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**NOTES ON THE VERTEBRATE FAUNA OF
TONGAREVA ATOLL**

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Tongareva (or Penrhyn) Atoll, at 9° S, 158° W in the south central Pacific Ocean, is the northernmost of an isolated group of islands north of the Cook Islands, and like them is administered by New Zealand. Tongareva is a typical ring atoll about 40 miles in circumference and contains a lagoon of about 108 square miles (Buck, 1932).

The vertebrate fauna of the atoll has been little studied despite relatively frequently visits by missionaries, anthropologists, and zoologists. The atoll was visited by the Kaimaloa Expedition in December 1924 and in September 1936 and April 1937 by William F. Coultas and R.W. Smith, respectively. Both Coultas and Smith collected birds but no formal reports on the collections were ever written.

On 13 June 1965, Tongareva was visited for 9 hours by a survey team of the Smithsonian Institution's Pacific Ocean Biological Survey Program (POBSP). Only the "bird islets" including Vaiari Islet at the southwestern corner of the lagoon and portions of the northwestern rim were visited.

Recently Batham and Batham (1973) presented observations on the birds of the atoll made during a visit from 12 August to 20 September 1968. The present paper presents additional information on the vertebrates of Tongareva Atoll and comments on Batham and Batham's useful contribution. Appendix Table 1 lists bird specimens collected in 1936, 1937 and 1965.

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Mammals

At the time of the POBSP visit, cats (*Felis domestica*), dogs (*Canis familiaris*), and pigs (*Sus scrofa*) were being raised by the natives. Comments in Ward (1967) and by Lamont (1867) suggest that the pigs may have been introduced to Tongareva in 1853 from the shipwrecked vessel Chatham. Rats (*Rattus* sp.) were numerous in 1965, but as no specimens were collected their identity is unknown. Lamont (1867) stated that in 1853 "... [the natives] had never seen an animal larger than a very small rat, that lives principally in the cocoa-nut trees" Lamont's description suggests that the rats on Tongareva are *Rattus elegans*, a species widely distributed on the Pacific Islands.

Reptiles

Although native informants indicated that turtles (most likely the Green Turtle [*Chelonia mydas*]) were frequently caught at Tongareva no turtles were observed during the POBSP visit. Lamont (1867) and Buck (1932) indicate that turtles were caught by the natives for food.

Burt and Burt (1932) in their report on the herpetological results of the Whitney Expedition stated that the collections of the American Museum of Natural History contained one specimen of the Mourning Gecko (*Lepidodactylus lugubris*, AMNH 41749) and one of the Blue-tailed Skink (*Emoia cyanura*, AMNH 41748). They also indicated that E.H. Bryan, Jr., had collected these specimens while a guest of the Whitney South Sea Expedition in 1925. In fact, these specimens were collected by the Kaimaloa Expedition in 1924 (E.H. Bryan, Jr., *in litt.*) and mentioned by Gregory (1925). Ball (ms.) added that the single example of Mourning Gecko seen was collected and that the skinks were common but difficult to capture.

More recently the POBSP collected 28 specimens of four species of lizards. The more abundant species, the Mourning Gecko (14 specimens, USNM 158325-338) and the Blue-tailed Skink (10 specimens, USNM 158340-349) were those reported by Burt and Burt. The other two species collected were the Snake-eyed Skink (*Cryptoblepharus boutoni*, 1 specimen, USNM 158339) and the Polynesian Gecko (*Gehyra oceanica*, 3 specimens, USNM 158322-324). Both of the latter species were widespread on well vegetated central Pacific atolls but neither has been recorded previously from Tongareva.

Birds

Annotated List

In the following species accounts the presence of brackets about the name of a bird indicates that the occurrence of the species on

Tongareva is not well documented and that its occurrence there should be considered hypothetical.

[White-tailed Tropicbird *Phaethon lepturus*]

Native informants indicated that this species is rarely seen at Tongareva.

Red-tailed Tropicbird *Phaethon rubricauda*

About half a dozen birds were seen by the Bathams, but no definite evidence of nesting was obtained by them. One bird seen under a bush may have been in the pre-laying stage.

Brown Booby *Sula leucogaster*

The Bathams found a bird incubating two eggs; this is the only record of nesting for this species on Tongareva. The only other record of occurrence is that of a Brown Booby banded on Jarvis Island, 30 May 1940 and recovered at Tongareva on 15 February 1941 (Munro 1944).

Red-footed Booby *Sula sula*

These birds were seen and collected in 1936, 1937, and 1965. All three of the POBSP specimens were collected from a group of ten birds seen on the southwestern bird islets. No evidence of nesting was found.

Two Red-footed Boobies banded elsewhere were recovered at Tongareva. One was banded 9 August 1938 on Jarvis Island by George C. Munro and recaptured at Tongareva on 28 February 1941 (Bryan, 1970). Another banded as a nestling 24 June 1965 on Malden Island by the POBSP, was recovered at Tongareva on 15 June 1966.

Great Frigatebird *Fregata minor*

This species, like the Red-footed Booby, was seen and collected in 1936, 1937, and 1965 but was not recorded by the Bathams. There is no evidence that the species breeds on Tongareva. Munro (1960) reported a Great Frigatebird that had been banded on Enderbury Island of the Phoenix Islands and recovered on Tongareva.

Lesser Frigatebird *Fregata ariel*

Large immature young were recorded by the Bathams during their visit, and approximately 150 birds were seen on the southwestern islets during the visit by the POBSP. The POBSP personnel found about 10 nests with eggs and 2 with nestlings in nests 7-8 feet up in 10 to 12 foot high trees (*Pemphis acidulus*). Native informants indicated that the species formerly nested in much greater numbers.

The Bathams stated that natives told them that band recoveries of *Fregata* from Australia and the United States had been obtained at Tongareva. It seems very unlikely that there have been any band recoveries from Australia. The "recoveries from the United States" presumably refers to the Great Frigatebird recovery mentioned above.

Pintail

Anas acuta

An adult female banded 16 August 1949 at Tule Lake, California, was shot 15 November 1949 at Tongareva. This is the only record of this species from Tongareva.

Domestic Fowl

Gallus gallus

Chickens were being raised by the natives when the island was visited in June 1965. Probably these birds were first introduced to Tongareva in September 1853 (Ward, 1967; Lamont, 1867).

Golden Plover

Pluvialis dominica

The POBSP saw six Golden Plovers along the west side of the island. The Bathams reported that this species was widespread on the atoll. They also stated that natives told them that this species and the Ruddy Turnstone nest on Tongareva but did not comment on this obviously erroneous information.

Bristle-thighed Curlew

Numenius tahitiensis

The POBSP saw two of these curlews and collected one.

[Asiatic Whimbrel

Numenius phaeopus variegatus]

This race of the Whimbrel, listed as *Numenius variegatus* by the Bathams, was stated by them to occur in small parties of two to nine on open areas of old bare coral. Although it is possible that this western Pacific species was seen, it seems much more likely that this record (and a similar record by the Bathams for Suvarov Atoll) were of the Bristle-thighed Curlew, which could be expected to occur on these atolls in some numbers.

Ruddy Turnstone

Arenaria interpres

Turnstones have been recorded only by the Bathams, who found them on every islet visited.

Wandering Tattler

Heteroscelus incanus

Wandering Tattlers were first recorded by the Kaimalooa Expedition in 1924 when a few were seen (Gregory, 1925). Subsequently six specimens were collected in April 1937 by Smith, and three were recorded along the west side of the atoll during the POBSP visit in June 1965.

[Black-naped Tern

Sterna sumatrana]

Native informants indicated that this species is rarely seen at Tongareva.

Sooty Tern

Sterna fuscata

Three birds were seen offshore in December 1924 and about 40 were seen flying over the island by the POBSP. The Bathams received six eggs which were attributed to this species, but further documentation of the nesting of this species on Tongareva would be desirable.

Blue-gray Noddy

Procelsterna cerulea

A nestling preserved in spirits at the American Museum of Natural History is the only record of this species from Tongareva. The bird was collected 26 September 1936 by Coultas.

Brown Noddy

Anous stolidus

Ball (ms.) first recorded these birds on the atoll in December 1924 when they were incubating eggs in nests in the coconut trees. Brown Noddies were commonly seen when Tongareva was visited by the Bathams. Nests with young and one with an egg were seen. Only two large nestlings were found during the visit by the POBSP. Both were in nests in *Pandanus* trees. In all, an estimated 300 birds were seen during the June 1965 visit, about 100 along the southwestern islets and the rest along the northwestern portion of the atoll.

Black Noddy

Anous tenuirostris

These birds were the most abundant seabird on the atoll when it was visited by the POBSP. An estimated 3,000 birds were seen on the small islets at the southwestern corner of the lagoon. At this time between 1,000 and 1,200 nests were present but birds were associated with only about 150 and all these contained eggs. Nests were primarily constructed of leaves of *Pandanus* and grass (*Lepturus* sp.) and were located in *Pandanus* and *Tournefortia* trees. Later in the season (of a different year), the Bathams found both eggs and nestlings, some in *Pandanus* and a few others in *Pisonia grandis*.

White Tern

Gygis alba

These terns were fairly abundant when the island was visited by the POBSP. Sixty-five counted among the islets at the southwestern corner of the atoll, and another seven were counted at the northwestern corner. No nests were found during the POBSP visit, but gonad data from the four specimens collected suggest that the birds were breeding in June 1965. Both eggs and young were found by the Bathams in August-September 1968.

Populations evidently decrease considerably during the northern hemisphere winter as only a few of these terns were seen by the Kaimaloa Expedition in December 1924 (Gregory, 1925). During this visit, Ball (ms.) considered the species uncommon.

[New Zealand Cuckoo

Eudynamis taitensis]

The Bathams reported a bird that the natives called "Koekoea", which was purportedly this species, but did not see one. The occurrence of the New Zealand Cuckoo on this atoll should be watched for.

Summary

This paper briefly summarizes what is known of the vertebrate fauna of Tongareva Atoll. Four species of mammals, dog, cat, pig, and an unidentified rat (*Rattus* sp.), occur on the atoll as does an unidentified turtle, probably *Chelonia mydas*. Four species of lizards, all of wide distribution in the central Pacific, are present. Two of these, the Snake-eyed Skink and Polynesian Gecko, are reported from the atoll for the first time.

Excluding species of hypothetical occurrence 16 species of birds are known from the atoll. Of these, the Brown Booby, Lesser Frigatebird, Brown, Black, and Blue-gray Noddies and White Tern are seabirds that breed or have bred on the atoll. Four other species of seabirds, Red-tailed Tropicbird, Red-footed Booby, Great Frigatebird, and Sooty Tern, visit the island regularly. The Red-tailed Tropicbird and Sooty Tern may breed on Tongareva.

The remaining six species include four migrant shorebirds, the Golden Plover, Bristle-thighed Curlew, Ruddy Turnstone, and Wandering Tattler, a vagrant duck (the Pintail), and the introduced Domestic Fowl.

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Appendix Table 1: Bird Specimens Collected on Tongareva Atoll

<u>Species</u>	<u>Sex</u>	<u>Museum Numbers (USNM) Of Birds Collected 13 June 1965 by the POBSP</u>	<u>Museum Numbers (AMNH) of Birds Collected 22-26 September 1936 by William F. Coultas</u>	<u>Museum Numbers (PAS) of Birds Collected 28 April 1937 by R.W. Smith</u>	<u>Totals</u>
<i>Sula sula</i>		495698	336391-392	128691	4
		495699-700		128692-693	4
<i>Fregata minor</i>		495716	336393	128725	3
			336394-395		2
<i>Fregata ariel</i>		495704	336397, 336399		3
		495705	336398		2
<i>Numenius tahitiensis</i>		495732			1
<i>Heteroscelus incanus</i>				128524, 128548-551	5
				128547	1
<i>Sterna fuscata</i>		495472, 495475	336411	128532-534	6
		495473, 495474	336412		2
<i>Procelsterna cerulea</i>			336413		1
<i>Anous stolidus</i>		495552-558		128588-589	9
		495559-560	336401-402		4
<i>Anous tenuirostris</i>		495577, 495579	336403	128602-604	6
		495578	336404		2
<i>Gygis alba</i>		495602	336410		2
		495599-601			3
					<u>60</u>