

Woody taxa from charcoal in Sibudu's Middle Stone Age Hearths

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DECLARATION

I declare that this thesis is my own unaided work. It is being submitted for the Degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

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ABSTRACT

Sibudu rock shelter was occupied by hunter gatherer groups of modern humans during the Middle Stone Age between 77 and 38 000 (38 ka) years ago. Sibudu is in the summer rainfall region and is situated about 15 km inland of the eastern coast of South Africa. The site includes technological industries such as Still Bay and Howiesons Poort that are distinguished by specific stone tool types. Woody taxa identified from archaeological charcoal in this site, indicate changes in vegetation and wood use. Archaeological charcoal specimens, specifically from hearths on three putative occupation floors, were analysed for behavioural information about wood selection and use. Two of the stratigraphic layers, BYA2 (i) and SPCA, are approximately 58 ka old and the MOD layer is approximately 49 ka old. All three layers contain tools from the post-Howiesons Poort industry. Identifications of woody taxa were made by means of a comparative charcoal reference collection and the InsideWood database. Charcoal was studied under stereo and reflective light microscopes. Woody taxa identified confirmed that the coldest, driest phase of occupation was at approximately 58 ka. Bushveld woods, including five *Acacia* types, have been identified in charcoal from MOD layer, ~49 ka. The vegetation mosaic was different from today's coastal forest and savanna near Sibudu. The availability of natural wood around Sibudu, visible in the type of wood burnt in hearths, has changed since 58 ka and 49 ka for either climatic or anthropogenic reasons or for a combination of these. In all three layers, the wood bundles include tinder, fuel, and a selection of woody plants that today are known to have medicinal bark, leaves and wood. People may have selected wood for burning properties (for example, temperature, light and coal production) and for medicine. Woods suitable for making firesticks for starting fires by means of friction are present. Wood from *Spirostachys africana* (tambotie) occurs in one hearth in each of the three layers. Since *Spirostachys africana* is normally avoided in cooking fires as it is poisonous, this suggests that the wood was selected deliberately and burnt for insecticidal smoke or other medicinal purposes. *Tarchonanthus parvicapitulatus* (syn. *T. camphoratus*) charcoal occurred in layer SPCA. This adds to the previous evidence of the use of aromatic plants at Sibudu, where sedge bedding was topped with aromatic, insecticidal *Cryptocarya woodii* (river-quince) leaves (Wadley *et al.* 2011. Science 334 (6061): 1388-1391). Wood use is different between hearths and surrounding sediments and between occupations dating 58 ka and 49 ka.

Keywords: phytomedicine, Sibudu, *Spirostachys africana*, *Acacia*, charcoal analysis, wood anatomy