

## FLORA

## EREMOPHILAS - EMU BUSHES, POVERTY BUSHES

Bob Chinmook

EMU bushes are common throughout the drier parts of Australia. They are also known as poverty bushes in Western Australia because in some areas a number of unpalatable species increase rapidly in numbers as pasture becomes degraded. These plants all belong to *Eremophila*, the largest and most diverse genus in the Myoporaceae family. This family is largely Australian and the other well-known genus, *Myoporum*, has 30 species worldwide with 18 occurring in Australia.

*Eremophila* occurs only in Australia and the great majority of species are found in WA. Of the 214 species recognised today, 180 occur in WA and of these 146 are only found there. They are particularly common throughout mulga country and in eucalypt woodlands throughout the wheatbelt. The richest *Eremophila* area in Australia occurs around Meekatharra where over 30 species can be found in a 1° square (latitude x longitude).

## PLANT FEATURES

Most *Eremophila* are shrubs commonly ranging from 0.2 - 3 metres tall but a few species like *E. longifolia*, *E. fraseri* and *E. mitchellii* can develop into small trees and a new species found in south west Queensland grows to 11 metres tall. In the southern parts of WA, a number of species form flat mats up to 2 metres or more in diameter.

Leaves are scattered or spirally arranged along the branches but in a few small groups the leaves are in opposite pairs or in whorls of threes to fives. They are undivided, frequently long and

narrow and have entire or toothed margins. They may lack hairs or have a sparse to dense covering of them. In many cases the white, or more rarely yellow hairs, completely cover the surface.

The branches, leaves and sometimes parts of the flowers secrete resin and many species are very sticky. In extremely resinous species like *E. ramiflora*, the hairs become immersed in the resin and are not visible.

*Eremophila* flowers are pollinated by either birds or insects, and the flower types for these pollinator groups are quite different in form and colour.

INSECT-POLLINATED SPECIES like *E. nivea* (Fig.1.) are characterised by having white, cream, lilac, pinkish-lilac to purple corollas with the anthers enclosed in the tube or just sitting at the throat. In the tube there are usually spots (rarely solid broad lines) forming lines on the lateral walls,

and often on, and below, the lower lobe. They help guide insects, usually native bees, but also honeybees, moths and butterflies, to the flower and down the tube to where the nectar is secreted. On entering the flower, pollen is rubbed onto the insect's head and back. Some flowers have tufts of white hairs at the entrance of the tube below the upper lobes and often on the lower lobe. Insects also "see" beyond the visible light spectrum into the UV range and both the hairs and spots in these flowers fluoresce and act as spotlights to the insects. Another feature of insect flowers is that the lower corolla lobe is projected forward and acts as a platform for the insect to land on.

BIRD-POLLINATED SPECIES like *E. subfloccosa* (Fig.2.) have red, orange, yellow and sometimes cream, green or brownish corollas. The anthers are normally exerted well beyond the tip of the corolla,

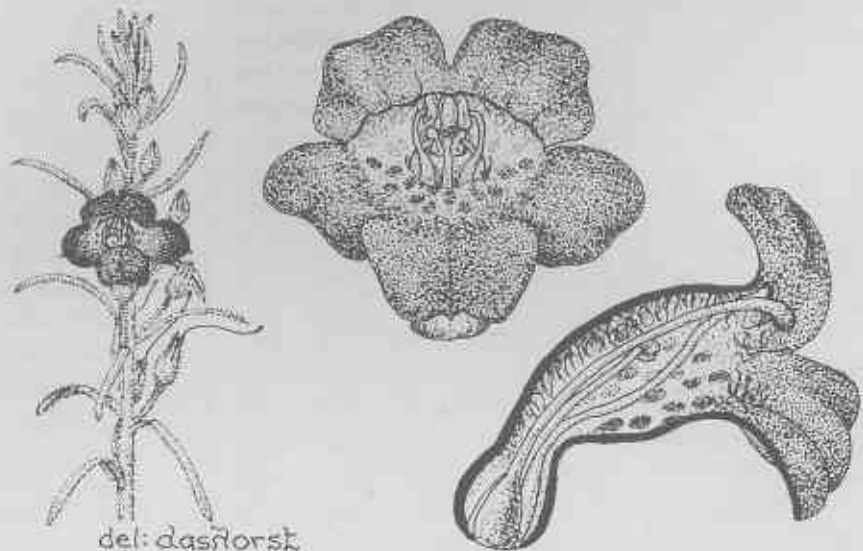


Fig. 1. *Eremophila nivea* showing the lower corolla lobe projected forward, enclosed stamens and the prominent spotting in the tube

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as is the style. Many species like *E. glabra*, *E. oppositifolia* and *E. subfloccosa* have no spotting at all but when it does occur e.g. *E. abietina*, *E. alternifolia*, the spots are randomly scattered over the surface, often only on the outside. Neither hairs nor spots are visible in the UV range. Birds only see in the visible light range.

Unlike insect flowers, the lower lobe in bird-flowers is reflexed out of the way to enable the bird to insert its beak easily.

The majority of bird-flowers like *E. subfloccosa* and *E. glabra* have glandular hairs in the tube. This is unique to bird flowers and is thought to assist cross-pollination by smearing sticky exudate on the bird's beak, which would in turn enable pollen to adhere and be transported to other flowers.

## RARE EREMOPHILA

Many species of *Eremophila* found within the wheatbelt of Western Australia are very rare and gazetted as Rare Flora. There are a number of reasons for their rarity including: the contraction of habitats over the last century and a half, as agricultural practices expanded; the fact that many of these species were probably always restricted to small areas; and the decline of populations with changing composition of the vegetation. Today some species are known only from one or a few sites and many of the populations consist of small numbers of individuals.

A number of factors influence the size and extent of *Eremophila* populations. The genus has a relatively high light requirement and few species will tolerate deep shade. Thus plants favour very open areas in sparse woodland, on open plains or they grow on rocky hillsides.

*Eremophilas* prefer clayey loams or stoney soils and relatively few

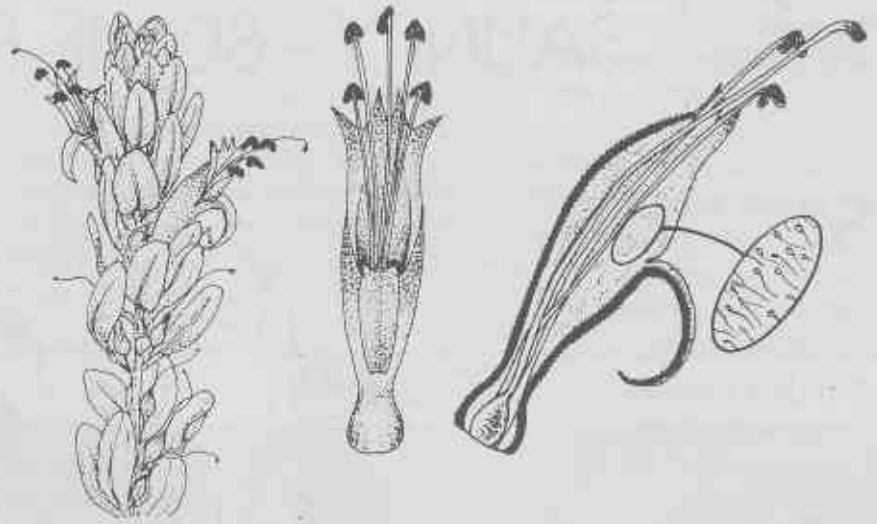


Fig.2. *Eremophila subfloccosa* showing the reflexed lower lobe, stamens extending well beyond the corolla and the glandular hairs (enlargement) on the inside of the tube

species occur on sand flats or on sand dunes. That is why the sand areas to the north and south of Perth are virtually devoid of them. Many *Eremophilas* are known to increase significantly in numbers following soil disturbance or after a fire event. It would appear that in many cases natural fires have probably been a significant factor in the rejuvenation of populations. Certainly old senescent plants of *E. purpurascens* and *E. denticulata* are known to re-sprout vigorously from the base after fire and many species are known to reproduce from seed following a fire event.

Over a period of more than 20 years I have studied a number of rare species in areas east of Hyden. Known populations of *Eremophila racemosa* were monitored during this period. They were restricted to disturbed road verges and usually consisted of relatively few plants, rarely more than 10. The largest population discovered was 38 plants. Although extensive searches were made in the undisturbed eucalypt woodlands adjacent to the populations, no

plants were ever found beyond the road verge.

During February 1994, extensive fires ravaged areas to the east of Hyden destroying all the populations known to me. In early 1996, however, Dr Guy Richmond found an extensive population south of Lake Cronin in a burnt-over area which he estimated at one million plants, and later that year, Guy and I located another population of between 5,000 and 10,000 plants (Fig.3). We counted up to 18 seedlings per square metre in some places.

Species like *E. racemosa* are therefore well adapted to fire and populations will proliferate following one when conditions of good light, reduced competition and good rains prevail. Over a period of time, populations will gradually decline once taller species such as *Eucalyptus* and *Melaleuca* start overtopping them and reducing light levels. So, I would expect that in another 20 years we will be back to small relic populations of *E. racemosa* restricted to road verges again. Certainly for the moment this

species cannot be considered "rare".

Within the wheatbelt many species are restricted to isolated pockets of vegetation or along road verges e.g. *E. adenotricha*, *E. nivea*, *E. resinosa*, *E. scaberula*, *E. viscida*, *E. virens* and *E. sargentii*. *Eremophila nivea* (Fig.1.), for example, is known only from a small area near Three Springs and apart from one population on a farm, it is restricted to a narrow roadside verge.

*E. adenotricha* occurs in a small area south of Merredin and was presumed extinct as it had not been collected for over 60 years, but was fortunately re-discovered in 1987. Another species, yet to be described, *E. "vernicaosa"*, was known only from a pressed collection in the Western Australian Herbarium made by Charles Gardner and William Blackall in 1934. The location given "between Wubin and Dalwallinu", covers a very large area and although searches were made by me and others on various occasions it was never located and presumed extinct. Then in 1998, during a vegetation survey, the species was re-discovered in a bush remnant on Kathie and Jack Stone's farm near Marchagee. Likewise in the same general area another species, not previously known, was discovered by Mrs Alison Doley on her property



Fig.3. Population of *Eremophila racemosa* west of Lake Cronin

"Koobabbie" and less than 10 plants are known.

Fortunately, through the interest in flora and the co-operation of land owners like the Doleys and Stones and bodies like Kings Park & Botanic Gardens and the *Eremophila* Study Group who work with or through government departments like DCLM, most of these rare species are being located and populations studied and conserved. Species are being propagated by cuttings and as a result many of these rare species

like *E. nivea*, *E. viscida*, *E. virens* and *E. scaberula* are established in cultivation.

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