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THE VALUE OF OIL MALLEES AS FORAGING HABITAT FOR THE WESTERN PYGMY POSSUM

Marie Short

Planting trees has become a major component of a farmer's annual program throughout WA. In particular, large areas of farmland throughout the south-west region have been planted to oil mallee species. While revegetation is not usually planted for conservation benefits it has the potential to enhance conservation of wildlife in rural environments. One mammal species that has been observed in oil mallee plantations is the western pygmy possum (*Cercartetus concinnus*). The western pygmy possum is a tiny nocturnal marsupial weighing 8-20 g (average 13 g), and has a head/body length of 71-106 mm and a tail length of 71-96 mm. The possums breed in all months of the year and females can rear two or three litters in close succession. On average, 3.5 young survive to the late stages of dependent life. This article reports utilisation patterns of the western pygmy possum in oil mallee plantings determined by observing the movement and behaviour of individual possums.

A pygmy possum Photo: M. Short

The research was conducted from May to September 2007 on farms in the shires of Narrogin, Cuballing and Wickepin (approximately 200 km south-east of Perth). Fourteen sites were used during the study. Nine of the sites were oil mallee plantings in either block or belt ('alley farming') configurations, ranging in size from 2 ha (small block) to 11 ha (widely spaced belts within a pasture paddock). The other five sites were mixed revegetation plantings of Australian natives (block plantings of approximately 2 ha). Remnant vegetation near to the sites consisted of isolated paddock trees and roadside vegetation, but one oil mallee planting was adjacent to a 9 ha patch of remnant woodland.

The possums were captured in pitfall traps which consisted of a series of three 20 litre plastic buckets buried to the rim (sealed with lids when not in use). The buckets were arranged in a 'Y' configuration with one bucket midway along each of the three 'arms' made of plastic garden edging 10 m long × 15 cm high). The buckets were opened at sunset and examined before 8am the following morning. Trapping periods ranged from one to 10 nights with a total of 39 nights and 92 pitfall traps, 62 in oil mallee plantings and 30 in mixed revegetation.

Radio tracking was undertaken to determine habitat utilisation patterns of the western pygmy possum at sites where they were captured. Selected possums were fitted with a single stage transmitter with a 10 cm trailing antenna weighing 0.55 g. The radio transmitter was attached to the possum's back using non-toxic glue on the fur, making no contact with the skin. At five minute intervals during tracking, the location of the possum was found and marked with flagging tape. At each interval, observations were made of the habitat the possum was

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Pygmy possums

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Oil mallees next to paddock wandoo Photo: M. Short

in, its location and distance from the previous location and its movement and feeding behaviour. During the following day at each of the locations marked by the flagging tape, measurements were taken of leaf litter, vegetation attributes, tree flowering and tree hollows. GPS coordinates were recorded at each of these locations and these were plotted over an aerial photograph.

Seventeen captures of western pygmy possum were made (three of these were recaptures). A total of 10 males and four females were trapped, one of the females was carrying pouch young, and one male and one female were juveniles. The male-biased capture rate may simply reflect differences in activity patterns, with males being more active than females due to greater home ranges, or the possibility that males were searching opportunistically for mates. Eight possums were radio tracked, five males and three females. A total of 13 of the 14 captures were in oil mallee plantings, with only one made in mixed revegetation. Males were observed to travel further distances (average 196.2 m) than females (average 39.2 m). During tracking, individual possums were observed to spend longer periods of time in oil mallees that were flowering prolifically than those with no or minimal flowers. The possums moved quickly through the canopies using the non-flowering canopies as a means to reach the flowering canopies without having to move across the ground. Once in the flowering oil mallees the animals were observed moving up and down the canopy from flower to flower feeding on the nectar for up to an hour in each tree. The longest distance travelled while feeding was 343 m over 3 hours and 10 minutes, by a male observed moving rapidly through the oil mallee canopies feeding on the nectar from the flowers, moving up and down the row of trees. Over the trapping period, western pygmy possums were only trapped when the vegetation was flowering, which may be because nectar and pollen are important sources of energy and protein in the diet of small mammals. Nectarivores have the ability to track resources and when the oil mallees were not flowering the western pygmy possums may have been travelling to surrounding vegetation that was flowering at the time.

Pitfall traps under oil mallees. Photo: M. Short

Six of the eight tracked individuals were traced back to their nesting site. All were found to use the hollows of white gum (*Eucalyptus wandoo*) trees. Two of the nesting trees were found amongst roadside vegetation, one within a fenced off remnant vegetation strip in a paddock and three were isolated paddock trees. These nest trees ranged from 10 to 70 m from the nearest edge of oil mallee planting. The longest distance travelled from a nest site to an oil mallee planting was 400 m (by a male). Large paddock trees provide important habitat for species in rural environments. The availability of new hollows in the next century and beyond will be directly influenced by whether successful tree recruitment occurs in farming areas and whether ecological processes involved in hollow formation continue to function.

Oil mallee plantings on farms in the southern Wheatbelt region of WA have been found in this study to provide suitable foraging habitat for the western pygmy possum. Planting oil mallees on farms may improve conservation for western pygmy possums in this area, especially when planted in the vicinity of remnant vegetation and suitable nesting trees. Revegetation practices should be encouraged to ensure suitable habitat, including feeding and nesting sites will be available in the future.

[Ref. list available - Ed.]

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