IS SYSTEMATICS CRITICAL FOR EFFECTIVE UTILISATION AND CONSERVATION OF ACACIA?

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"Systematics taxonomy, is the science of delimiting organisms, naming them and determining their relationships."

The Australian Acacia flora represents a vast and as yet largely under-utilised genetic resource. We are only now beginning to properly understand these species, to explore their economic and social potential, and to apply appropriate and effective conservation strategies to ensure their survival.

There are about 960 species of Acacia in Australia making this by far the largest genus of woody plants in the country. Each of these species has a unique scientific name and each name represents a discrete biological unit that has been defined taxonomically. These names are the basic units of communication concerning the species, enabling us to exchange information about them. Without properly circumscribed and named species neither conservation nor utilization has anything to work with, the taxa in effect do not exist. Taxonomy is therefore fundamental to the effective conservation and utilization of biota because it identifies, defines and names taxa, which can then be managed or utilized through the exchange of relevant information. Thus, the first priority for conservation and utilization should be straightforward species circumscription and description (alpha taxonomy).

It is important that the taxonomy be scientifically sound because if the names are wrong then the information that is assembled and disseminated about the species will quite possibly also be erroneous. Wrongly named or poorly defined taxa may have serious and costly implication for users of scientific names. Therein lies the great responsibility for taxonomists, they need to accurately define and name species and to provide reliable means whereby users can gain access to this information.

Although taxonomy is the foundation upon which all biological sciences rely, few people know exactly what taxonomists do. This paper will therefore explore the taxonomic process by examining its role in conservation and utilization research. The five basic taxonomic activities to be discussed will include:

- **Delimitation and nomenclature**. The determination of boundaries between taxa and the application of stable names to the bioligical entities that are recognized.
- **Classification and phylogeny**. The placement of taxa within a hierarchical system and the determination of the historical relationships between them; this provides "value-adding" to the names by giving them predictive value, i.e. they are not merely "tags" or labels.
- **Identification**. Referring individual specimens to previously determined (and usually named) groups, i.e. the provision of tools enabling species to be correctly named.
- **Information**. Assembling and disseminating relevant information about the taxa (the taxon name is the key or conduit to *information*).
- **Vouchering**. The collection and on-going management of specimens that represent a physical manifestation of the taxa under study.

Taxonomy as a scientific discipline has become seriously under-resourced, sometimes to the extent that it is referred to as the "taxonomic impediment". Yet its role in support of conservation and utilisation is fundamental. Recognition of this role is a vital preliminary to addressing what might more properly be called the "taxonomic imperative".