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### Notes on the mammals of Turneffe Atoll, Belize

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Turneffe Atoll is one of three atolls in Belize, and one of only four atolls in the Western Hemisphere (Stoddart, 1962). Comprehensive faunal inventories of the Belizean atolls have not been undertaken, and information on the ecology of atoll fauna is almost non-existent (Platt et al., 1999a). In particular, the mammals of Turneffe Atoll have received scant scientific atten-

tion and remain poorly known. Stoddart (1962) reported only domestic dogs and semi-feral pigs in the vicinity of settlements, and noted that rats were a major pest in coconut plantations. We herein summarize existing records and present additional information on the mammalian fauna of Turneffe Atoll.

Turneffe Atoll (Figure 1) is 50 km long and 16 km wide, with an estimated surface area of 330 km<sup>2</sup> (Hartshorn et al., 1984). The atoll consists of a chain of islands partially enclosing three shallow lagoons: Southern, Central, and Northern or Vincent's Lagoon. A near continuous beach ridge extends along the eastern shore, with a maximum elevation of about 1.5 m above sea level (Stoddart, 1962). Mean annual rainfall is 1347 mm/year, with a pronounced wet season from June through November (Hartshorn et al., 1984). Fresh surface water is scarce to non-existent during the dry season.

Much of the atoll is dominated by mangrove swamp, with transitional formations bordering elevated habitats. The continuous beach ridge is characterized by littoral forest, which is the most endangered habitat in the coastal zone. Significant tracts remain on Blackbird, Calabash, and Deadman's Cays. The atoll is largely undeveloped, although resorts have been constructed on Cay Bokel and Blackbird Cay, and a marine research center was established on Calabash Cay by the University College of Belize. There are many small fishing camps scattered throughout the atoll. The atoll is under increasing pressure for development and the construction of additional tourist facilities has been proposed.

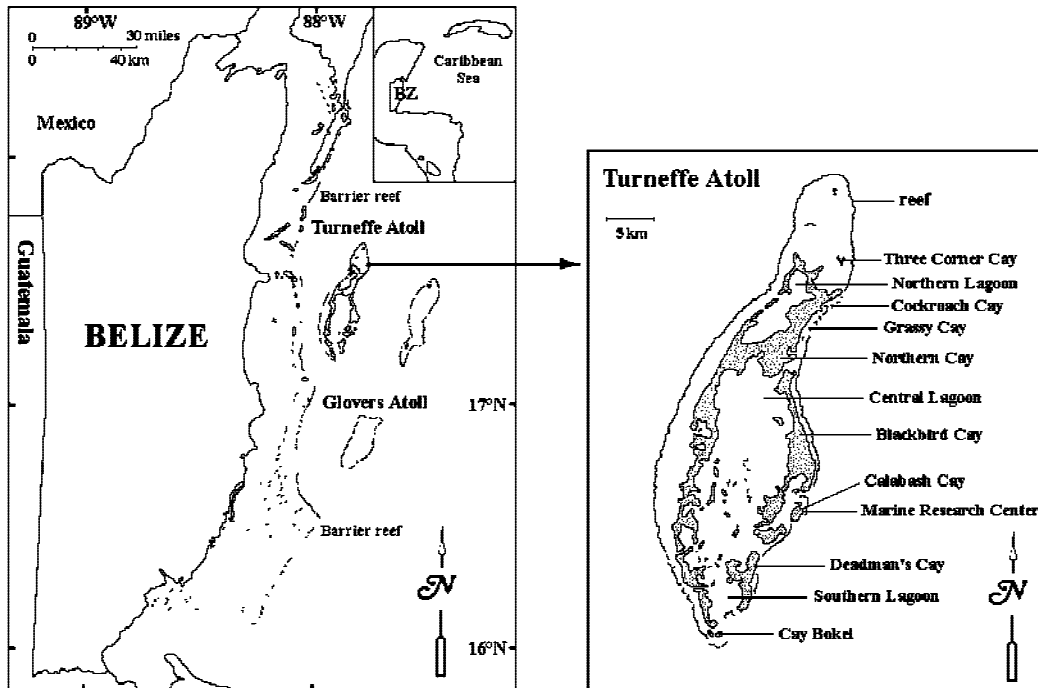


FIG. 1. Map of Turneffe Atoll, Belize showing relation of atoll to mainland and locations mentioned in text.

Data on the mammals of Turneffe Atoll were gathered from 1994 to 1997, in conjunction with a country-wide crocodile survey (Platt et al., 1999b; Platt and Thorbjarnarson, 1996). The atoll was visited during May, June, and September 1994, June 1995, August and November 1996, and February, April, May, June, and July 1997. Mammals were observed primarily at night using a handheld Q-beam spotlight (250,000 candlepower) and auxiliary 12-volt headlights. We also searched the Belize Biodiversity Information System (BBIS, 1999) for records, and examined specimens and unpublished field notes at the Museum of Natural Science (LSUMZ), Louisiana State University, Baton Rouge, Louisiana. Nomenclature follows Honacki et al. (1982). Place names correspond to topographical maps issued by the Ordnance Survey, Southampton, England and obtained from the Department of Lands and Survey, Belmopan, Belize.

[*Marmosa* spp. Gray]. Two species of mouse opossums (*M. robinsonii* Bangs and *M. mexicana* Merriam) occur on the Belizean mainland (Reid, 1997), but there are no records for offshore islands (BBIS, 1999). A mouse opossum was observed during a spotlight crocodile survey on 19 June 1995, climbing in mangroves along the shore of Northern Lagoon. We could not capture the animal for species identification.

*Rhogeessa parvula* [= *R. tumida* H. Allen, black-winged little yellow bat]. A single specimen (LSUMZ 7148) was collected on 13 April 1956 from Calabash Cay, but no further information is provided in the field notes (S. Russell, LSUMZ, unpubl.). *Artibeus jamaicensis* Leach (Jamaican fruit-eating bat) probably occurs in Turneffe Atoll, since two specimens were collected in 1995 from littoral forest on Lighthouse Atoll (C. M. Miller and B. W. Miller, unpubl.).

*Dasypus novemcinctus* Linnaeus. The nine-banded armadillo is common on the Belizean mainland, but has not been reported from offshore islands (BBIS, 1999). We found many probe-holes made by foraging armadillos (Murie, 1954) in littoral forest on Blackbird Cay, and residents report occasional sightings. On 10 April 1997 we found a partially consumed carcass of an armadillo on Blackbird Cay, approximately 5 km north of Blackbird Resort. A voucher photograph (CUSC 2765) is deposited in the Campbell Museum, Clemson University, Clemson, South Carolina.

*Oryzomys couesi* Alston (Coues' rice rat). Ten specimens (LSUMZ 7195-7204) were collected on Calabash Cay from 13 to 15 April 1956 by Stephen Russell and Dan Dennett of the Museum of Natural Science, Louisiana State University, Baton Rouge (LSUMZ, unpubl. data). We are unaware of recent records.

*Procyon lotor* Linnaeus. Twenty-one raccoons were observed in mangrove habitats during spotlight crocodile surveys of Blackbird (6), Calabash (4), Deadman's (7), and Northern (4) Cays. Raccoons probably occur throughout the atoll, as they swim readily, and movements of up to 645 m across seawater gaps have been reported (Bigler et al., 1981).

Forty-six raccoon scats collected during April and May on Blackbird and Calabash Cays contained only the chitinous remains of crabs. Predation of many spiny-tailed iguana (*Ctenosaura similis* Gray) nests was noted on Blackbird Cay during April 1997. Raccoons are also a major predator of American crocodile (*Cro-*

*codylus acutus* Cuvier) eggs (Thorbjarnarson, 1989), but losses appear minor in the Turneffe Atoll. Fleming et al. (1976) found that raccoon predation of American alligator (*Alligator mississippiensis* Daudin) nests was dependent on the availability of alternate foods, such as crustaceans, with predation being lowest when other foods were most abundant.

*Trichechus manatus* Linnaeus. The 300 to 700 West Indian manatees estimated to remain in Belize constitute the largest extant population in the Caribbean (O'Shea and Salisbury, 1991). Manatees occur throughout the coastal zone of Belize, but Turneffe Atoll has not been included in previous surveys (Bengtson and Magor, 1979; O'Shea and Salisbury, 1991). We encountered solitary individuals in Northern Lagoon (1996 and 1997) and Central Lagoon (1994), and a group of three in Southern Lagoon (1995). Migratory movements of up to 850 km have been documented (Reid et al., 1991), and thus movements between the atoll and mainland are within the dispersal capabilities of manatees. Since fresh water is required for drinking (Lefebvre et al., 1989), occasional returns to the mainland are very likely.

*Odocoileus virginianus* Zimmerman. White-tailed deer were released before 1960 on several larger cays in the atoll by resident fishermen hoping to establish a herd to exploit for fresh meat. We found no evidence for their continued persistence, and speculate that the herd probably perished when the atoll was inundated during Hurricane Hattie in 1961 (Stoddart, 1963).

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