LEGACY DATA: USING THE PAST FOR THE FUTURE

Legacy data present an immensely rich and varied body of largely unstudied information that allows present-day scientists and researchers further understanding of Turkey and the Black Sea region. The British Institute at Ankara's own historical collections, including paper and photographic archives as well as archaeological collections, offer insights into the evolution of the topic or material under study as well as information about assets now lost. The Institute owns collections of squeezes and ceramic sherds as well as large photographic collections and archives that offer excellent study material for scholars in many disciplines, including archaeologists, historians, anthropologists and specialists in epigraphy and ethnology. This strategic research initiative aims to promote interdisciplinary academic research that relates to legacy data concentrating on Turkey and the Black Sea region. Work on the Institute's collections will be an important focus, as will research on other legacy data available in Turkey and the Black Sea region.

doi:10.18866/biaa2022.14

The British Institute at Ankara's digital repository: Botanical Reference Collections digitisation project

Nurdan Atalan Çayırezmez, Ilgın Deniz Can, Barış Necdet Uğurman, Gonca Özger, Orhun Uğur & Nihal Uzun | British Institute at Ankara
Necmi Aksoy | Düzce University

The BIAA's Digital Repository Office is currently digitising the BIAA's collections and transferring information from old databases into the new digital repository system, which is an open access resource applying FAIR (Findable, Accessible, Interoperable, Reusable) principles to its contents. The process of data ingestion is ongoing, and the repository will be made accessible to the public in February 2023. As part of this project, the Botanical Collections, one of the BIAA's unique biocultural collections, has been digitised.

The Institute's Botanical Collection was established between 1970 and 1974 by archaeobotanist Gordon C. Hillman as a reference collection to support archaeobotanical research in Türkiye. Today, it is one of 63 herbaria in Turkey that are registered in the international herbarium index, Index Herbariorum (https://sweetgum.nybg.org/science/ih/herbarium-details/?irn=124131), with the code BIA (Holmgren, Keuken 1975). The BIAA collections currently comprise a total of ca 5,000 physical plant samples, including herbarium specimens, wood samples and charcoal samples, collected between the 1970s and the 1990s. In addition, a seed reference collection was once part of the BIAA's Botanical Collections, but it has now been transferred to the Museum of Anatolian Civilizations in Ankara (see *Heritage Turkey* 2020).

The plant samples were collected by researchers including Gordon C. Hillman, David H. French, George Willcox, Mark Nesbitt, Naomi Miller and others during BIAA fieldwork projects. Many of the sites from which the plants came are remarkable and illustrate Türkiye's plant biodiversity. They include Can Hasan (Karaman), Gordion (Polatlı, Ankara), Aşvan (Elazığ) and Tille Höyük (Adıyaman). Some of these locations, Aşvan and Tille Höyük among them, are now underwater due to the construction of hydroelectric dams (Nesbitt et al. 2017). Therefore, these collections can provide an insight into the biodiversity of a part of Türkiye that is no longer accessible.

The herbarium digitalisation project (Digitalising Turkey's Botanical Heritage, 1 January 2021–31 July 2022) involved preparing, cleaning, mounting, labelling, photographing, barcoding and preserving the collection. Archival documents relating to this material – including the original collectors' notes on location, date and habitat – were digitised to provide important contextual information, encompassing terms for flora and information about the collectors.

At the beginning of the project, an assessment was made in order to collect general information on the specimens in the collection, as well as in previously created records. It became clear that the collections in fact

Example of specimen mounted by the original collector and cleaned, and a specimen that was newly mounted using similar techniques. Left: BIA000694 (GCH 2704); mounted specimen; right: BIA001336 (RMN 3129); specimen mounted during the project).

contained more physical samples (4,312 herbarium specimens, 250 wood samples and 50 charcoal samples) than indicated by the existing archival documents (2,792 seed samples, 2,568 herbarium specimens, 80 wood samples and 50 charcoal samples) (Göçmengil, Günergun 2019). Most of the herbarium specimens were kept in folded newspapers, as they were when first collected in the field. As part of the project, the specimens were removed from the newspaper, cleaned and mounted on acid-free archival paper. Some herbarium specimens had already been mounted by the original collectors, and these often needed only cleaning. Where further treatment was required, techniques practised by the original collectors were studied before conservation and re-mounting. These original techniques were followed as much as possible for every treatment or conservation process, with the aim of preserving and maintaining the historical and archival aspects of the herbarium.

New mounting followed the old, preserved technique, which used strips of paper to secure the specimen to the acid-free paper. If necessary, the specimens were also glued on, using water-soluble and non-toxic glue. In addition to the specimens, all labels that had been prepared by the original collector were attached to the paper, creating a historical record of the specimen.

New labels were created for each of the specimens and fastened alongside them. These labels incorporated details of plant locality, collection date, identification, plant or habitat notes, and scientific plant names. Identifications were made according to P.H. Davis's *Flora of Turkey and the East Aegean Islands*. The scientific plant names listed on the original collectors' labels were always preserved and the taxonomic status compared with national and international references such as the IPNI (International Plant Names Index: https://www.ipni.org), GBIF (Global Biodiversity Information Facility: https://www.gbif.org), POWO (Plants of the World Online: https://powo.science.kew.org), and Bizim Bitkiler. Scientific plant names sometimes differed from the names assigned by the original collectors and were updated on the new labels based on these reference works.

In addition to the physical aspect, digital records were created for all botanical specimens. These include all label information, as well as an individual digital identifier (e.g.,

BT 1), barcodes (BIA000001), collector numbers (e.g., RMN3075), determiner, information on taxonomy and more. Once the treatment of a group of specimens was completed and digital records created, professional photographer Gücügür Görkay photographed each of the specimens. Thirty days in total were needed for this work, spread over five different sessions, photographing 160–170 specimens per day. The camera was a Nikon D800 36 MP with a Micro-NIKKOR 55 mm lens, used with lights. The images, with a resolution of 300 dpi, were saved in NEF (as RAW files) and JPG formats. Each image includes the barcode number of the specimen so it can be matched with the digital record.

Near the end of the project, results and information about the digitisation procedures were shared with Turkish researchers and other stakeholders, and new possibilities were discussed, during a workshop on 14 and 15 June 2022.

A version of the historical BIAA herbarium will be available online to botanists, archaeobotanists, ethnobotanists and researchers from other disciplines. The physical plant specimens, combined with online access to specimen data, creates much wider access to the herbarium than before. It is now available to the academic community, and also the general public, which we hope will result in increased usage of this unique resource. Digital herbaria are crucial to accessing major plant collections remotely, and they are crucial to projects such as the *Illustrated Flora of Turkey* (https://www.turkiyeflorasi.org.tr/; Güner 2014). Specimens can now be cited via their unique barcodes or collector numbers.

Acknowledgements

This project was funded by the BIAA, Imagining Futures (project reference number 113806R), the Charlotte Bonham-Carter Charitable Trust, the Stevenson Family Trust, and the Seven Pillars of Wisdom Trust. All the processes described in this article were carried out with the vital help of Turkish botanists, students and interns, to whom we extend our sincere thanks (Nabila Nabila, Sabina Abrahamova, Serengül Gözaçık, Alper Temiz, Ezgi Özdemir, Vildan Toprak, Emrullah Yılmaz, İlayda Dumlupınar, Gamze Kaya, Deniz Çit, Teoman Kars, Azranur Elif Sucuoğlu, Nedim Emre Özkaş, Sevilay Gözaçık and Esra Doğan), as well as BIAA staff. For their time and support, thanks also go to Mark Nesbitt, Naomi F. Miller, Sue Colledge and Stephen Mitchell.

References

Davis, P. H. (ed.) 1965–1985: *Flora of Turkey and the East Aegean Islands*, vols 1–9. Edinburgh: Edinburgh University Press

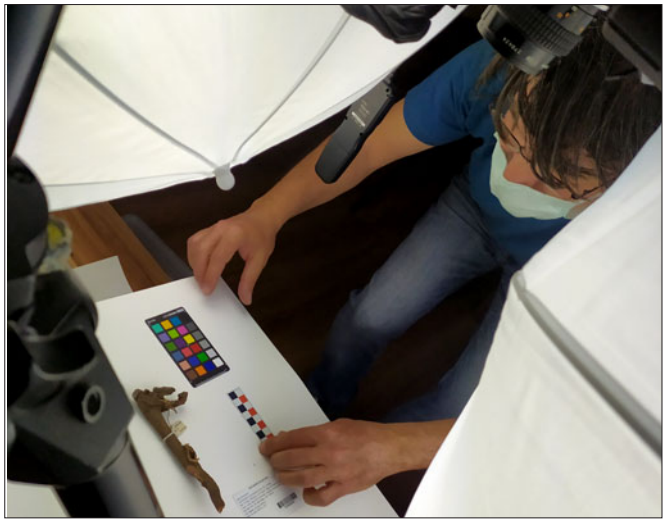
'Digitalising Turkey's botanical heritage' *Imagining Futures through Un/Archived Pasts*. https://imaginingfutures.world/projects/digitalising-turkeys-botanical-heritage

Göçmengil, G., Günergun, F. 2019: 'Botanik Araştırmalarının Türkiye'deki Tarihine Bir Katkı: Ulusal Botanik Bahçeleri, Arboretumlar, Herbaryumlar, Botanik Bahçeleri Çalıştayı (Düzce, 2019)' *Osmanlı Bilimi Araştırmaları* 20: 163–70

Güner, A. (ed.) 2014: *Resimli Türkiye Florası*. Ali Nihat Gökyiğit Vakfı, Istanbul: Flora Araştırmaları Derneği and Türkiye İş Bankası Kültür Yayınları yayını.

Holmgren, P. K., Keuken, W. 1975. 'Index Herbariorum ed. 6: geographical arrangements of the herbaria listed in Index Herbariorum' *Taxon* 24: 543–51

Nesbitt, M., Bates, J., Hillman, G., Mitchell, S. 2017. *The Archaeobotany of Aşvan: Environment & Cultivation in Eastern Anatolia from the Chalcolithic to the Medieval Period*. London: British Institute at Ankara.



Gücügür Görkay photographing a wood specimen, left (© British Institute at Ankara-PH15368); Ilgın Deniz Can cleaning and mounting a herbarium specimen, right (© British Institute at Ankara-PH15294).