FUNGI

The Ghoul Fungus

Fungi are as varied in their requirements as other organisms. One group, called the 'ammonia fungi' require nitrogen in the form of ammonia in order to grow and fruit. An example from the south-west forests and woodlands is *Hebeloma aminophilum*, the Ghoul Fungus.

This is a fairly large toadstool (cap about 14 cm across), all-over beige-brown with rusty spores. It is always found growing alongside the carcasses of kangaroos, sheep, snakes or other sizable animals. It fruits in winter and early spring. Since dead bodies can occur anywhere, it makes one wonder how many million fungal spores are floating in the atmosphere, just waiting for the appropriate circumstances to occur so that they can develop and grow.

There are no known edible species of hebelomas, they are all more or less poisonous, though proably not deadly.

Illustration by K. Griffiths from "A Field Guide to the Larger Fungi of the Darling Scarp and the South West of Western Australia".

FLORA

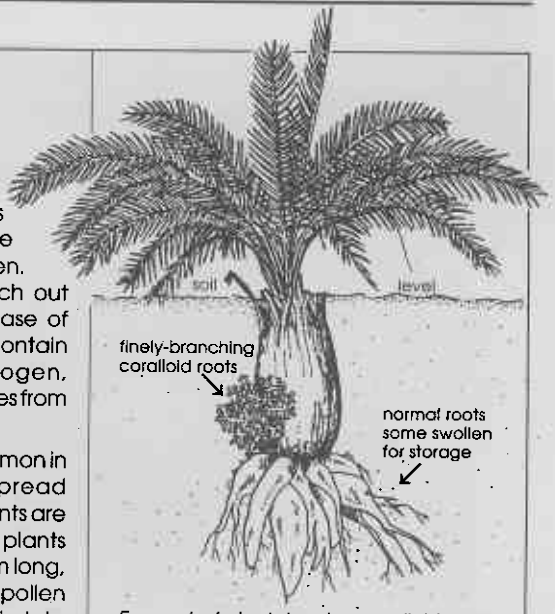
Zamia

Zamias grow well in WA's impoverished soil, as they have the ability to fix atmospheric nitrogen. Masses of "coralloid roots" branch out from the swollen underground base of the stem. These specialised roots contain cyanobacteria which fix nitrogen, themselves receiving carbohydrates from their host.

Zamia (*Macrozamia reidlei*) is common in the Jarrah forest, and widespread throughout the southwest. The plants are either male or female. The male plants develop several cones, up to 30 cm long, which are made up of scales with pollen sacs underneath. Pollen is shed in late spring. Female plants seldom develop more than two cones, and they are very large, weighing up to 14 kg. Each scale in the female cone develops two seeds, originally bright red in colour, which are released when the cone rots away. Emus, and possibly other animals, help to disperse the seed.

These huge cones are an enormous drain on a plant's stored food reserves. A male plant uses 10% of its stored energy in order to produce a cone. It takes 25% of a female plant's store to produce even one cone. If, due to burning off, Zamias are forced to use stored reserves to produce whole sets of new leaves every few years, there will be little energy left for reproduction, so cone production may be reduced. By the time the store has been built up, the fire comes again. This may account for the apparent preponderance of male plants in forest areas.

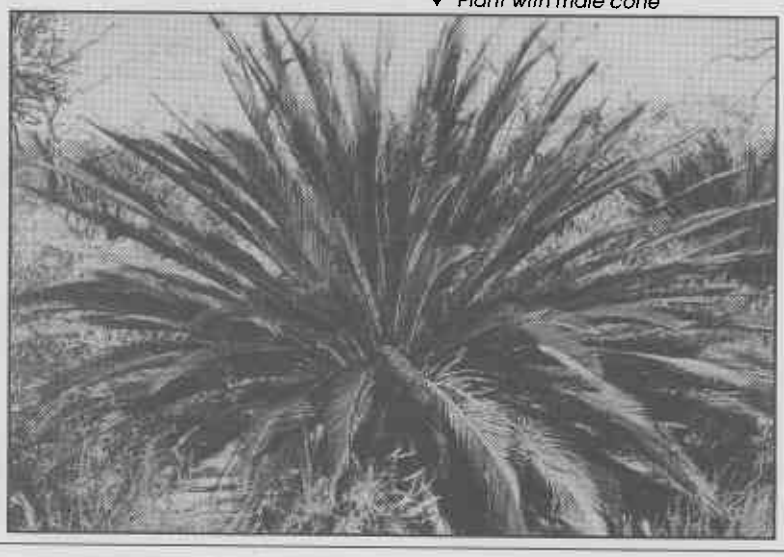
Zamia leaves contain a substance toxic to stock. Grazing of regrowth leaves after fire or partial clearing of the country (ie probably the only time when these leaves are palatable to stock) causes "wobbles" in cattle. Zamia seeds contain a lot of starch, and the Aboriginal people leached out the poison before eating them. When Captain Fremantle explored the Swan River his party roasted and ate the seeds, and were extremely ill afterwards! Incidentally, Charles Fraser, the Colonial Botanist of NSW, explored the Swan with a party from Captain Stirling's H.M.S. *Success* in 1827. Near Claise Brook he reported Zamias 30 feet high! Zamias are slow growing, so these must have been extremely old. Few such large specimens still exist, although there are still some in Stockyard Gully National Park.



Excavated plant showing coralloid roots

Zamia "palm" is not a good name, as the Zamia is a cycad, a much more ancient group of plants than palms.

▲ *Ripe seeds on female cone*



▼ *Plant with male cone*