AUSTRALIAN NATIVE PLANTS – NAMING THE PLANTS AND MAKING A START WITH THEIR IDENTIFICATION

Did you know that,

- The person who introduced the 'binary' system for classification of plants and animals (that is, describing them in terms of genus + species) was the Swedish botanist Carolus Linnaeus
- Linnaeus died in the same year that the first fleet arrived in Australia
- By and large the traditional method of plant classification using plant morphology has been found to be consistent with classification based on DNA analysis

The Botanical Naming of Plants

	BOTANICAL NAME	COMMON NAME(S)
	*Banksia serrata*	Old Man Banksia Saw Banksia Saw Leaf Banksia
	*Bidens pilosa*	Cobbler's Peg Farmer's Friend Spanish Needle Herbe d'aiguille
	*Ceratopetalum gummiferum*	Christmas Bush (in NSW)
	*Prostanthera lasianthos*	Christmas Bush (in Victoria)

To the newcomer the botanical name of a plant can seem quite strange. Using botanical names rather than common names, however, has many advantages. Botanical names are universal – they are the same regardless of the language being used. The names are based on

Greek or Latin words, and their botanical use is world-wide. Their use also overcomes the problem of some plants having several common names (see *Bidens pilosa*, above) or of two plants having the same common name (see the two plants above called Christmas Bush). The botanical name often gives an indication of some distinguishing feature of a plant. *Banksia serrata*, for example, is a *Banksia* with serrated leaves.

Genus and Species

Every plant has a two-part botanical name. The first part is the **genus** and the second is the **species**, e.g. *Banksia* (genus) *serrata* (species). The genus always starts with a capital letter, the species with a lower case letter. The **genera** (plural of 'genus') are grouped into **families.** The *Banksia* genus, for example, belongs to the Proteaceae family-

Family:	**Genus:**	**Species:**
Proteaceae	*Banksia*	*serrata*

Occasionally - to accommodate groups of similar plants - a plant family is divided into various **'sub-families'** or sometimes even further into **'tribes'**:

Family	**Sub-Family**	**Tribe**	**Genus**	**Species**
Ericaceae	Styphelioideae	Epacrideae	*Epacris*	*longiflora*

Sometimes the root words are derived from the names of people – common in the case of the genus - and sometimes they are derived from a feature of the plant or its resemblance to another plant – common in the case of the species.

Here are some of the root words which are used in botanical names:

Number	uni - one	penta - five
	bi - two or twice	quinque - five
	di - two	poly - many
	tri - three	-bunda - abundant
	tetra - four	pauci - few
Colour	leuco - white	glauca - blue-green / grey
	alba - white	laterita - brick red
	mela - black	caerule - blue
	nigra - black	virida - green
	coccinea - scarlet	flavi - yellow
	ferru - rusty	lute - yellow
Plant Part	-folia, -folius, -folium	- of the leaves
	-flora, florus, -florum	- of the flower
	-carpus,	- of the fruit
Size	macro - large	iso - equal
	grandi - large	brachy - short
	micro - small	late - broad
	lepto - small	longi - long
	parvi - small	angusti - narrow
Description	fruti - shrubby	glabra - smooth
	hirsuta - hairy	hispida - bristly
	integri - entire	lanceolata - lance-shaped

Word Endings of the Botanical Names

Unlike nouns in the English language all nouns in Latin have gender. So a plant genus, being a Latin term, will be of feminine, masculine or neuter gender. Consider, for example, these three plant genera and note the different word endings –a, -us, and -um for the three different genders:

genus:	*Acacia*	*Ozothamnus*	*Leptospermum*
	-a	-us	-um
its gender:	(feminine)	(masculine)	(neuter)

- '–a', '-us' and '–um' are by far the most common endings for feminine, masculine and neuter plant genera - but there are other endings …….
- Because of the complexity of Latin declensions or of complications due to a word being of Greek origin some genera have word endings different to those above – or have one of the above endings but an unexpected gender. (Latin scholars enjoy explaining the rationale for these different and contradictory endings!) Some notable examples are:
  Different endings:
  Platysace and *Brachyscome* – '-e' endings
  Isopogon and *Callistemon* – '-on' endings
  Contradictory endings:
  Comesperma, *Leionema*, *Lepidosperma* – neuter gender despite the '-a' ending
  Eucalyptus - feminine gender despite the '–us' ending
- In general, the feminine gender for a plant genus is the most common, neuter gender the next most common and masculine gender the least common.

The second part of the botanical name, the **species**, is an adjective which **must agree in respect of gender with the genus to which the species is attached**. Consider, for example, the word endings for these three plants:

Acacia floribunda		*Ozothamnus diosmifolius*		*Leptospermum squarrosum*	
-a	-a	-us	-us	-um	-um
(feminine gender)		(masculine gender)		(neuter gender)	

While the '–a', '-us' and '–um' endings for the species are again the most common there are other reasonably common endings as in the following examples:

Themeda australis		*Sarcochilus australis*		*Syzygium australe*	
-a	-is	-us	-is	-um	-e
(feminine gender)		(masculine gender)		(neuter gender)	

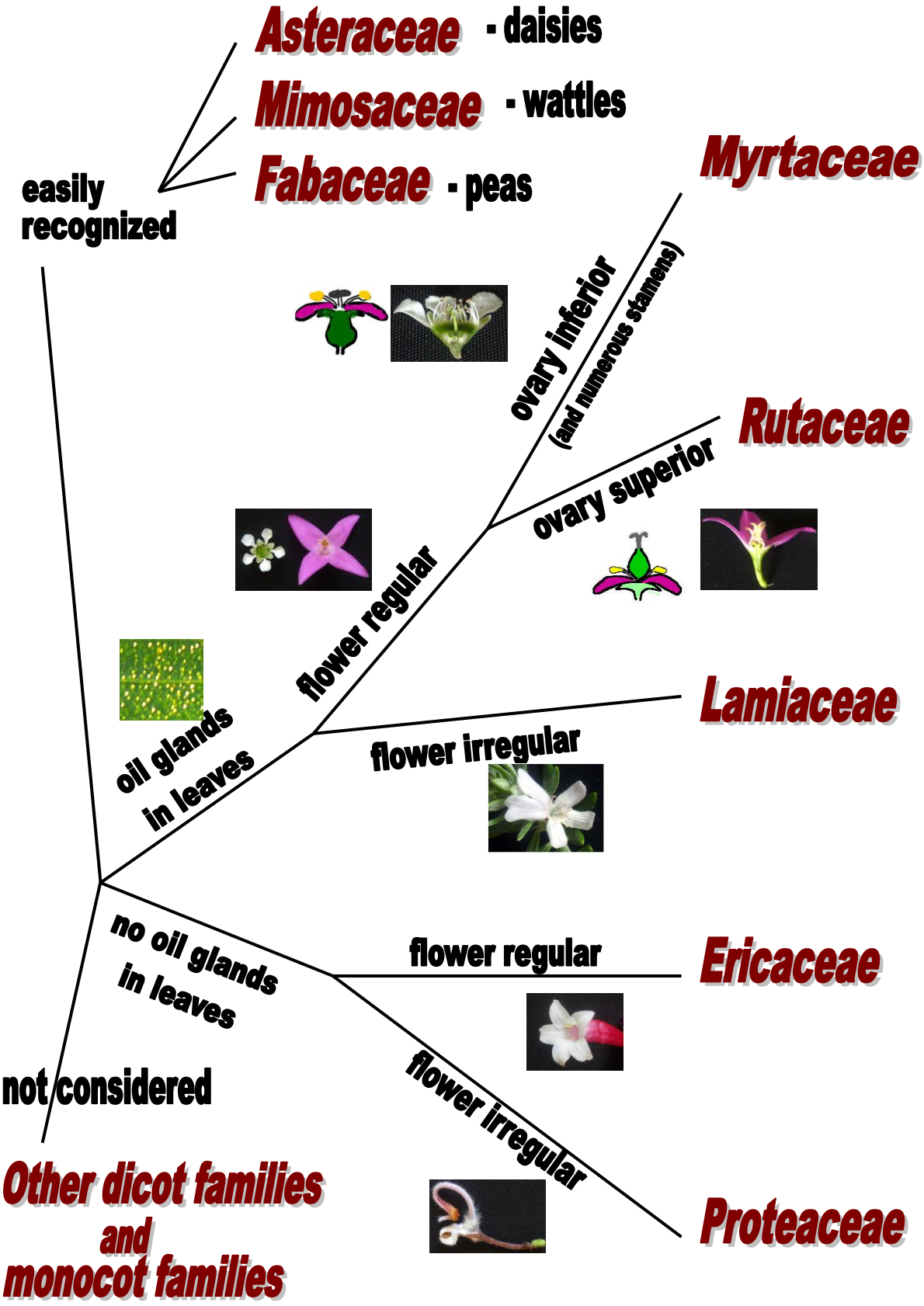
For some endings there is no change whatever the gender:

feminine	masculine	neuter
-ex	-ex	-ex
-ens	-ens	-ens
-oides	-oides	-oides
-ii	-ii	-ii
-i	-i	-i

e.g. *Acacia schinoides* *Aotus ericoides* *Leptospermum arachnoides*
Melaleuca sieberi *Callistemon sieberi* *Ecastaphyllum sieberi*

- The '–oides' ending means '–like'. In *Brachyloma daphnoides*, for example, the *'daphnoides'* means Daphne-like, referring to the fragrance.
- The '-ii' or '-i' endings are used when a person's name is involved, for example, *Syzygium smithii*.

Identification of Native Plant Families



Notes about the above scheme.

1. The scheme is rather simplistic. To correctly place plants into their families other characteristics often need to be considered. Although *Westringia fruticosa*, for example, does not show significant oil glands it has a flower shape (2-lipped petals) characteristic of the family Lamiaceae and is placed there; and although *Persoonia* species have regular – not irregular - shaped flowers they have a flower structure characteristic of the family *Proteaceae* (sepals and petals combined into a so-called 'perianth') and are placed there. There are many such anomalies.
Despite its shortcomings the scheme can provide a good first approach to plant identification.

2. Other dicot families are not considered in the scheme. Some commonly occurring plants in these families are as follows:

Scientific Name	**Common Name**	**Family**
Actinotus helianthi	Flannel Flowers	Apiaceae
Actinotus minor	Lesser Flannel Flower	Apiaceae
Platysace linearifolia	Narrow-leaf Platysace	Apiaceae
Allocasuarina distyla	She-oak	Casuarinaceae
Bauera rubioides	Dog Rose	Cunoniaceae
Ceratopetalum gummiferum	Christmas Bush	Cunoniaceae
Hibbertia species		Dilleniaceae
Dampiera stricta		Goodeniaceae
Scaevola ramosissima	Fan-flower	Goodeniaceae
Pittosporum undulatum		Pittosporaceae
Pomaderris intermedia		Rhamnaceae
Dodonaea triquetra	Hop Bush	Sapindaceae
Stylidium graminifolium	Trigger Plant	Stylidiaceae
Pimelea linifolia		Thymelaeaceae
Tetratheca ericifolia		Tremandraceae

3. Monocots are not considered in the scheme. Monocots as a group are distinguished by having flowers with only 3 petals (Dicots have 4 or 5 petals). Some monocots belong to clearly distinguishable families such as grasses, orchids, reeds, etc.

Where to Find Details of Plant Families in the Sydney district:

1. 'Field Guide to the Native Plants of Sydney' by Les Robinson, Kangaroo Press.

This wonderful and comprehensive book gives descriptions of all native plants occurring in the Greater Sydney Area. Included with the descriptions of the plants are line drawings that show unique aspects of the plants – invaluable for their identification. Derivations of the names of species are also given and sometimes anecdotes concerning their history and culture.

Plant families are considered in a rather arbitrary order. About half of the book (the first half) deals with the **dicotyledons**. In Robinson's words these are "flowering plants characterised by the embryo having two cotyledons (seed leaves) ….herbs and woody plants, mostly with net-veined leaves and flowering parts in 4s or 5s". Six dicotyledon families considered to dominate the Sydney vegetation are dealt with first: Myrtaceae, Mimosaceae, Fabaceae, Proteaceae, Ericaceae and Rutaceae. All other dicot families are then considered in alphabetical order in a section labelled 'Lesser Families'. (Included

here are Asteraceae and Lamiaceae shown in the above scheme for 'Identification of Native Plant Families').
The next section of the book deals with the **monocotyledons.** In Robinson's words**,** again**,** these are "flowering plants characterised by the embryo having a single cotyledon (seed leaf). …most are herbs with leaves with parallel veins and flowering parts in 3s." (Included in the monocots are the lilies, the orchids, the grasses and the reeds & sedges.)
A section then follows on primitive plants "which dominated world vegetation before the rise of flowering plants". (Principally this section covers the Ferns.)
Finally some specialised groups of plants are considered, Climbers, Rainforest Species, Coastal and Estuarine Species and Aquatic Species. (Dicot, monocot and primitive plant species are all included in this section..)

2. 'Native Plants of the Sydney District' by Alan Fairley and Philip Moore, Kangaroo Press.

This is another outstanding book, thorough and comprehensive. The feature of this book is the inclusion of excellent colour photographs of all species considered. These provide a wonderful complement to the drawings in Robinson's book. Families are arranged with the most ancient and primitive (the fork ferns and the ferns) at the start of the book. Then follow plant families in order of the plants' increasing proportions of 'advanced' features. The bulk of those with advanced features are the angiosperms (the flowering plants).
The monocotyledons are treated separately towards the end of the book with the rationale for this being that the two groups (that is, dicots and monocots) have undergone 'concurrent lines of development' in which individuals display both primitive and advanced features in different proportions.

3. 'PlantNet' An internet site of the Royal Botanic Gardens, Sydney.
http://plantnet.rbgsyd.nsw.gov.au/
This internet site is the ultimate reference for indigenous plants in NSW. For each species it gives a botanical description, flowering times, distribution and occurrence and often photographs and sketches.

4. 'Sydney Sandstone Flora' by Tony Edmonds and Joan Webb, NSW University Press.

While not a comprehensive text this book provides an excellent introduction to the plants in the Sydney region.

Acknowledgements
Pictures on page 1 are all from the PlantNet site shown above and printed with the permission of The Royal Botanic Gardens & Domain Trust.
The plant identification scheme on page 4 has been adapted from a scheme suggested by Dr. Joan Webb (see Reference 4 above).

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