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Seed Notes for Western Australia

No. 13 Dryandra

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Department of
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Our environment, our future

Dryandra

The genus *Dryandra* (family Proteaceae) was named by the explorer and botanist Robert Brown in honour of the Swedish botanist Jonas Dryander, the first librarian of the Linnaean Society of London and curator of Joseph Banks' collections. The first European collector of *Dryandra* was Archibald Menzies in 1791. By 1827 English nurserymen were propagating plants of this genus from seed.



Dryandra mucronulata ssp. *retrorsa*.
Photo – Anne Cochrane



Fruit and flower of a typical *Dryandra*. Photo – Babs and Bert Wells/DEC

Description

All species are woody perennials ranging in size from prostrate shrubs to small trees. Most species have lobed or divided leaves. The *Dryandra* flower head is generally wider than it is long and the individual flowers of the inflorescence are set in a curved woody receptacle. Flower colour is mainly yellow but can vary from cream to orange or may be multi-coloured. Some species produce masses of flower heads over a long period, attracting both insects and birds for food and pollination. *Dryandra* is closely related to

the genus *Banksia*, differing in the presence of a prominent involucre and in the shape and arrangement of the seed follicles. The leaves of *Dryandra* are also more pungent than those of the *Banksia*. Many *Dryandra* are horticulturally interesting and some are found in cultivation. A number of species are suitable for the cut flower trade (e.g. *D. formosa*). They would be useful for parks and gardens as they are hardy and may be considered drought tolerant. Unfortunately many are also quite prickly and therefore not generally in use for amenity plantings. Many species are extremely variable and identification is often problematic unless you have considerable taxonomic knowledge.



Dryandra flowers are often bright and showy, attracting both birds and insects.
Photo – Babs and Bert Wells/DEC



The rare *Dryandra ionthocarpa*.
Photo – M. McDonald

Geographic distribution and habitat

The genus *Dryandra* is a prominent endemic genus of Western Australia with 93 species and 34 infraspecific taxa in the south-west. It is the third largest genus in the family Proteaceae in Western Australia. The majority of species are found on nutrient-poor laterite soils in and around the agricultural wheatbelt, or in deep sands on the southern coast or northern sandplains. They are an important component of many vegetation types in the south-west and often thrive in inhospitable situations such as road verges, open hillsides on shallow stony soils and at the edges of gravel pits. Many species are threatened by broadscale clearing for agriculture, habitat fragmentation, weed invasion and rising salinity. Most species are also considered highly susceptible to the soil-borne root fungus *Phytophthora cinnamomi*.



Typical leaf shape of *Dryandra calophylla*.

Photo – Ellen Hickman

Seed collection

Dryandra seed follicles are usually thin, smooth, brownish, roughly triangular in shape and frequently buried deep in the old flower heads. The infructescence of the *Dryandra* may hold just a few follicles or up to 40 or more depending on the species. Each follicle may hold one or two seeds. Some species shed their seed as soon as it matures while others retain old fruiting heads for several years. Follicles tend to turn dark brown or black when ripe. Seed collection of *Dryandra* is not always easy, and the use of gloves is strongly advised owing to the presence of prickly leaves. Fruiting heads are often hidden within the foliage and more often than not one or both seeds within the follicles will be damaged by insects, or the entire fruit ravaged by birds.

In a recent research project, the results of germination testing of seed collected from live, dead and half-dying plants of a rare subspecies of *Dryandra nivea* were identical. This means that dying and recently dead plants may be the source of seed material without the need to unduly stress live plants during seed collection.

Dryandra are most commonly propagated by seed which is by far the easiest method, although care must be taken not to kill seedlings with too much water as damping off can be a problem. Germination may take from several weeks to several months. Cuttings are successful for some species.



Above: Collecting seed of *Dryandra pseudoplumosa* near the Stirling Range National Park.

Below: Flower and fruit of *Dryandra drummondii* ssp. *macrorufa*.

Photos – Anne Cochrane



Reproductive biology

Dryandra are excellent for attracting birds. Honey eaters visit the flowers and may be pollinators of many species. Insects also feed on plants and it has been suggested that flies may pollinate at least one prostrate species with somewhat offensive smelling flowers! Mammals may also provide pollination services to the plants. It may take up to six months for follicles to develop and mature after flowering has finished. *Dryandra* are disturbance opportunists, regenerating in the hundreds after fire, road maintenance or gravel extraction activities.

Species may be either lignotuberos and therefore resprout after disturbance, or non-lignotuberos and killed by fire, regeneration then occurring from seed.

Seed quality assessment

The seed coat surrounding the seed should be black when mature with a firm white seed within. The follicles will be medium to dark brown and hard, except for those species that do not hold their seed in hard follicles.



Above: *Dryandra longifolia* ssp. *longifolia* follicles.

Right: *Dryandra anaton* seed follicles showing healthy white endosperm.

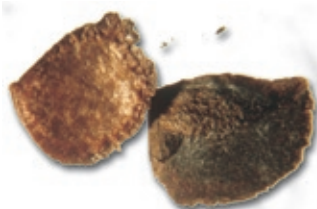
Below: *Dryandra mucronulata* ssp. *retrorsa* follicles.

Photos – Anne Cochrane



Dryandra trifontinalis regenerating at the edge of a gravel pit.

Photo – Anne Cochrane



Above: *Dryandra octotriginta* seed.

Right: *Dryandra ionthocarpa* seed.

Below: *Dryandra pteridifolia* ssp. *pteridifolia* seed.

Photos – Anne Cochrane



Seed germination

Seed germination of *Dryandra* is relatively easy with most species requiring no pre-treatment to give good germination, provided the seed has been extracted from the woody follicles. The winged seed of *Dryandra* is released on heating. This can be done by placing fruits in a paper bag and either placing in a low temperature oven (no more than 60°C) or on the dash-board of a car to heat up. If the follicles are very large and woody, then cutting the tops of the follicles with secateurs can help the follicles to open. Be careful not to cut the bottom end of the follicle where the seed lies. High rates of germination (up to 100 per cent) can be achieved for many species. Fruits containing good seed will maintain their viability for many years if stored dry and cool under standard genebank conditions.



Far right: The rare *Dryandra montana* at Bluff Knoll.

Above right: *Dryandra speciosa* ssp. *speciosa*.

Right: *Dryandra preissii*.

Photos – Anne Cochrane



Above: *Dryandra formosa*.
This species is picked for the floriculture industry.

Left: *Dryandra mucronulata* in wandoos woodland.

Photos – Babs and Bert Wells/DEC

Note: Due to taxonomic revision, all species of *Dryandra* have been transferred to the genus *Banksia*.

Recommended reading

Cochrane, A., Brown, K. and Kelly, A. 2002. Low temperature and low moisture storage of seeds of rare and threatened taxa in the endemic Western Australian genus *Dryandra* (R. Br.) (Proteaceae). *Conservation Science Western Australia* 4 (1), 1-12.

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Seed Notes for Western Australia



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



SEED CENTRE

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

Concept by Grazyna Paczkowska.

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