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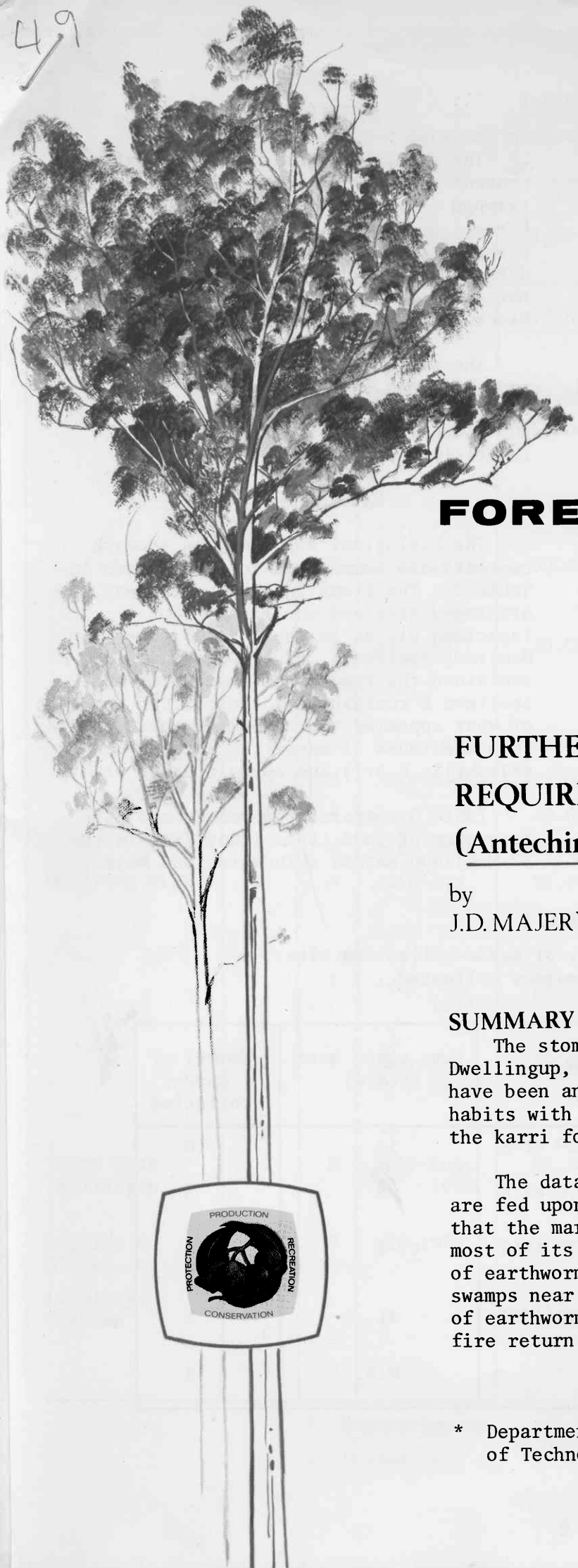

FORESTS DEPARTMENT
OF WESTERN AUSTRALIA

FURTHER NOTES ON THE FOOD REQUIREMENTS OF THE MARDO (Antechinus flavipes (Waterhouse))

by
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SUMMARY

The stomach contents of mardos collected from Dwellingup, situated in the northern jarrah forest, have been analysed in order to compare their feeding habits with those of populations occurring within the karri forest.

The data show that a similar range of invertebrates are fed upon at both localities and confirm suggestions that the mardo is an opportunistic feeder, obtaining most of its food from the litter layer. The presence of earthworms in the stomachs of two mardos taken from swamps near Dwellingup suggests that the availability of earthworms may here contribute to the earlier post-fire return than is the case in upland forest sites.

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INTRODUCTION

The mardo (Antechinus flavipes (Waterhouse)) is an insectivorous marsupial mouse prevalent in the forests of southwest Western Australia. Mardo numbers are considerably reduced following fires in jarrah and karri forest and population recovery takes several years, although recolonization is more rapid in swampy areas (Christensen and Kimber, 1975).

Hindmarsh and Majer (1977) investigated the stomach contents of mardos collected from karri forest in the Manjimup-Pemberton region, and related the results to invertebrate abundance in forests sampled at varying times after burning. Their data suggest that the mardo is an opportunistic feeder taking the larger, more abundant invertebrates from the forest litter layer. The investigation revealed no correlation between the abundance of the mardo and that of the forest invertebrates during the post-fire succession, suggesting that food availability is not a major factor in mardo population changes.

The author has recently received some preserved mardos trapped near Dwellingup, in the northern jarrah forest, and this paper records the results of the stomach content analysis of these specimens.

METHOD

The eighteen animals on which stomach content analysis was carried out were trapped near Dwellingup by officers of the Forests Department between 1971 and 1973 using break-back mammal traps. The site data are summarized in Table 1. The first three localities are all swamps; Amphion 6 Block is an upland jarrah site.

The stomach of each mardo was removed and slit open, and the contents were washed out into a petri dish containing 70% alcohol. Food fragments were identified using a stereo-microscope.

RESULTS

The biological data and the stomach contents are summarized for each mardo in Table 2. The items included a variety of arthropod taxa and one lizard foot (specimen O), as in the case of the Manjimup specimens. Two specimens contained the remains of earthworms and specimen E contained two solidified droplets of what appeared to be the gum that exudes from the trunk of marri (Eucalyptus calophylla R.Br.) and certain other plants.

Table 3 compares the percentage frequency of food items identified in the 37 Manjimup mardos (Hindmarsh and Majer,

TABLE 1

Location and fire history of mardo collection sites, and number of mardos collected

Location	Map reference	Time since burn (years)	Number of mardos collected
Moore's Swamp	116° 02'E, 32° 41'S	14	10
Marrinup Mill	116° 02'E, 32° 41'S	8	3
Swamp near Dwellingup	116° 06'E, 32° 45'S	c. 5	1
Amphion 6 Block	116° 11'E, 32° 47'S	41	1
Locality unknown	N.A.	N.A.	3

N.A. - data not available.

TABLE 2

Biological data and stomach contents of mardos

Locality where collected	Code	Sex	Date of capture	Preserved weight (g)	Body length (cm) (nose-vent)	Stomach contents
Moore's Swamp	I	F	July 1971	29.50	9.91	Coleoptera or Orthoptera or Blattodea.
	P	F	July 1971	35.00	9.90	Chilopoda, Coleoptera.
	M	M	July 1971	58.00	11.18	Oligochaeta, Scorpionida, Araneae (eggs), Blattodea, Coleoptera (Carabidae).
	Q	F	July 1971	26.00	10.16	-
	N	F	July 1971	30.00	10.16	Chilopoda, Orthoptera, Diptera, Coleoptera, Hymenoptera (ant*).
	R	F	July 1971	30.00	9.40	Lepidoptera larva, Hymenoptera (ant+), Coleoptera or Orthoptera or Blattodea.
	H	F	July 1971	27.00	10.41	-
	G	M	July 1971	53.00	9.40	-
	A	F	Oct. 1971	30.00	10.16	-
	E	M	Oct. 1971	29.00	10.16	Dried gum.
Marrinup Mill	D	F	July-Aug. 1972	36.40	10.16	Oligochaeta, Coleoptera (adults and larvae), Blattodea, Hymenoptera (ant and other family).
	L	F	July-Aug. 1972	24.70	7.62	Scorpionida, Coleoptera (larva), Coleoptera (Scarabaeidae).
	J	F	July-Aug. 1972	25.40	9.15	Diplopoda, Orthoptera, Coleoptera (larva), Coleoptera (Curculionidae).
Swamp near Dwellingup	O	M	July-Aug. 1972	58.30	12.90	Scorpionida, Blattodea, (winged), Hymenoptera (bee), lizard's foot.
Amphion 6 Block	F	F	May 1973	-	-	Coleoptera.
Locality unknown	B	-	-	-	-	-
	C	-	-	-	-	-
	K	-	-	-	-	-

* Monomorium sp.

\+ Iridomyrmex sp.

TABLE 3

Percentage frequency of food items identified in stomachs of 37 mardos collected near Manjimup-Pemberton and 18 mardos collected near Dwellingup, and total of food items in the Dwellingup mardo stomachs

Stomach contents	Percentage frequency of food items		Total food items in Dwellingup specimens
	Manjimup-Pemberton	Dwellingup	
Oligochaeta	-	11.1	2
Scorpionida	2.7	16.6	3
Araneae (adults)	48.6	-	-
Araneae (eggs)	-	5.5	1
Diplopoda	5.4	5.5	2
Chilopoda	10.8	11.1	2
Blattodea	35.0	11.1*	>3
Isoptera	-	5.5	1
Dermaptera	10.8	-	-
Orthoptera	-	11.1*	>2
Homoptera	10.8	-	-
Heteroptera	10.8	-	-
Lepidoptera (larvae)	2.7	5.5	1
Coleoptera (larvae)	-	16.6	20
Coleoptera (unidentified families)	32.4	11.1*	>5
Coleoptera - Carabidae	-	5.5	2
- Staphylinidae	2.7	-	-
- Scarabaeidae	2.7	5.5	1
- Curculionidae	8.1	5.5	1
Diptera	2.7	5.5	1
Hymenoptera - Apoidea	5.4	5.5	1
- Formicidae	5.4	16.6	4
- Others	8.1	5.5	1
Lizard	2.7	5.5	1
Bird	2.7	-	-
Dried gum	-	5.5	1

* These values are probably underestimates due to uncertainty of determination.

1977) and the 18 Dwellingup specimens. The use of percentage values on such low sample sizes should be viewed with caution, but it nevertheless gives some idea of the relative abundance of food items in mardo stomachs at the two localities.

The total number of food items in each taxonomic group for the Dwellingup animals is also given. These values are mostly proportional to the frequency values, although the high number of Coleoptera larvae should be noted.

DISCUSSION

The analysis shows that the mardo feeds on a similar range of animals in the karri forest and at the swampy localities in the northern jarrah forest. The most abundant and frequently occurring food items in the Dwellingup animals are Coleoptera adults, Coleoptera larvae, Scorpionida, Hymenoptera, Oligochaeta, Chilopoda, Blattodea, and Orthoptera. The absence of spiders in the Dwellingup specimens is probably due to digestion of the softer bodies of this taxonomic group.

The ranks and range of animals fed on by the mardo at Dwellingup correspond with the author's observations of the relative abundance of fauna at the collection sites, confirming Hindmarsh and Majer's (1977) suggestion that this animal is an opportunistic feeder. That it feeds mainly in the litter layer is also suggested by the type of animal found in the stomachs.

The two main ways in which the food of the mardo in the Dwellingup area differs from that at Manjimup-Pemberton are the presence of small ants (< 3 mm long) of the genera Monomorium and Iridomyrmex and that of large earthworms.

Hindmarsh and Majer (1977) suggested that there was a limit to the size of food of approximately 3 mm, below which the mardo does not feed. The presence of small ants in the Dwellingup specimens indicates that this figure may have to be revised; however, if the ratio of energy expended in feeding to energy obtained from food is the deciding factor in food size-limits, exception may be made for small animals such as ants which are concentrated in high numbers around nest entrances.

The occurrence of earthworms in the food range of mardos collected in the Dwellingup swamps is of interest. Earthworms are presumably abundant in the moist soil here and are unlikely to be severely depleted by fires. Although Hindmarsh and Majer (1977) concluded that food availability was not responsible for the long absence of mardos after fires in the karri forest, the presence of large earthworm populations in the northern jarrah forest swamps could be a contributory factor to the early return of mardos in swampy areas following fires.

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