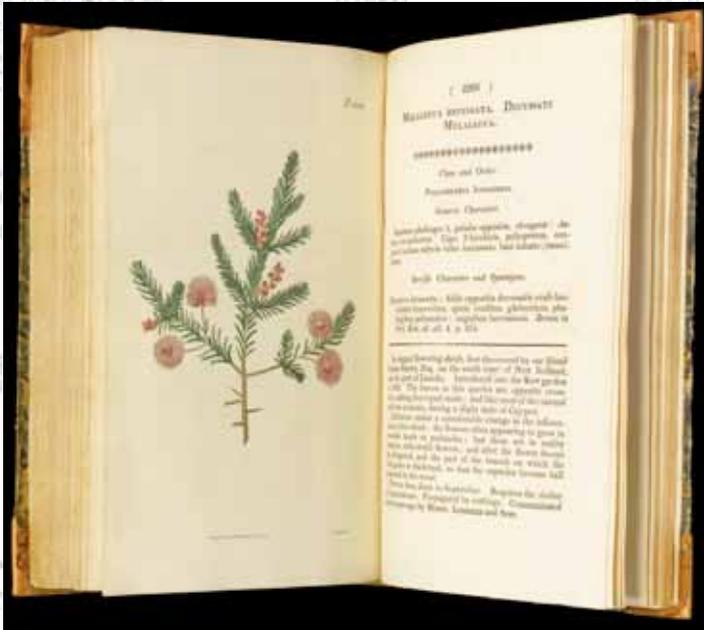


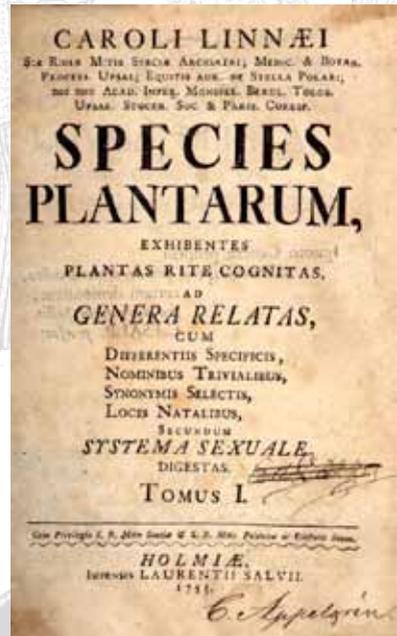
Why are new species described?



Biodiversity is essentially the number of species found in a particular area. Fundamental to any measure of biodiversity is the recognition of species. The science of recognising and describing organisms is taxonomy. Today, botanists agree that there are more than 300,000 species of flowering plants living on earth. Although controversial, there are estimates that there may at least 150,000 more flowering plant species yet to be described. Botanists at the State Herbarium of South Australia are contributing to the discovery of new plant, algae and fungi species.

Modern taxonomists have a wide range of tools at their fingertips to assist with classifying and naming species. Botanists from all parts of the world follow the same set of rules that govern how new species are named.

There are many reasons why species names are so important. Like any language, the way we name plant or animal species should result in things that share the same properties having the same name. Consider, if different parts of the world had different names for plants and animals that were essentially the same, it could get very confusing.



Today, in biology, we still use a classification system that was devised by Carl Linnaeus (*Species Plantarum*, 1753). This relies on a binomial naming system where each species is known by two words, a genus name and a species name. This system is remarkably robust to duplication if some simple rules are followed. Groups of species are associated into hierarchies (known as taxonomic ranks) that reflect relationships. Modern classifications reflect evolutionary relationships across all taxonomic ranks. To describe a new plant species, botanists must be convinced that the plant is truly different from all other species already known. Thus new species are typically identified when a specialist revises the taxonomy of a whole group of species through taxonomic revision.

Taxonomic revisions (where all species in a closely related group are reviewed) are based on morphology. Important components in the recognition of a new species are to follow the rules of the *International Code of Nomenclature for algae, fungi, and plants* and then to publish the description of the new species in a recognised book or journal (which may be online ones as of 2012), providing:

- a description of its attributes, with some or all of this being in Latin (or English as of 2012);
- a list or key describing how the new species differs from all the other species in the genus;
- the choice of a collection to serve as a "type" specimen, and lodging that in a recognised herbarium;
- the choice of a name, which must be unique and reflect the classification of the species.



What is in a name?

The genus is named after Joseph Banks (1743-1820)

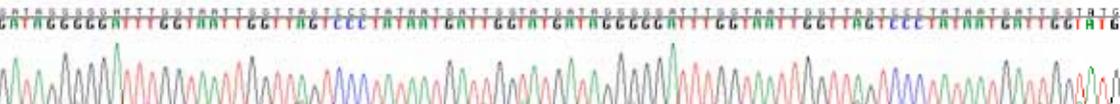
Banksia blechnifolia F.Muell.

Ferdinand von Mueller described the species in 1864

The epithet is derived from the name of the fern genus *Blechnum* and the Latin *folium* (leaf), indicating that the species leaves resemble those of fern leaves

Modern tools available to botanists include traditional morphology, anatomy and electron microscopy, chemical composition, and even DNA sequences.

Understanding and identifying individual species is critical to ensuring their conservation and assessing biodiversity. When species are weeds, correct identification can ensure the success or failure of prevention, control or eradication efforts.



The State Herbarium of South Australia

'South Australia's key centre for the preservation and generation of knowledge of native and naturalised plants, algae, lichens and fungi.'

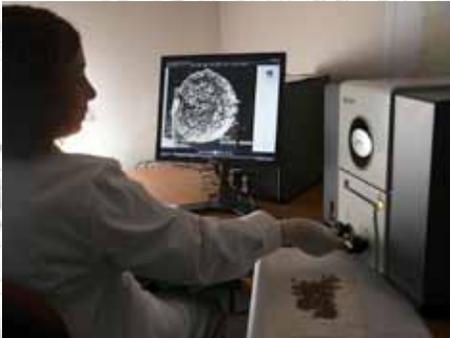
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Taxonomy in action

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