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Differential Utilization of Prey Resources by Great Horned Owls and Barn Owls in Central Chile

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Great Horned Owls (*Bubo virginianus magellanicus*) and Barn Owls (*Tyto alba pratincola*) are sympatric in central Chile (Herrera and Jaksić 1980), but their interactions in terms of prey taken have not been analyzed. This is because no simultaneous collection of pellets has been done at the same locality. We report the prey in 98 pellets of Great Horned Owls and in 151 pellets of Barn Owls collected during September 1979 beneath one nest of each species at La Dehesa (33°21′S, 70°32′W; 875 m elevation; 20 km east of Santiago).

Prey were identified to the species level whenever possible, and the following parameters were computed: (1) food-niche breadth (Levins 1968: 43); (2) food-niche overlap (Pianka 1974); and (3) mean weight of mammalian prey taken (Herrera and Jaksić 1980). The Kolmogorov-Smirnov test with Chi-square approximation (Siegel 1956: 131) was used to test for differences in the distribution of prey sizes taken by the two owl species. Mean weights of mammalian prey available in central Chile were obtained from Herrera and Jaksić (1980); activity times of those prey were reported by Jaksić and Yáñez (1979).

The Great Horned Owls and Barn Owls associated with these nests both preyed mainly on small mammals (Table 1), but some differences in prey composition were obvious: Great Horned Owls preyed on European rabbits (7 adults, 11 juveniles) and on black rats, but Barn Owls did not. The consumption of rabbits by Great Horned Owls was probably associated with the larger body size of this species (ca. 1,500 g) as compared to that of the Barn Owl (ca. 310 g). It is intriguing that black rats were not taken by the Barn Owl, as their activity pattern is nocturnal and their weight, about 158 g, is well within the handling capacity of Barn Owls. This is exemplified by the relatively high proportions of degus and chinchilla rats in their diet (Table 1). Perhaps Great Horned and Barn owls hunted in different habitat patches, where availability of black rats was different. The presence of degus and coruros in pellets of Barn Owls but not of Great Horned Owls may be associated with the diurnal-crepuscular activity patterns of these two rodent species. If Barn Owls hunt over a more extended period than Great Horned Owls, their probability of encountering those prey would be greater, leading to a higher representation of degus and coruros in pellets of Barn Owls. Alternatively, different preferences in hunting habitat may have increased the relative availability of those two prey species for Barn Owls.

The food-niche breadth of Great Horned Owls was 6.90, considerably greater than that of Barn Owls,

TABLE 1. Prey items from 98 fresh pellets of Great Horned Owls and from 151 of Barn Owls in central Chile. Common names are in parenthesis; n = number of individual prey items in the pellets.

Prey	Weight (g)	Great Horned Owl		Barn Owl	
		n	%	*n*	%
MAMMALS					
Rodents			69.3		89.7
Abrocoma bennetti (chinchilla rat)	219	21		64	
Akodon longipilis (long-haired akodon)	76	19		2	
Akodon olivaceus (olivaceous akodon)	40	1		9	
Octodon degus (degu)	230	—		7	
Oryzomys longicaudatus (rice rat)	45	5		19	
Phyllotis darwini (leaf-eared mouse)	66	5		68	
Rattus rattus (black rat)	158	22		—	
Spalacopus cyanus (coruro)	112	—		1	
Unidentified	—	6		4	
Lagomorphs			15.8		0.0
Oryctolagus cuniculus (European rabbit)	*[a]	18		—	
Marsupials			3.5		4.1
Marmosa elegans (mouse opossum)	40	4		8	
BIRDS			11.4		6.2
Unidentified Passeriformes	—	13		12	
TOTAL PREY		114		194	

[a] * Adults = 1,300 g; juveniles = 534 g.

3.98. This was associated with the more even consumption of different prey categories by Great Horned Owls, as compared to the high predation on a few species by the Barn Owls (i.e. chinchilla rats and leaf-eared mice). Food-niche overlap was 0.48 (of a maximum of 1.00), and mean weights of mammalian prey taken were ($\bar{x} \pm$ SE) 265.8 ± 33.4 g (n = 95) and 123.1 ± 6.0 g (n = 178) for Great Horned and Barn owls, respectively. The marked differences in mean prey size were associated with the higher consumption of larger-sized prey by the Great Horned rather than by Barn owls ($\chi^2 = 26.82$; $P < 0.001$).

In conclusion, it seems likely that some differences observed in the diet of Great Horned and Barn owls were related to differential utilization of the hunting habitat and hunting activity time. Also, the larger size of Great Horned Owls presumably allowed them to exploit large prey items (e.g. rabbits) that were hardly available as prey for the relatively small Barn Owls.

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