

# Archaeological charcoal from the African Rainforest. Describing and defining wood types from a diverse environment

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**Summary:** *Identification of charcoal from species-rich woody environments like the African rainforest is difficult. Obstacles to be encountered are the sheer number of woody species in the region, many of them with similar wood anatomy, and the fact that the wood of many species has not been described yet. To put identifications from regions like these on a sound base, detailed descriptions of charcoal types and discussions on the reliability of their identifications, need to be published and discussed within the scientific community.*

**Key words:** *charcoal identification, wood types, rain forest, Cameroon*

## INTRODUCTION

Our aim is to reconstruct the woody vegetation of the last 2000 years around the site of Dibamba, close to Douala, Cameroon (Oslisly *et al.*, 2008). However, using archaeological wood charcoal from the rainforest as a palaeoenvironmental archive entails some problems brought about by the high diversity of woody species.

For West Central Africa there have been some publications referring to charcoal or wood analysis from the end of the 1980s onwards. All of these publications, including our own, have shortcomings. Often information on the data is missing, as for example the number of samples and/or the number of fragments counted. Sometimes it is not clear who actually analysed the charcoal fragments, and often descriptions and/or illustrations of identified types are not included. Consequently, it is not possible to comprehend the identifications and to evaluate the interpretations.

The missing documentation of wood types is an issue, because generally accepted wood types are not established for Central Africa. There are wood anatomy atlases (Normand, 1950-1960; Lebacqz, 1955-1963) published before the standardization of features for identification (IAWA Committee, 1989) while IAWA-standard descriptions of some timbers of 25 important timber-containing families have been published recently (Loupe *et al.*, 2008; Inside wood, 2004-onwards). Nevertheless, let alone that many taxa are not described anywhere, those that are described are not evaluated concerning diagnostic characters and similarities to other taxa.

These evaluations are important for wood and charcoal identification, because not all characters are useful in the same manner. Some vary within one species (intraspecific variability) and not every species has a distinct wood structure that separates it from all the other species present in the study region

(interspecific similarity). In view of these difficulties, it would be important to know, how one can manage to identify charcoals from the African rainforest to species level - as it has been done in the past.

Within this project, designed to identify human impact onto the rainforest of coastal West Central Africa from the Iron Age to colonial time, we have started to tackle the matter of putting identification in West Central Africa on a sound base. As identification is part of the “archaeo/anthracological filter” (Théry-Parisot *et al.*, 2010) and may bias the results of the anthracological reconstruction, it is important to start to establish a sound base of wood types described in detail. Results will not be comparable as long as their base is not disclosed.

## DATA AND RESULTS

Charcoals from four pits at Dibamba I have been screened. Every fragment has been shortly described. Wherever a type was recognized, pictures were made with a SEM. Extended depth of field images were taken after the acquisition of a motorized incident light microscope and multi-focus software. Fragments were grouped according to similarities and the name of a taxon of whichever possible level was assigned to them – provided that taxa with similar wood structure were found in the reference collection or were found to be described in the reference literature.

## DISCUSSION

Some wood types it is quite easy to identify and to assign a taxon to them, especially if they have specific characters, like for instance oil-cells, that are not very common. Other wood types propose larger difficulties, e.g. woody types belonging to Fabaceae s.l. or Euphorbiaceae. They are not easily assigned to taxa at a lower taxonomic level than family.

## CONCLUSION

An open discussion concerning the identification of charcoals from the African rainforest is needed. It would be desirable that those few anthracologists working in this region share their knowledge and openly discuss the wood types that they have recognized in their assemblages.

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