A combined database of anatomical features and micrographs for selected Southern African woods and charcoals: a perspective on an identification key for anthracological study

Elysandre Puech, Arnaud Barbe, Marco Corneli, Isabelle Théry-Parisot

A combined database of anatomical features and micrographs for selected Southern African woods and charcoals: a perspective on an identification key for anthracological study.

Elysandre Puech[1,2], Arnaud Barbe[1], Marco Corneli[1,3], Isabelle Théry-Parisot[1]

[1] Université Côte d'Azur, CNRS, CEPAM, UMR7264 – France

[2] University of the Witwatersrand – Afrique du Sud

[3] Université Côte d'Azur, Inria, CNRS, LJAD, UMR7351, MAASAI team, Nice, France

Résumé

The taxonomic identification of charcoal is an inherent step in any anthracological analysis, but it can be challenging in some parts of the world with rich woody species. A combination of several anatomical criteria, or features, is necessary to describe a charcoal specimen. Regions with rich woody species are characterised by a high level of similar anatomical characteristics that often limit wood identification at the family / tribe level, especially when archaeological charcoals are not well preserved, or very fragmented.
In the southern African interior plateau in central Limpopo, the richness of the native woody plants is estimated to include around 1000 ligneous species. The diverse climatic regimes and landforms that characterize the region also contribute to the high *inter-* and *intra-*specific variability in wood anatomy, intrinsically linked to the physiological conditions of tree growth. However, there is currently no comprehensive atlas or identification key for the study area that takes into account both the wide diversity of woody species and their anatomical variability. Compilation in a single database of anatomical descriptions from wood of the study area is thus needed to allow rigorous taxonomic identification while facilitating the work of bibliographic research. These descriptions, which include more than hundred anatomical characters per specimen, are regularly updated and adjusted according to the International Association of Wood Anatomists (IAWA). They currently include specimen descriptions (with duplicates) from: field sampling (83), the InsideWood online database (ca. 1800), the CIRAD xylotheque in Montpellier (23), the Goethe University xylotheque (40), and various published articles (ca. 400).

1567 micrographs from field-sampled specimens were acquired according to the three anatomical sections of wood under the reflected light microscope as well as the scanning electron microscope (SEM). They were uploaded to the online database Anatom-IA, a collaborative and interoperable image bank dedicated to wood anatomy research and training. In addition, approximately 700 micrographs were acquired in the different xylotheques visited and approximately 1000 micrographs are currently extracted from the literature.
We present here the database of anatomical features in connection with the bank of micrographs, which are under construction. These data are intended to be published as a digital identification key for southern African woods. Throughout these databases, we will discussed to the homogenisation of the taxonomical names, the standardisation of the descriptions, the

*Intervenant

representativity specimen used regarding the current woody vegetation of the area and the available tools which are dedicated to taxonomic classification.

Mots-Clés: Wood anatomy, Bank images, Southern Africa, Anthracology, Identification key