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BATS AS PREY OF STYGIAN OWLS IN SOUTHEASTERN BRAZIL

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Few studies have examined quantitatively large numbers of pellets or stomachs for assessing the relative frequency of bats as prey of owls (cf., Uttendörfer 1943, Ruprecht 1979, Mikkola 1983). Pellets cast by three or four Stygian Owls (*Asio stygius*) were collected during 25 mo, mostly between June 1985 and February 1987 and sporadically in August–September 1989, December 1990 and February 1991. We collected pellets under trees in a *Pinus* sp. plantation located in São Carlos, São Paulo State, southeastern Brazil (21°58'S, 47°52'W) at an altitude of 840 m. The climate of the study area is a transition between Köppen's Cwai and Awi, or rainy tropical with dry (April to September) and wet (October to March) seasons (Tolentino 1967). The nocturnal foraging activities of the owls took place in savannah ("campo cerrado") and grassland ("campo") habitats near the *Pinus* plantation, which was used for diurnal roosting. All data were gathered through direct observation in the study area.

A total of 422 pellets were analyzed after treatment with a 3% boiling solution of NaOH (Schueler 1972). Prey remains were identified by comparison with reference collections. The bulk of the prey items consisted of small birds (Table 1), mostly finches (e.g., *Volatinia jacarina* which alone comprised 62.5% of all birds or 56.3% of all prey), weighing 10–15 g (J.C. Motta Junior unpubl.). Bats were the second most frequent prey whereas insects

Table 1. Numbers of prey items found in pellets of Stygian Owls in two climatic seasons in southeastern Brazil.

	DRY SEASON		WET SEASON		TOTAL	
PREY	*N*	(%)	*N*	(%)	*N*	(%)
Bats	49	(5.7)	26	(6.8)	75	(6.1)
Birds	793	(93.1)	318	(83.7)	1111	(90.2)
Frogs	0		1	(0.3)	1	(0.1)
Insects	10	(1.2)	35	(9.2)	45	(3.6)
Total Prey	852	(100.0)	380	(100.0)	1232	(100.0)
Total Pellets	265		157		422	

Table 2. Bats (N = 75) found as prey of Stygian Owls in southeastern Brazil. Body weights were obtained from museum specimens, collected in São Paulo state.

SPECIES	WEIGHT (g) (RANGE)	(N)	NO. (%) OF BATS IN PELLETS
Molossidae			
Eumops glaucinus	28.6–38.6	(12)	47 (62.7%)
Nyctinomops laticaudatus	8.5–13.8	(6)	10 (13.3%)
Nyctinomops macrotis	26.0	(1)	1 (1.3%)
Vespertilionidae			
Eptesicus furinalis	5.0–7.2	(8)	3 (4.0%)
Histiotus velatus	7.0–10.8	(9)	1 (1.3%)
Lasiurus blossevillii	8.7–11.4	(3)	1 (1.3%)
Lasiurus cinereus	14.3–23.5	(3)	3 (4.0%)
Lasiurus ega	14.3–15.0	(3)	6 (8.0%)
Phyllostomidae			
Glossophaga soricina	8.2–12.0	(86)	1 (1.3%)
Chiroderma doriae	26.9–33.0	(18)	1 (1.3%)
Pygoderma bilabiatum	15.4–15.9	(2)	1 (1.3%)

(Scarabaeidae and Orthoptera) and a frog seemed to be of minor importance. The absence of rodents in the diet of the Stygian Owls studied was surprising. Rodents were abundant in the study area as evident from their frequent occurrence in pellets of Barn Owls (*Tyto alba*) living in the same area (Motta Junior 1988).

G-tests (Sokal and Rohlf 1969) applied to seasonal frequencies of prey items (Table 1) demonstrated that insects were more frequently preyed upon during the wet season ($G = 39.92$, $P < 0.001$), whereas consumption of birds and bats did not show seasonal trends ($G = 2.58$, $P >$ 0 10 and $G = 0.35$, $P > 0.50$, respectively).

Eleven species of bats in eight different genera and three families were recorded. The largest bat (*Eumops glaucinus*) was also the most frequently preyed upon by Stygian Owls (Table 2).

Data from Colombia (Borrero 1967), Belize (Franz 1991) and from Colima, Mexico (based on three pellets) were similar to ours. Except for the Black-and-White Owl (*Ciccaba nigrolineata*) that forages heavily on bats (Ibáñez et al. 1983) and the Stygian Owl (this study), apparently no other owls include bats so frequently (6.1%) in their diet (cf., Uttendörfer 1943, Earhart and Johnson 1970, Burton 1973, Mikkola 1983).

RESUMEN.—Durante 25 meses, entre junio de 1985 y febrero de 1991, estudiamos la ocurrencia de murciélagos en la dieta del Tecolote Fusco (*Asio stygius*) en el sudeste de Brasil. El análisis de 422 egagrópilas rindió 1232 presas entre las cuales las aves representaron 90,2%, los murciélagos 6,1%, los insectos 3,6%, y los anuros 0,1%. Identificamos 11 especies de murciélagos entre 75 individuos. *Eumops glaucinus* fue la especie más frecuente (47 individuos). La predación de murciélagos fue regular a lo largo de las estaciones. *Asio stygius* es apuntada como una de las especies de Strigiformes que más preda murciélagos en todo el mundo.

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