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SOCIETIES FOR GROWING AUSTRALIAN PLANTS
INDIGENOUS CYCAD/ZAMIAD AND PALM STUDY
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Macrozamia riedlei

by Kings Park Gardens, Perth.

This is an endemic, palm-like plant which arouses a lot of interest. There are many of these plants occurring naturally throughout the bushland and Botanic Gardens of Kings Park.

It is a member of the family ZAMIACEAE which is restricted to tropical and warm temperate regions of Africa, Asia, Australia and North and South America. This family is closely related to the Cycads, both being primitive plant families which were more abundant and showed a greater diversity of form in a previous geological era.

The scientific name Macrozamia riedlei comes from
macros - meaning large and
zamia - from the genus with that name.
riedlei - commemorating Anselme Riedle (1775-1801), a gardener at the Paris Botanical Gardens who was chief gardener on Baudin's expedition of 1800-1804.

HABIT

This is a non-flowering, cone-bearing plant. Often the leaves arise at, or just above ground level from a swollen, underground stem with fleshy root tubers. At the northern and eastern limits of its distribution the plant may develop a trunk up to 4m tall, which is covered with the persistent remains of old leaf bases. The leaves are rigid, up to 2m long, with a thick midrib and spreading sharp-pointed, lateral leaf segments. There are separate male and female plants. Male plants bear cones which produce pollen. Female plants bear "pineapple-like" cones which produce seeds. A survey found there were about 3 or more male plants to 2 female plants within the bushland and Botanic Gardens of Kings Park.
The cones become visible in the centre of the plant about May, but plants about to cone can be recognised earlier by the spreading apart of the leaves and the presence of "wool" in the centre of the plant.

MALE PLANTS

These develop 3 - 7 cones, measuring up to 30 x 15 cm before the release of the pollen. Each cone is made up of numerous cone scales with pollen sacs beneath. These scales are tightly packed during May to July, but separate with the lengthening of the cone just before the pollen is shed. A cone was recorded as lengthening from 32 cm to 48 cm in 3 days.

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The release of cone pollen begins at the top of the cone and works downwards, often being completely shed in 4 days. The scales open back so that the pollen falls onto the scale below or drops to the ground and is blown away. This occurs during September to October.

FEMALE PLANTS

Female cones occur singly or in pairs and at maturity can reach 50 x 25 cm and weigh 25 kg. Each cone is made up of several cone scales which bear 2 ovules (immature seeds) towards the cone axis. The cone scales are tightly packed together before and after pollination but during pollen release open about 1 - 2 mm for short periods. Pollen is transferred from male to female plants by the wind, but insects which live inside the cone are important for transferring the pollen from the cracks between the cone scales to the oculeś. A mealy bug is found inside both the male and female cones at all stages of development. A weevil and a small brown beetle occur in large numbers at the time of pollination. Fertilisation takes place some months later.

The following autumn the cone rots, the bright red seeds falling to the ground around the parent plant.
The seeds lie dormant for a whole year, germinating after the following winter rains. Germination takes place on the ground, but the root pulls the young plant down into the soil. Growth of the seedling for the next few years is very slow, producing a single leaf annually.

DISTRIBUTION

This species is restricted to south-western Australia, but in this area has a wide range in the sandy and lateritic soils extending from south of Geraldton in the north to Israelite Bay on the south coast. The tallest forms occur towards the northern area of distribution, especially between Hill and Irwin Rivers, and in the eastern area around Esperance. The Esperance plant was described as a separate species but is only an extremely robust form.

TOXICITY

This is possibly the earliest recorded toxic plant for Western Australia. The crew of Wilhelm de Vlaming's ship who visited the Swan in 1697 became ill after eating the seeds.
From the times of earliest settlement in the southern parts of Western Australia, cattle eating Macrozamia have developed rickets or wobbles. This was common where an area had been burnt or partially developed, and the regrowth eaten.

USE MADE OF THE PLANT

The plant was used for food by the aborigines and early settlers who extracted a substitute for arrowroot from the pith of the stem. After drying, the material was shredded, soaked in water for about 6 hours, then shaken up and filtered. The resultant milky fluid was allowed to settle. The sediment was washed several times, dried slowly and finely powdered.

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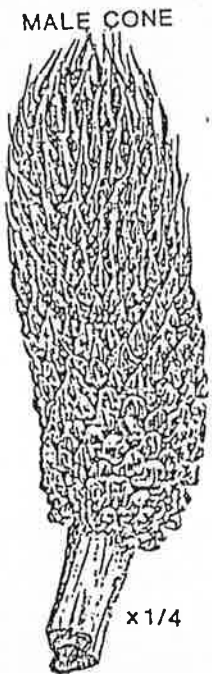
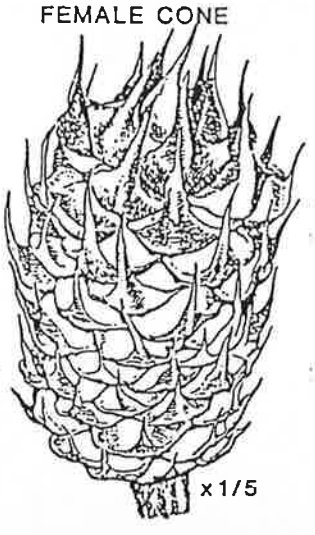
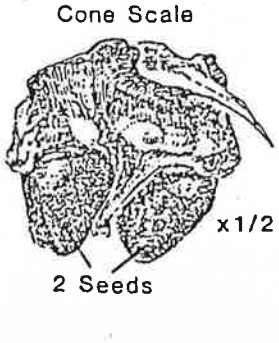
The aborigines used to bury the cones in moist soil until the seed coating became swollen, and then cook on hot coals before eating. The kernel was rarely if ever eaten. The wool which develops around the cones was used by the aborigines for catching the fire, and by the early settlers as "kapok" for pillows and mattresses.
The leaves were used as temporary shelters and wind breaks by the early settlers, and occasionally as brush-houses.

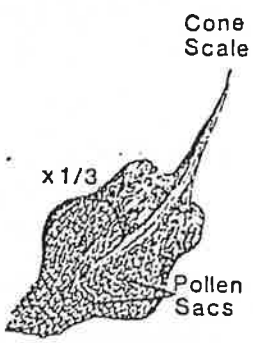
Macrozamia riedlei

Diagrams courtesy of Gould League









Lt. 75 Sublime Glade,
NEERABUP. 6831 W.A.

January, 26th, 1991

Dear Len,

In reference to your last letter regarding locations and variations of M. Riedlei. Almost all of the Riedlei in the Perth suburbs and environs are mainly the Subterranean caudex type. However I know two locations, one in the Swan Valley (The Vines Country Club Estate) where they have a bulbous trunk varying in height from ½m to 1.5 metre in mature specimens with 20 to 30 leaves. Some of the fallen ones have been transplanted onto The Vines Golf Course, also as a small pocket exists at Joondalup near here (see enclosed map).

DARLING SCARP

Some also claim that Re Darling Range spp. is a small and more compact plant with shorter leaves (1.5m/2.0m). My opinion is that the soil structure restricts their growth.
Shallow Soil (Laterite Gravel) overlying Granite Rock (Subterranean caudex).

THE JURIAN SPP.

The Jurian spp. has much taller trunks about 1.5/2.0m high and possibly 400/1500 years old. There is a fine reserve of these on a hillside on the Brand Highway at Badgingarra about 70km's or so from here (North).

CYCAS CALCICOLA IN HABITAT

As for the Esperance spp. I have never seen them as far as I know they are just a more robust form.
Perhaps if you can contact Ken Adcock he can give you more details about the above 2 species as I know he has made a detailed study of the Jurian spp. at the Badgingarra Reserve he may also be familiar with the Esperance Species.

As far as the rest of its distribution in the South-West of the state it varies between being trunk and trunkless. What is the reason for this species to be so variable especially the difference between Trunk and Subterranean Caudex. Sometimes they exist practically side by side.

FURTHER INFORMATION ON M. REIDLEI

We have 6 mature plants on our block (5 acres) with some 10 to 15 smaller plants of various ages.
Height of Caudex all Subterranean ones have a type of crown 8" out of ground. Length of leaves - female between 2.0m and 2.4m. male 3.0 metre. As a matter of interest the leaf stalk seems to be different between male and female. See diagram:

The leaflets male, are spaced much further apart than female plants on leaf stalk and generally the male plant is a more open plant and female compact. Is this normal?

Ratio male to female of 6 - 2 are males.

Type of country - our block on edge of limestone. Tuart trees (Euc. Gomphocephala) and Banksia Attenuata and small Hakea and Hibbertia as under storey and Heathland Plants. But just over the road it changes to Banksia Woodland, (Grandis, Attenuata and Menziesii with Jarrah, Marri (Euc. Calophylla) and Casuarina Fraserana and a coastal plain Heathland Plants.
All of the estate seems to carry Macrozamia dotted around. There are no clumps of them.
I have noticed with a few of the younger plants with leaves of about 900mm long are a bluish colour which makes them look a lot different to a mature plant.

David Roch