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The Prey of Common Barn-Owls *(Tyto alba)* in Dry Limestone Scrub Forest of Southern Jamaica

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ABSTRACT. – A collection of common barn-owl *(Tyto alba* Scopoli) pellets from caves on the Portland Ridge of Jamaica reveals that whereas introduced rodents constitute approximately 90% of the total prey, bats and birds are also frequent prey items. Of the bats, frugivorous species predominate with *Ariteus flavescens* Gray and *Artibeus jamaicensis* Leach accounting for the largest portion of the bat prey. Insectivorous bats are markedly under-represented with respect to the known diversity of insectivorous species in the habitat.

INTRODUCTION

The prey of barn-owls on Caribbean islands is of special interest because of the contribution that owl-pellet accumulations have made to the palaeontological record (Pregill and Olson, 1981), and because owl pellets provide faunal samples in areas which may otherwise be poorly known in this respect. Modern owl-pellet accumulations have been reported from Grand Cayman (Johnston, 1974), Hispaniola (Wetmore and Swales, 1931), and the southern Bahamas (Buden, 1974). These studies have suggested that the relatively depauperate small mammal faunas of the Bahamian and Antillean islands may have forced a degree of dietary shift upon island owl populations. Recently, Schwartz and Bleitch (1985) have provided evidence which indicates that the proportions of prey taxa in barn-owl pellets collected in southern California reflect true prey densities, an observation which reinforces the value of owl pellet studies.

METHODS

In June of 1985, osteological material was collected from large owl-pellet deposits on the talus cones of two deep collapse pits, Arrow Pit and Entrance 1, Somerville Cave (Wadge et al., 1979). These caves lie in the dense coastal arid faciation of the dry limestone scrub forest (Asprey and Robbins, 1952), close to the village of Jackson's Bay, Clarendon Parish, Jamaica. Arrow Pit is approximately 20 metres deep, and Entrance 1 of Somerville Cave measures some 15 metres from lip to talus slope. Both pits have steeply overhanging walls with many ledges and alcoves frequented by barn owls.

The deposits were of two types; discrete, young pellets on ledges, and very large accumulations of loose bone apparently scattered from ledges downward onto talus slopes. The size of the deposits, which at Somerville occupied an estimated floor area of 100 m^2, together with the heterogeneous disposition of prey taxa precluded the collection of a truly random sample in the time available. In practice all non-rodent crania encountered in 10 man-hours of search at the two sites were collected, together with a large but partial sample of the rodent material. Thus the relative proportions of the non-rodent taxa are considered to be a true representation of their proportions at the sites, but the proportion of rodent to non-rodent specimens is biased in favor of non-rodents. Specimen numbers are given as minimum number of individuals (MNI) since crania and mandibles were always disassociated.

TABLE 1. Vertebrate prey taxa from owl-pellet deposits at Jackson's Bay.

Taxon	Minimum # of individuals	% of non-rodent total
Mammalia; Rodentia		
Rattus rattus (L.)	900-950	—
Mus musculus (L.)	20-25	—
Mammalia; Chiroptera		
Artibeus jamaicensis (Leach)	16	19.5
Ariteus flavescens (Gray)	22	26.8
Erophylla sezekorni (Gundlach)	8	9.7
Monophyllus redmani (Leach)	2	2.4
Eptesicus lynni (Shamel)	4	4.8
Aves		
Icterus leucopteryx (Wagler)	3	3.6
Vireo altiloquus (Vielliot)	4	4.8
Coccyzus sp. *(americanus?)*	3	3.6
Tiaris olivacea (L.)	3	3.6
Tyrannus sp. *(dominicensis?)* (Lacepede)	4	4.8
Loxigilla violacea (L.)	7	8.5
Dumetella carolinensis (L.)	1	1.2
Myiarchus sp. *(Stolidus?)* (Cabanis)	1	1.2
Unidentified	2	2.4
Reptilia		
Anolis garmani (Stejneger)	2	2.4

RESULTS

Seventeen taxa of vertebrates were identified from the Jackson's Bay collections, which were dominated by the remains of the introduced rat *Rattus rattus* Linnaeus. Of the non-rodent prey items, 63.4% were bats, 34. 1% were birds, and 2.4% were lizards. Table 1 lists the species identifications together with the minimum number of individuals represented.

DISCUSSION

The only native rodent currently extant on Jamaica is *Geocapromys brownii* Chapman, whose adult size (1000-2000 g) makes it an unlikely prey item for barn-owls. *Geocapromys brownii* is known from the Jackson's Bay caves but not from owl-pellet material. The black rat, *Rattus rattus,* is by far the dominant prey item at both Arrow Pit and Somerville Cave. An estimated 90% of the total prey items at these sites were *R. rattus.* The house mouse, *Mus musculus* Linnaeus, was quite scarce in the deposits and accounted for no more than 2% of the total prey items. These figures compare with 87.5% and 3.9%, respectively, for pellets collected at Morne La Viste, Haiti, by Wetmore and Swales (1931).

Five species of bats were identified from the Jackson's Bay collections. The selection of bat prey by the owls is apparently unrelated to prey size, since the commonest prey species *(Ariteus flavescens,* 12 g, MNI = 22) is very close to the size of the two least common prey species *(Eptesicus lynni,* 12 g, MNI = 4; *Monophyllus redmani,* 12 g, MNI = 2) whereas the second commonest prey species *(Artibeus jamaicensis,* 35 g, MNI = 16) is at least three times as large. Another large species, *Erophylla sezekorni,* (35 g, MNI = 8) was also represented. It is interesting to note that the three commonest prey species are all frugivores, although *Erophylla* takes significant quantities of flowers and nectar also. It is possible that the slow flight of these species and their predictable occurrence at fruiting trees renders them more vulnerable to aerial predation.

Ariteus flavescens is know from only two recent literature records of the living animal, one of six specimens from the "Kingston area" (Williams, 1952) and one of three specimens from Hector's River, Portland Parish (Howe, 1974). Additional specimens from Kingston (D. L. Harrison, pers. comm.) and "St. Thomas" (British Museum, Natural History) are also known. Since these localities are all relatively mesic, the fact that *Ariteus* is apparently a common species in the dry limestone scrub of Jackson's Bay implies that it is probably widely distributed across the island.

Eptesicus lynni is also known from very few literature records (Hall, 1981). The recovery of at least four individuals from Jackson's Bay implies that this species also may be more widely distributed than has hitherto been supposed. The insectivorous bat *Macrotus Waterhouse* Gray was collected alive from Jackson's Bay during this fieldwork, but is not represented in the owl-pellet material. It is unlikely that these are

the only two of Jamaica's 13 insectivorous bats to occur in this habitat.

The numbers of avian prey do not suggest any particular specialization by the owls, but probably reflect local species abundances. Lack (1976) regards only *Dumetella carolinensis* as scarce in Portland Ridge habitat. A tendency for avian prey of barn-owls to consist of communally-roosting species has been noted (Cramp, 1985); of the avian prey species in this study, only the grassquits *(Tiaris)* and perhaps the bullfinch *(Loxigilla)* might be considered communually-roosting species.

The lizard *Anolis garmani* is clearly under-represented with respect to its' abundance at Jackson's Bay, suggesting that owl predation is not important for this species.

The diversity of bat species represented in the owl-pellet accumulations provides a minimum estimate of species richness in the bat community of Jamaican dry scrub forest. The predominance of *Ariteus flavescens*, a bat which is rare in museum collections taken from the island, suggests that either the status of this species has been seriously underestimated or that it is disproportionately vulnerable to barn-owl predation. The marked under-representation of insectivorous bats in the owl pellets suggests that it would be unwise to use these deposits alone to reconstruct a whole bat fauna.

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