
FEATURES

VOUCHERING OUR SCIENCE

A voucher can be defined as something “serving to confirm or prove something” (OED). In biology it usually refers to a preserved specimen lodged in a museum or herbarium collection which represents a sample of an organism or taxon which has been studied.

A prime role for SID’s herbarium is to “voucher” our scientific observations and results. In effect, each of the 375,000 herbarium specimens is a voucher; each one represents a particular taxon at a specific locality and a particular habitat. This broad-scale vouchering role is why the herbarium actively seeks to increase its holdings of well annotated material which provides the basic data for SID’s electronic information systems.

Any research which gathers field data on plants and habitats can be vouchered efficiently in the SID herbarium through its databasing system. It is, of course, essential to have a voucher herbarium specimen which needs to be a well chosen sample of a single taxon with adequate labelling and an indication of what research project is being vouchered.

The herbarium can curate collections related to a particular SPP, geographic area or particular project. Specimens may voucher photographs, bioprospecting

samples, the key plants of a particular animal habitat or a detailed botanical survey of a defined geographic area. In these cases plant specimens can be collected and processed for incorporation in the herbarium as vouchers for the particular research effort. Incidentally, it is imperative to build specimen processing costs into any grant application as detailed in the Staff Guidelines.

Vouchers add particular value to scientific publications where plant names are cited in relation to particular biological research. For example, vouchering of disease impacts on a species, fire responses, chromosome number determinations, conservation status or functional characters such as mode of perennation, age to first seed set, etc. It is usually mandatory for scientific reports and publications to include a note on which institution holds the vouchers. In any plant research in WA, vouchers should be lodged in the WA Herbarium which has the internationally recognised acronym PERTH. It is remarkable that many biological scientist/authors haven’t vouchered their observations; there are some classic local examples where we do not know what species has been referred to in papers and books. Any publication referring to *Eucalyptus redunca* var. *elata* or *E. wandoo*, for example, could now refer to any of six taxa (see *Nuytsia* 8:1). The point is that our names are continually being revised and we have a management system to continually update these changes on voucher material.

If you are compiling a list of species for a particular purpose and each taxon name has a voucher in the herbarium where the special field "voucher for....." has been completed, then it is possible to obtain an updated list at the time of preparation of a paper or report. Not only will this list have up-to-date names but the spelling of the name and the authority will be standardised and according to current herbarium practice.

It is rarely accepted by most non-taxonomists that many plant identifications are only an "educated guess". In the case of the species rich WA flora there is great morphological variability which is still being documented and for this and other reasons, WA taxonomists do not have the knowledge base to identify many taxa with 100% certainty. In other words there is a high error rate with plant identifications.

Our knowledge of the flora is advancing very rapidly. CALM botanists are continually revising identifications of the specimens incorporated into the collections. If an incorporated specimen is incorrectly identified it will invariably be picked up and correctly determined, the corrected specimen then passes back through the databasing operation. When any published taxonomic account of WA flora appears any misnamed specimens are re-determined or new determinations are made on the specimen sheet and in the databases. If some of the re-determined material is a voucher for a particular project then it is easy to see how information can be updated and made available to the researcher.

One of the most productive benefits of the vouchering system is that any field herbarium or other reference collection of plants can be managed so that the names of each voucher are current. The databasing system has revolutionised the management of ancillary collections such as the one at CALM Manjimup. The reference collection there consists of a single collection for each species collected to date in the region. Every specimen is represented by a barcoded "parent specimen" which has been incorporated into PERTH and which can be scrutinised by herbarium users. In many cases because of the Australia-wide activity relating to the Flora of Australia project the specimen may be sent on loan for specialist study at another herbarium. Alternatively a visiting specialist botanist may visit PERTH to study herbarium material and will spend some time checking determinations and renaming specimens. The Manjimup duplicate specimen has a note of the unique PERTH barcode number and any name changes, name corrections, etc, initiated in PERTH can be sent to Manjimup and entered on the specimen. With this system botanical researchers can access material with current names. The protocols developed for Manjimup and for the Reference Herbarium in Como is being introduced by a number of field herbaria, Landcare Conservation Groups and others who need access to reliable names of WA flora.