"Cooloomia" Nature Reserve

Cooloomia Nature Reserve consists of an area of 50 350 hectares situated about 50 kilometres north of Kalbarri within Shark Bay Shire as shown on the map. The reserve was declared (for the purpose of Conservation of Flora and Fauna) and vested in the Western Australian Wildlife Authority on June 22, 1979.

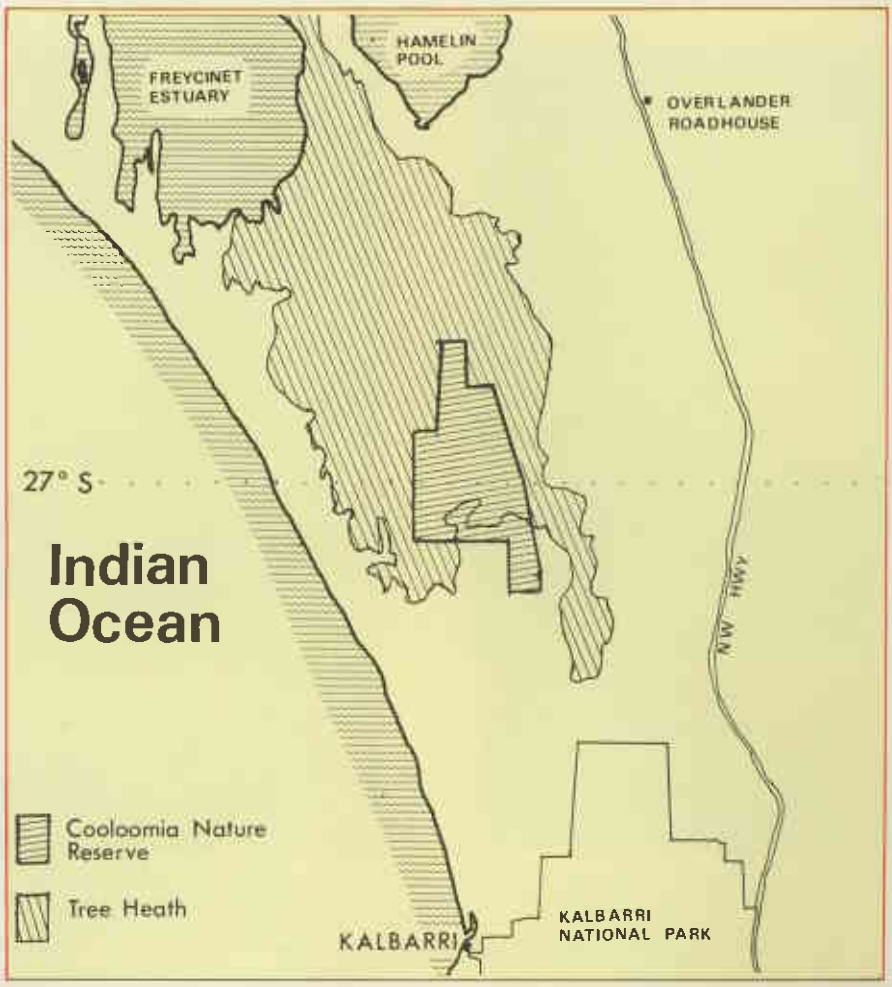
Cooloomia is surrounded by land held under pastoral leases and can only be entered on unmade roads. This general remoteness and difficulty of access are contributing factors towards its relatively natural state which makes it an important addition to the State's nature reserve system.

The reserve lies at the northern extremity of the South West Botanical Province.

The area also lies near the edge of the State's arid zone, a fact that has important ramifications, particularly for the flora of the area which is enriched by the presence of arid species of the Eremean Botanical Province as well as south western species of the South-West Botanical Province.

Areas such as Cooloomia which lie near the boundaries of the South-West and Eremean Botanical Provinces are of particular importance to scientists and Departments involved in Nature Conservation because:-

1. They contain many vegetation formations, plants and animals found only in the Interzone area.
2. Extensive clearing in the boundary areas in the past means that few suitable areas for conservation remain.



▲ Cooloomia Nature Reserve showing its position relative to the unique tree heath vegetation zone of Western Australia.

▼ Tree Heath vegetation in Cooloomia showing the typical blending of heath and taller trees. (Photo: S. Hopper)

"Cooloomia"—Special Features

▲ The outstanding yellow *Verticordia* of Cooloomia discovered by the survey team in 1979. It has erect stems to 2.5 metres and grows in heath on yellow sand. (Photo: S. Hopper)

▲ Polythene pipe pitraps and flywire drift fence The mallee eucalypts *E. ororia* occur only in sma Nature Reserve. (Photo S. Hopper)

▲ Giant plants, (above) an *Eramaea* and, (below) a *Calothamnus* both un-named species which are a feature of the area. Species of both these genera are usually shrubs less than two metres tall. (Photo S. Hopper) ▼

▲ A native bee *Chalicodoma semiluctuosa* on flowers of *Swainsona canescens*. This pea-flowered herb is a common occupant of swales in undulating red sand dunes on Cooloomia Nature Reserve. It flowers in spring. (Photo: S. Hopper)

▲ *Banksia lindleyana* prov during its flowering season i rare species that reaches its Cooloomia Nature Reserve. (P

▼ Delicate flowers of Parakeelya *Calandrinia polyandra*, an ephemeral herb common on Cooloomia Nature Reserve. It ranges from the north-west coast of W.A. southwards and east to the Nullabor Plain and South Australia. Each flower opens for only one day. (Photo S. Hopper)

fence used to trap native marsupials and frogs
n small isolated clumps on Cooloomia

▲ One nights catch of *Arenophryne rotunda*, the very rare frog that lives in this water free area. (Photo S. Hopper)

provides a brilliant effect
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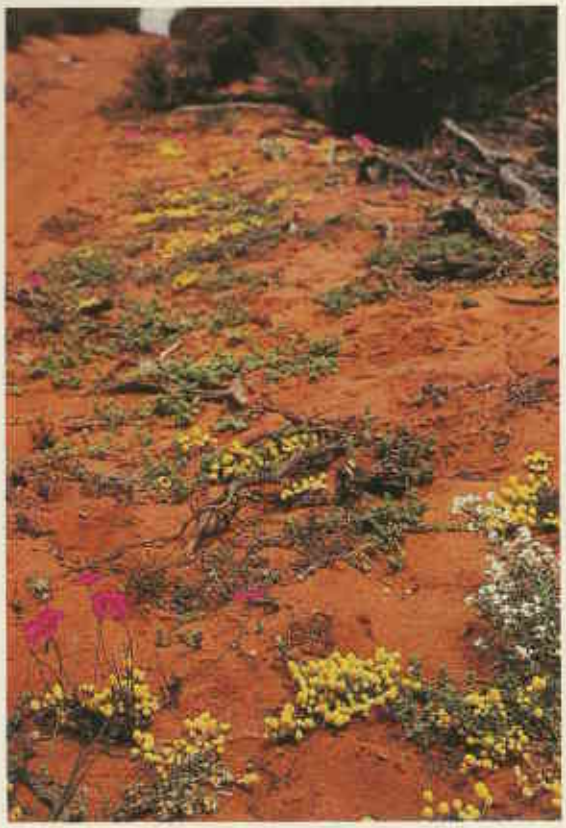

▲ Ephemeral spring wildflowers on the edge of a track through red sand dunes on Cooloomia. The yellow button daisy is *Calocephalus francisii*, while the pink flowered herb is Parakeelya *Calandrinia polyandra*. The white flowered everlasting *Helipterum condensatum* in the right foreground is restricted to the Shark Bay—Murchison River region. (Photo: S. Hopper)

▲ *Grevillea rogersoniana* with Spiny Cheeked Honey-eater feeding. This *Grevillea* is another of the species restricted to the area. It flowers in spring. (Photo: S. Hopper)

▼ *Adenanthos acanthophyllus* one of the plant species restricted to tree heath area. The holly-like leaves are unusual for species in this genus. (Photo: S. Hopper)

▼ Mallee heath vegetation in which the yellow flower heads of the rare un-named *Verticordia* of Cooloomia rise up to 2.5 metres. The emergent mallee is *Eucalyptus roycei*, an uncommon species confined to the Shark Bay—Cooloomia region. (Photo: S. Hopper)

3. Many south western species reach the limit of their geographical range in this region and scientific study of species in such places is of value in determining the adaptation of species to their environment and the factors which limit distribution and abundance.

The formation of these 'boundary' reserves was strongly recommended by the Conservation Through Reserves Committee report of 1974.

Botanically, Cooloomia Nature Reserve is particularly important for a further reason as it lies within a band of unique type of vegetation known as "tree heath" which is not known to occur elsewhere in Western Australia.

The tree heath zone extends in a south-easterly direction from the shores of the Freycinet Estuary, as shown on the map.

Tree heath is essentially heathland with small trees of any height up to 6 metres indiscriminately arranged without discernible stratification. The plant community is open at all levels and very irregular, and shows features of both south-west and arid type plant associations.

A fairly large number of plants are restricted, or nearly so, to this community including *Eucalyptus beardina*, *E. roycei*, *Grevillea rogersoniana*, *Adenanthos acathophyllus*, *Newcastelia chrysophylla*, *Hakea stenophylla*, and undescribed species of *Melaleuca* (two species), *Acacia*, and *Macarthuria*, *Verticordia*, *Eremaea* and *Calothamnus*. The undescribed *Verticordia* is an outstanding yellow-flowered species up to 2.5m tall that was only discovered by officers of the Department of Fisheries and Wildlife in September 1979 and the small populations on the reserve are the only ones known at present.

Several shrub species are present in "giant" forms in Cooloomia e.g. the undescribed species of *Eremaea* regularly attains a height of four metres. The reasons for the "gigantism" behaviour are not fully understood at present.

Numerous other components mainly occur in this community and only sparingly and to a limited range outside it, or are more abundant and vigorous in it than elsewhere, all adding to the unique character of the reserve.

The extreme southern portion of the reserve is vegetated by scrub heath dominated by *Banksia sceptrum*, *Actinostrobus arenarius* (Sandplain Cypress) and *Xylomelum angustifolium* (Woody Pear). The Woody Pear is one of a number of typical south-western sandplain species that reach their northernmost limit in the reserve e.g., *Stylidium macrocarpum*, *Conostylis aculeata*, Tamma, *Casuarina campestris*.

Survey of Reserve

In September 1979 and March 1980 survey teams from the Department of Fisheries and Wildlife visited the reserve and observed (or found evidence of) a wide variety of bird life comprising 43 species.

The birds were of species typical of both the South West Zone and of the Arid Zone. Four of the South West species were at the northernmost limit of their range i.e. the Red Wattle Bird, Western Yellow Robin, Fan-tailed Cuckoo and Golden Whistler. After the survey it was found that the Fan-tailed Cuckoo had never been recorded north of the Murchison River before and Cooloomia therefore represents a northern extension to its range.

A wide variety of reptiles were also observed including a rare small striped skink *(Lerista humphriesi)* about 60mm in length, which is only known to occur very locally in the area.

The team set trap lines, as shown in the photograph, and were surprised to discover large populations of the frog *Arenophryne rotunda* which was previously thought to be extremely rare. In the past only isolated specimens had been found by scientific surveys on the western side of Freycinet Estuary. This frog is unusual as at Cooloomia it is living in an area that appears devoid of all surface water and that in itself is an achievement for frogs which are, of course, normally aquatic in lifestyle.

In fact, the evidence suggests that this species has eliminated the aquatic tadpole stage in its lifestyle completely and appears to exhibit direct development from egg to adult form, a truly remarkable example of adaptation to dry conditions.

The frogs dig to just below the interface of the moist subsurface layer and the overlying dry sand where they remain in a small cavity to avoid the heat of the day and emerge in the cooler periods between evening and dawn at which times they were trapped by the team.

The frogs are small (head and body length about 30mm) but they have an exceptionally long tongue and from analysis of faecal pellets it appears that they use this long tongue to catch their main diet of ants and small beetles.

The survey team also sought native marsupials, however, only Red Kangaroos and Grey Kangaroos were observed in any numbers. Single specimens were also collected in pit traps of two species of native mice, i.e., the Pebble Mouse or Sandy Inland Mouse, *Pseudomys hermannsburgensis* and the Ashy Mouse *Pseudomys albocinerius*. The Common Dunnart *Sminthopsis murina* was also found.

The reserve was found to be heavily populated with introduced species, particularly goats and rabbits, with foxes, camels and the common house mouse also in evidence.

The Department of Fisheries and Wildlife has now taken action to reduce the number of goats on the reserve, as they represent the greatest threat to the unique vegetation in the area.