



OTHER FAMILIES

ASTERACEAE, APIACEAE AND GOODENIACEAE FAMILIES

Did you know that,

- The so-called 'flower' of a daisy is not a single flower but a 'flower head' made up of many tiny individual flowers
- The Flannel Flower, despite its appearance, is not a member of the daisy family - it belongs to the same family as carrots
- A genus of flowering plants first described by Reverend Goodenough in the 18th Century has been named Goodenia rather than the more logical one of Goodenoughia (!)

Asteraceae

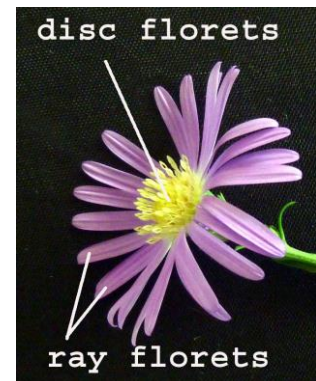
Members of the 'daisy' family (Asteraceae) can generally be recognized by their characteristic flower heads.



With over 25,000 species Asteraceae is one of the world's most numerous and widespread of plant families. So successful are these plants that many of them are weeds – Dandelion, Fleabane and Cobbler's Peg, for example. On the other hand plants such as Gerberas and Zinnias are prized horticultural species – and the uniquely Australian 'everlastings' are widely used in floral art. Daisies growing in the Australian alpine regions and on the sandplains of Western Australia provide fantastic flower displays every Spring.

The Flower Head Structure of Asteraceae Species

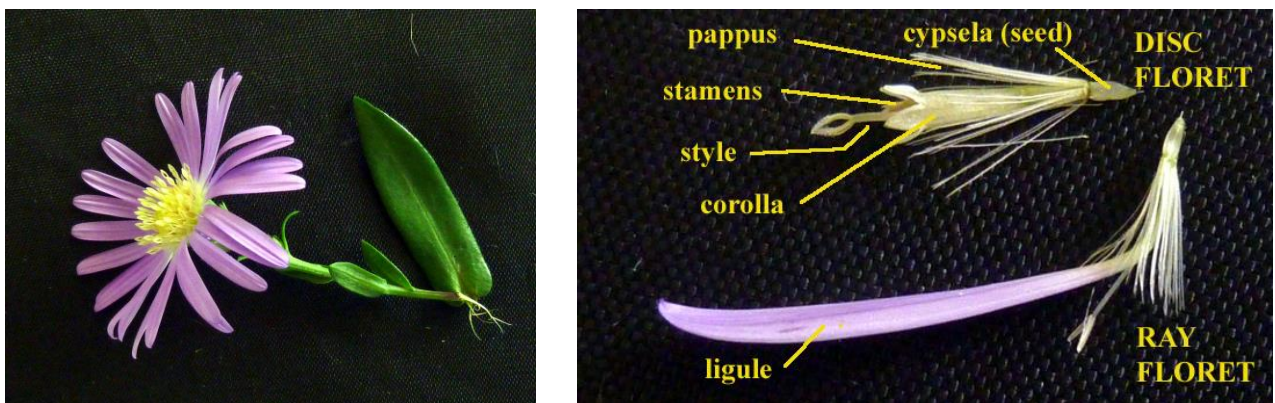
The flower head of a daisy is actually a collection (or composite) of many individual flowers. These individual flowers are called 'florets'. The outer ones (resembling the petals of a simple flower) are called 'ray florets'. Those at the centre of the flower head are called 'disc florets'. (The previous name of 'Compositae' for this plant family provided a very fitting description of the nature of the flower heads!)



The following pictures show some daisy flowers broken open to reveal these florets in more detail.



Here is a picture of an *Erigeron* species with its disc and ray florets shown enlarged in the right hand picture.



The disc floret is usually bisexual consisting of a tubular corolla with five lobes at its apex, a set of stamens inside this tube and a style that protrudes from the tube and separates into two style arms. At the base of the tube is the 'pappus', (the calyx of sepals) and below that the 'cypsela' (the seed).

In the most common type of ray floret the corolla tube is split and a section of the tube is extended into a 'petal-like' structure called a 'ligule'. (The ray is described as 'ligulate'.) These ray florets are most often female (that is, no stamens are present). Sometimes the ray florets are

sterile (neither stamens nor styles present) or even bisexual (both stamens and styles present). In general, the ray florets have evolved to attract pollinators.

(Occasionally only disc florets or ray florets are present - the Scotch Thistle with only disc florets and the Yam Daisy with only ray florets, for example.)



Florets sit on an enlarged part of the stem called the 'receptacle'. They are surrounded by an 'involucre' of bracts which can be either soft and green (resembling the sepals of ordinary flowers) – or papery and often brightly coloured (resembling the petals of ordinary flowers).



Gazania species
(bracts soft and green)



Xerochrysum bracteatum
(bracts papery, yellow)

Identification of Asteraceae Species.

There are many criteria for identifying Asteraceae plant species – plant habit, leaf shape, type of bract, the floral features and the arrangement of the flower heads. While some species such as *Taraxacum* (Dandelion) have solitary flower heads others have whole clusters of flower heads which can be so tightly packed that the daisy-like structure is hardly recognizable! *Ozothamnus diosmifolius*, present in Ku-ring-gai Wildflower Garden, is one such species.

(See picture of this species below.)

Another very important identification feature is the structure of the cypselas and its attached pappus. Here, for example, are pictures of the cypselas and pappus for members of four genera. Note the hairiness of the Dandelion pappus, the barbs on the *Bidens* pappus, the absence (almost) of a pappus on the *Brachyscome* species and the relatively large pappus on the *Erigeron* species. (The corolla has not yet fallen away on this *Erigeron* species)

Taraxacum (Dandelion) *Bidens* *Brachyscome* *Erigeron*



Asteraceae Species in Ku-ring-gai Wildflower Garden.

Coronidium elatum (Formerly *Helichrysum elatum*)
(White Paper Daisy)

An erect daisy growing to almost 1 m. The flower head has a yellow centre surrounded by white bracts. Whether the plants growing at Cunningham's Rest in KWG are indigenous or introduced is uncertain.



Brachyscome multifida is a sprawling, low-growing perennial with mauve or blue ray flowers about 1 cm long. The ray flowers are female while the disc flowers are bisexual. An excellent home-garden plant that flowers for much of the year.



Xerochrysum bracteatum
(Golden Everlastings, Yellow Paper Daisy)

A rather variable species with spectacular flower heads. The most widespread form has a yellow head up to 6 cm in diameter. The bracts are various shades of yellow and remain on the flower for much of the year, making the plants widely recognizable.



Ozothamnus diosmifolius

(Paper Daisy)

A tall shrub with a dense head of white flowers in terminal corymbs. (Just in bud in this picture.) It is conspicuous in the bush due to its tallness and the fact that it flowers in mid-summer. Leaves are narrow, green above and white below and they are strongly perfumed.



Cassinia uncata (Bent Cassinia)
(Although not present in KWG this species is included here because it is so easily mistaken for *Ozothamnus diosmifolius*.)
Note its slightly hooked leaf tips.



Cassinia denticulata

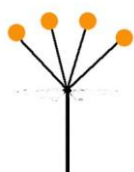
(Only small features differentiate the inflorescence of the genus *Cassinia* from that of *Ozothamnus*. Ray flowers are absent or only very small in both but in *Cassinia* the individual disc flowers are separated by long, chaffy scales.)

Cassinia denticulata leaves are glossy, finely toothed and with a layer of white felt underneath.

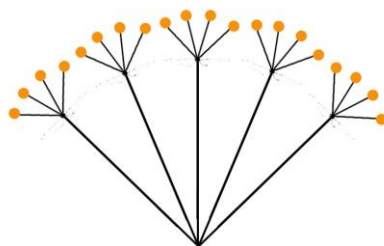


Apiaceae

The family Apiaceae (formerly known as Umbelliferae) is widely distributed throughout the world and includes the vegetables carrots, parsnips, parsley and celery. The best known local member of the family is the Flannel Flower, *Actinotus helianthi* – an Australian icon. A common feature of the family is the umbel-shaped inflorescence, either simple or compound.



simple umbel



compound umbel



parsley (gone to seed)
- a compound umbel

Other features often present are leaves deeply divided into segments (as in parsley) and the umbel surrounded at its base by a ring of bracts (an 'involucre' of bracts). All members have 5 stamens, a tiny calyx and an inferior ovary (that is, the ovary is situated below the calyx and corolla).

Apiaceae Species in Ku-ring-gai Wildflower Garden

Actinotus helianthi (Flannel Flower)

This much loved plant (left-hand picture) is widely distributed across Australia's east coast. The 'daisy-like' appearance of its inflorescence is due to a rim of white bracts surrounding a closely packed head of small individual florets. Its leaves are deeply divided and the whole plant is covered in woolly, white hairs.



Actinotus minor (Lesser Flannel Flower)

In some respects this plant (right-hand picture) is a miniature version of *A. helianthi* but flower heads are at the ends of relatively long, wiry branches so the general appearance of the plant is 'straggly'. Another difference is the extent of the 'woolliness' – the stems and upper surface of the leaves are hairless, even glabrous (shiny).



Xanthosia pilosa (Woolly Xanthosia)

A small, straggly and densely hairy shrub - the stem is especially hairy. Flowers are a pale yellow-green. Umbels are often paired. Leaves are 3-7 lobed.



Xanthosia tridentata (Rock Xanthosia)

A small plant with a characteristic wedge-shaped leaf, 3-toothed at its tip. Stem is sparsely hairy, the leaves less so. With a rather insignificant flower this plant is easily missed.



Platysace linearifolia (Carrot Tops)

A common, small herb with soft, narrow, almost cylindrical leaves. The small white flowers (in compound umbels) appear in February or March.

Goodeniaceae

This is a family of low-growing herbs and shrubs in which the corolla tube of the flower is slit to the base and the whole then 'fanned' out into five corolla lobes. Sometimes these lobes are spread evenly (*Scaevola*) and sometimes they form an upper lip of two lobes and a lower lip of three lobes (*Goodenia*, *Dampiera*).

A common feature of all Goodeniaceae is the presence of a pollen cup or 'indusium' at the top of the style. The indusium collects pollen from the anthers while the flower is in bud. This does not cause self-fertilisation because the stigma has not yet fully developed. Later, when the stigma does develop fully, pollen is accepted both from other plants and from the plant itself.



Goodeniaceae Species in Ku-ring-gai Wildflower Garden.

Dampiera purpurea (Purple Dampiera)

An erect shrub with almost round-shaped leaves and mauve flowers with yellow centres. The stems, undersurface of leaves and backs of flowers are covered in woolly hairs. Like all Dampieras the indusium is hairless.



Dampiera stricta (Blue Dampiera)

A straggling shrub with thick, almost diamond-shaped leaves and blue flowers with yellow centres. Stems and leaves are hairless.



Goodenia ovata (Hop Goodenia)

An erect shrub to 1.5 m. Leaves are soft, broad and glossy with toothed margins. Stems (especially the growing tips) are slightly sticky. Flowers are bright yellow with petals in upper and lower lobes as described above.



Goodenia heterophylla subsp. *heterophylla*
A low growing shrub with yellow flowers similar to those of *Goodenia ovata* but smaller. Leaf shapes are very variable. (All leaves in the picture are from the same plant!)



Scaevola ramosissima (Purple Fan-flower)
A low growing, straggling plant with spectacular, fan-shaped, purple flowers. Stems are rather wiry and covered with stiff hairs making them rough to the touch. Leaves are narrow, lanceolate and slightly toothed.



Scaevola aemula (Fairy Fan-flower)
A sprawling perennial herb occurring along NSW coast although fairly rare in Sydney region. Leaves are obovate with toothed margins. Fan-shaped flower is light pink with a yellow-brown centre.



Acknowledgements

Photos: Scotch Thistle and Yam Daisy from Wikimedia Commons, *Coronidium elatum* from Hornsby Library Herbarium site. All other pictures from photographs taken by members of the North Shore Group of the Australian Plants Society.

In KWG these plants have green disc '13' attached to the botanical sign.

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