

TRAP-DOOR SPIDER STUDY



Part of the trapdoor spider study area in wodjil bush (dominated by the wattle *Acacia stereophylla*, the sheoak *Casuarina acutivalvis* and *Hakea multilineata* with smaller wattles and *Grevillea paradoxus* and tussocks of *Ecdeiocolea monostachya*).

Nature Reserves Nos. 19950 and 17732, north of Bungulla in the Tammin Shire are being used in a current study of trap-door spiders.

Dr Barbara York Main of the W.A. University Department of Zoology has been interested for many years in the natural history and particularly in the spider fauna of the reserves.

The spider study involves observations on several species of trap-door spiders. At least eight species are known to occur in the reserves:

- Anidiops villosus* (family Ctenizidae)
- Arbanitis hoggi* (family Ctenizidae)
- Idiosoma nigrum* (family Ctenizidae)
- Aganippe cupulifex* (family Ctenizidae)
- Aganippe raphiduca* (family Ctenizidae)
- Chenistonia tepperi* (family Dipluridae)
- Ixamatus* an undescribed species (family Dipluridae)

Undescribed genus and species (family Dipluridae)

It is probable that species of the following genera also occur in the reserves: *Missulena* and *Conothele* (family Ctenizidae) and *Aname* and *Teyl* (family Dipluridae).

Through 1967-1969 pit traps were set in the bush to collect male specimens of undescribed species. A part of the overall study is concerned with detailed observations on *Anidiops villosus*. This species attains a larger body size and digs a deeper burrow than any other Australian Ctenizid and is one of the largest ctenizids in the world. The species is endemic to southern W.A. and although formerly widespread throughout the wodjil country of the Wheatbelt and Goldfields it is now in the western part of its range restricted to small isolated pockets of **undisturbed bushland**. The genus contains only one other species—*A. manstridgei* which ranges from the eastern Goldfields into S.A.

Anidiops villosus has several characteristics which enable it to survive in semi-arid habitats and areas of erratic rainfall. These include features of the burrow and the large body size of the spider. While some work on the species has been carried out in other districts

by Dr Main and Michael Gray (now arachnologist at the Australian Museum, Sydney) continuing observations are being made by Dr Main on the North Bungulla populations. To date 129 burrows have been



Site of some of the trapdoor spider nests of *Anidiops villosus*. Note termite mound in right lower corner—the spiders feed mainly on foraging termites (*Drepanotermes*) and ants. A numbered disk marking a spider's nest is visible in mid foreground behind tussock.

"tagged" with numbered wire pegs in a small area (less than one hectare) which contains a high concentration of the spiders.

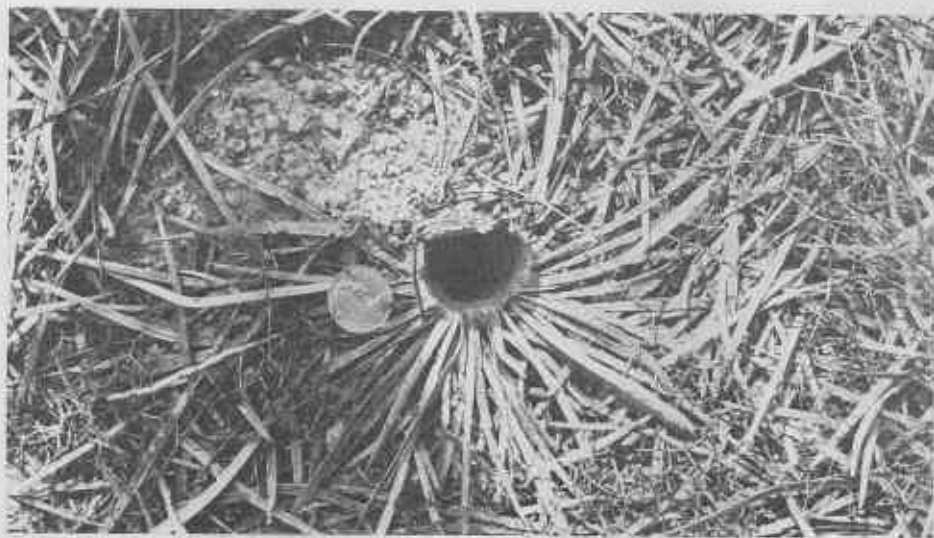
The area containing the marked burrows is immediately adjacent to and north of the sand and gravel pits in Reserve 17732. Marked burrows contain spiders of various ages. Spiders appear to take at least five years to mature. One nest still contains a reproductively active female which was mature in 1967. The estimated age of this and several other specimens is upwards of fifteen years.

Aspects of the study include: investigations on age at maturity, reproductive activity in relation to seasonal conditions, i.e. mating, egg-laying, longevity, dispersal of young, prey eaten and feeding behaviour, density of

spiders and effect of varying seasonal conditions on survival of spiders.

The spiders attach twigs and leaves of acacias, sheoaks and hakeas to the burrow rim and use these as feeling lines to detect insects crawling over the litter. The burrow-nest is a **permanent** life-long structure which is enlarged as the spider grows. Any disturbance of the vegetation, leaf-litter cover, or soil is detrimental to the spider population as a whole.

During the past year it has been noticed that rubbish had been deposited on the reserves. This together with haphazard walking over the natural leaf-litter had irreparably damaged some burrows. Signs have now been erected to warn of the situation. While most nature reserves are limited access areas only, shire workers and others who find it necessary to enter such reserves should do so only on worn tracks or firebreaks.



Nest of the trapdoor spider *Anidiops villosus* with door propped open. Note the fan of twig-lines of acacia phyllodes ("leaves") which the spider has attached to the rim of the nest. These function as "feeling lines" for the spider when situated in the entrance of the nest with tips of legs resting on inner ends of twigs—it feels the vibrations of insects on the outer ends of the twigs and runs out to catch them. Related species without twig-lines catch prey without emerging from nest thus nests with twig-lines provide a greater foraging range for the spider. This is an adaptation to semi-arid habitats where the prey potential is less abundant. Note also the hummock of soil behind the door—this is excavated soil from when the spider was deepening the burrow after rain.