

## PROTEACEAE – it's all about pollination .....Gail Slykhuis

### Illustration Philippa Hesterman, images Ellinor Campbell & Marg McDonald

A predominantly southern hemisphere plant family, *Proteaceae* is well represented in Australia, particularly in the West, but we do have our own equally special local representatives, some of which are outlined below.

A characteristic feature of many genera within this plant family is the 'pollen presenter', which is a fascinating mechanism by which the pollen, which would otherwise be difficult to access for potential pollination vectors such as bees, birds and nectarivorous mammals, is positioned on the extended style of the flower, facilitating cross-pollination. The stigma, which is part of the style, is not mature at this time, thus avoiding self-pollination.

A hand lens would enable you to clearly see pollen presenters on the following local representatives: *Banksia marginata*, *Grevillea infecunda*, *Hakea* spp., *Isopogon ceratophyllus* and *Lomatia illicifolia*.

It is interesting to note that both Victorian Smoke-bush *Conospermum mitchellii* and Prickly Geebung *Persoonia juniperina*, also found in our district, do not have pollen presenters.

#### Silver Banksia *Banksia marginata*

This shrub or small tree is readily recognisable when flowering (Feb – July) by the conspicuous yellow pollen presenters, which are an obvious floral part of the banksia flower. These flowers then slowly mature into our iconic woody banksia cones. It is interesting to observe the changes in the nature of the pollen presenters as the flower develops. The white undersides of the leathery leaves provide a clue to the choice of common name with their tip being characteristically blunt or truncate.

#### Anglesea *Grevillea infecunda*

One of our endemic plants, the Anglesea *Grevillea* was first named in 1986 and is found in several locations north west of Anglesea. It is readily identifiable when flowering (Oct-Dec) due to the many pollen presenters that give the red flower its toothbrush appearance. The leaves can be readily distinguished from Holly Lomatia *Lomatia illicifolia* due to their coarse prickly lobes, dark green upper surface and silvery lower surface.

#### Horny Cone-bush *Isopogon ceratophyllus*

The distinctive nature of this rounded, prickly, small shrub has certainly ensured that it is well known within the district. Long petioles (leaf stalks) support divided leaves, with an 'ouch' factor arising from the presence of pungent spines on each of the leaf segments. The yellow cone like flowers (Jul-Jan) contain extended pollen presenters, are approximately 1.5cm across and are well protected by the leaves.



Horny Cone-bush

#### Victorian Smoke-bush *Conospermum mitchellii*

Well known for their striking display in both bud and flower (Sept-Dec), the blue-grey buds produce a hazy smoky look which in turn becomes a mass of white as the flowers open.



Anglesea Grevillea



Victorian Smoke-bush

This spectacle can be enjoyed in the Fraser Ave Reserve, in spring. The appearance of this flower when compared with other members of *Proteaceae* may raise the question of why is this a member of *Proteaceae*, but on examination of the flower you will see the common floral number and similar arrangement of floral parts. The difference is the lack of a pollen presenter. This would suggest that the floral structure of this plant species utilises a different technique to ensure cross pollination.

Research indicates a species of small bee (*Leioproctus conospermi* group) is responsible for triggering both an advantageous movement of the style and an explosion of pollen from the anthers.

References:

*Flora of the Otway Plain & Ranges 2* Mayfield, Enid, 2013

*Flowers of Anglesea and Aireys Inlet* MacDonald, Margaret (Ed) 2009

*Floral Biology and Propagation of Blue Flowered Conospermum spp.* Stone, Lynley M, 2003

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