Wagener, 1857, *D. nanus* Dogiel and Bychowsky, 1934 and *D. parvus* Wagener, 1909, associated with Palaeoarctic cyprinids of the subfamily Leuciscinae, namely species of the genera *Alburnus, Blicca, Leuciscus, Rutilus* and *Scardinius*. The other species found on *Mirogrex terraesanctae terraesanctae* in Lake Kinnereth, namely *Dactylogyrus sphyrna* Linstow, 1878, is also a Palaeoarctic species associated with fish of the above mentioned genera. This finding confirms affinity of the Monogenea parasitic on *M. terraesanctae terraesanctae,* with Palaeoarctic monogeneans associated with the subfamily Leuciscinae.

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The diet of barn owls at a roost near Grahamstown

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Barn owl *Tyto alba* pellets were collected over a period of 13 months from a roost near Grahamstown. Twelve species of small mammals and two bird species were found in the pellets. *Mastomys natalensis* and *Mus minutoides* were most numerous in the diet of the owls toward the end of winter whilst in summer *Otomys irroratus* and *O. saundersae* formed most of the prey remains.

Onverteerde, pilvormige kosreste van nonnetjie-uile *Tyto alba* is oor 'n tydperk van 13 maande by 'n slaapplek naby Grahamstad versamel. Twaalf kleinsoogdierspesies en twee voëlspesies is in die kosreste gevind. *Mastomys natalensis* en *Mus minutoides* was die mees algemene voedselsoorte van die uile teen die einde van die winter terwyl *Otomys irroratus* en *O. saundersae* die meerderheid van die prooireste gedurende die somer gevorm het.

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Analyses of pellets of birds of prey, particularly of barn owls *T. alba* in southern Africa have yielded some useful distributional data on small mammals (Nel 1969; Vernon 1972; Dean 1973; Skinner, Lindeque, van Aarde & Dieckmann 1980; Tilson & Le Roux 1983). Most of the studies are based on a single collection of pellets from a roost, from which only distributional information and a list of prey items can be obtained. Perrin (1982) compared his analysis of a single collection of pellets to the results of trapping in adjacent habitats and was able to draw some conclusions on prey selection by the owls.

I collected pellets at roughly monthly intervals over a period of 13 months (1986/87) from a barn owl roost situated in a small recess of a cliff on the farm Thornkloof (33°14'S / 26°19'E) 15 km north-west of Grahamstown in the eastern Cape. During my first visit to the site in April 1986 all skeletal debris from old pellets was cleared from below the roost, so that only pellets regurgitated between sampling periods were collected. The vegetation surrounding Thornkloof for several kilometres is karroid and similar to Acocks's (1975) Fish River Scrub (veld type 23). During the study the area was still in the grip of a drought.

Each pellet was soaked in water before being dissected and all the skulls of vertebrates were retained and identified using Coetzee (1972), De Graaff (1981), and Smithers (1983). Some doubtful material was sent to the Kaffrarian Museum for identification. Mean masses of vertebrates were obtained from De Graaff (1981), Smithers (1983) and Maclean (1985).

The numbers and the mean total biomass of each prey species in the pellets is summarized in Table 1. Small

Table 1 Monthly composition of vertebrate remains in barn owl pellets. Mean mass (g), total number and mean total biomass (g) for each species recorded are presented

Species	Mean mass	May		June		July		August		September		October		November		Dec.–Jan.		Feb.–Jun.		Total	
		No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass	No.	Mass
Rodents																					
Aethomys namaquensis	46	3	138	2	92	1	46	–	–	2	92	1	46	2	92	–	–	1	46	12	552
Cryptomys hottentotus	126	1	126	1	126	–	–	–	–	1	126	–	–	–	–	–	–	–	–	3	378
Dendromys spp.	15	–	–	–	–	–	–	2	30	–	–	–	–	–	–	–	–	–	–	2	30
Mastomys natalensis	58	10	580	2	116	37	2146	57	3306	14	812	1	58	2	116	7	406	3	174	133	7714
Mus minutoides	8	3	24	–	–	11	88	41	328	18	144	–	–	–	–	1	8	–	–	74	592
Otomys irroratus	143	1	143	1	143	–	–	4	572	3	429	1	143	9	1287	4	572	3	429	26	3718
Otomys saundersae	103	–	–	–	–	1	103	–	–	3	309	3	309	6	618	14	1442				
Otomys spp.	123	–	–	–	–	–	–	–	–	1	123	–	–	–	–	7	861	2	246	10	1230
Shrews																					
Crocidura cyanea	9	–	–	–	–	–	–	–	–	1	9	–	–	2	18	5	45	1	9	9	81
Crocidura flavescens	24	6	144	–	–	–	–	–	–	3	72	–	–	–	–	4	96	1	24	14	336
Suncus infinitesimus	3	2	6	–	–	–	–	4	12	3	9	–	–	–	–	5	15	–	–	14	42
Undetermined	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	2	–
Birds																					
Indicator minor	28	–	–	–	–	–	–	–	–	–	–	1	28	–	–	–	–	–	–	1	28
Ploceus capensis	44	1	44	–	–	–	–	–	–	–	–	–	–	–	–	1	44	–	–	2	88
Total		28	1205	6	477	50	2383	108	4248	47	1919	4	275	18	1822	38	2356	17	1546	316	16231

mammals of 12 species formed the main prey items of the owls. These include *Rhabdomys pumilio* (one skull), *Saccostomus campestris* (two skulls), and *Elephantulus* sp. (two pairs of mandibles) which were found below the roost when it was first discovered, but were not found in pellets subsequently. The dominant prey species, *Mastomys natalensis* made up 42% of the total number of animals consumed by the owls during this study. *Mus minutoides*, the next most numerous prey item made up 23% of the total, followed by *Otomys* spp. together at 16% and shrews at 12%. Birds formed less than 1% of the items consumed and insect remains were rarely encountered in the pellets.

Three nestling barn owls estimated to be between 28 and 40 days old were found in the roost in April 1986. Two adult birds were flushed from the site at the same time. The nestlings had gone when the site was revisited the following month. This coincides with a decline in prey biomass between May and June. Prey consumption increased dramatically thereafter, peaking in August, though it is not known if the owls bred again during this time. Unfortunately no trapping was done during this time to determine densities of small mammals in the area in relation to the increased frequency of *M. natalensis* and *M. minutoides* in the diet of the owls. After September the number of prey items in the pellets remained small, except for a peak in November. Dean (1973) calculated the monthly biomass consumed by a single barn owl to range from 1250–3270 g. These values are much higher than those calculated for the months of June and October in my study and suggest partial use of another roost during this time.

The preferred sizes of the barn owl prey items at

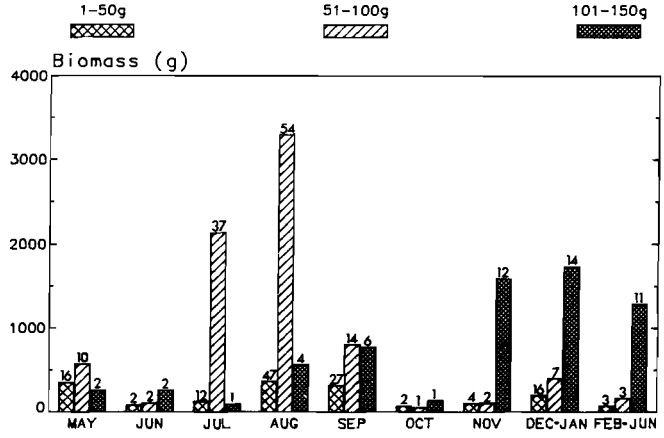

Figure 1 Total monthly biomasses of three prey size classes found in barn owl pellets. The number of individuals in the size classes is given above each column.

Thornkloof were examined by dividing prey species into three categories: 1–50 g, 51–100 g, and 101–150 g (Figure 1). A Chi-squared test was performed to test whether the results agreed with an expected equal number of prey items taken in each size class per month over the entire study-period. All three size classes differed significantly from expected values ($p < 0{,}001$; $d.f. = 8$) indicating temporal differences in the size of prey eaten. During July and August prey in the second size class formed the bulk of the prey remains, yet from November onward prey items in the third size class were more numerous. Because of inadequate supporting data it is impossible to tell if this seasonal difference in prey reflects the actual

small mammal densities in the area. The presence of only a few prey species in some months may reflect local population explosions of these species. This phenomenon has been recorded for both *M. natalensis* and *M. minutoides* (De Graaff 1981; Smithers 1983) which were the commonest prey items in this study. However, these assumptions need to be tested more thoroughly by concurrent monthly small mammal trapping in the habitats adjacent to the roost, and by obtaining more detailed breeding data on the owls.

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