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Seed Notes

for Western Australia

No. 18 *Isopogon* and *Petrophile*

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This issue of **Seed Notes** will cover the genera *Isopogon* and *Petrophile*.

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Isopogon and Petrophile

The botanist Robert Brown named the genus *Isopogon* in 1810. The name means equally bearded, which refers to the nut that is hairy all over. *Petrophile*, which means rock loving, was named by Joseph Knight in 1809. The first specimens of this genus were collected from rocky habitats. Very few species of *Petrophile* are cultivated in spite of their attractiveness, including good floral displays and interesting foliage variation. Some species of *Isopogon*, commonly called cone bushes or conesticks, have been used in the cut flower trade and in amenity plantings. Seed is not generally available for either genus from commercial outlets.

Below: *Isopogon formosus* ssp. *dasylepis*.

Below right: *Petrophile latericola*.
Photos – Anne Cochrane



Isopogon formosus ssp. *dasylepis*. Photo – Anne Cochrane

Description

Isopogon and *Petrophile* (family Proteaceae) are very closely related and often difficult to tell apart. Species of both genera are woody perennials, ranging from dwarf to medium erect shrubs up to two metres tall. Leaves can be flat or cylindrical, simple or divided, and soft or pungent. Both have flowers in heads or short terminal or axillary spikes that are attached to the stem or sometimes on short stems. The flowers are

clustered in numerous small flowers that can be cream, yellow or pink. Flowering is mainly late spring to early summer. The distinguishing feature of these two genera is the fruit, which is a cone. When the fruit of *Isopogon* is ripe, the bracts, or cone scales, fall away; in *Petrophile* they are persistent. Some species in the genus *Isopogon* have lignotubers and can resprout from rootstock after fire or cutting.



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Geographic distribution and habitat

There are about 35 species of *Isopogon* and more than 50 species of *Petrophile*. Both genera are endemic to Australia. Most species are confined to south-western Australia, occur on a range of soil types and grow in heaths or woodlands over granite or gravel, or in heath on sandy soils over laterite. In the east of Australia, species are found on sandstone soils in higher rainfall areas. They mainly occur in temperate to semi-arid zones on acid soils. The dieback disease, *Phytophthora cinnamomi*, is threatening the survival of many species that occur in high rainfall areas.



Approximate distribution of *Isopogon* and *Petrophile* in Australia.

Seed collection

Collection of cones from both genera is very easy but care must be taken to only collect mature cones. Cones turn grey to grey brown when ripe and lose their old floral parts. They are usually ripe six months after flowering. Use secateurs to cut the cones from the shrub. This is often necessary in plants that produce axillary cones that are hard to remove from the branches. In *Isopogon*, the cones will disintegrate with age and the seed will be released. The seed does not extract as easily from *Petrophile* and may need to be pulled out with a pair of forceps.



Reproductive biology

The cone consists of many fruits or nuts which contain a single seed. Seeds of both *Isopogon* and *Petrophile* are wind dispersed with the hairiness of the fruits helping dispersal. It is likely that flowers of both genera are insect or bird pollinated. It is also thought that mammals such as bush rats and honey possums may pollinate species in these genera.



Below: *Isopogon uncinatus*. Photo – Anne Cochrane

Below right: *Petrophile linearis*. Photo – Sue Patrick



Seed quality assessment

It is sometimes hard to find the small fruits containing the seed of *Isopogon* within the cone. The seed is surrounded by many long silky hairs so pulling apart the cones and finding the seed is tedious. The small fruits of *Petrophile* are fringed with hairs and the seed within the fruit is flattish. Many 'false' fruits are produced in both genera. This means that fruits are formed but are not filled by a seed. Nicking a small corner of the fruit coat will, if present, reveal a seed.



Above: *Petrophile latericola*.
Photo – Anne Cochrane



Far left: *Isopogon formosus* ssp. *dasylepis*.

Left: *Isopogon tridens*.

Below left and below: *Isopogon latifolius*.

Photos – Anne Cochrane



Seed germination

Plants of both *Isopogon* and *Petrophile* can be grown from seed with variable results. Germination may take several months. Smoke has been implicated in improved germination for some species. Removing the hairs and nicking a small section of the seed coat to reveal the underlying white seed gives good results, provided the seed is not damaged. This cutting away of the seed coat has a tendency to speed up the germination process.



Right: Germinating seed of *Isopogon latifolius*. Photo – Anne Cochrane

Below: Mature cones of *Isopogon drummondii*. Photo – Sue Patrick





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These **Seed Notes** aim to provide information on seed identification, collection, biology and germination for a wide range of seed types for Western Australian native species.

THREATENED FLORA



They have been written and compiled by Anne Cochrane, Manager of DEC's Threatened Flora Seed Centre.

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The **Seed Notes** are available from www.naturebase.net

Seed Notes

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Above: *Isopogon asper* fruit.

Photo – Sue Patrick

Recommended reading

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