM, Montenegro, Poland, Switzerland and Ukraine). The oldest sheet in ZA dates back to 1833, and in ZAHO back to 1918, while the average age of the ZA Collection is 113 years and of the ZAHO is 81. The main collectors in ZA are Ljudevit Rossi, Dragutin Hirc and Ambroz Haračić, while in ZAHO predominates Ivo Horvat.

KEYWORDS: Croatia, digitisation, herbarium, orchids