

22. SOME ORNITHOLOGICAL OBSERVATIONS FROM THE WESTERN INDIAN OCEAN

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Introduction

These records were obtained while making a collection of oceanic birds for the National Museum of Kenya (formerly the Coryndon Museum). They were made in September and October 1967 when I accompanied the East African Marine Fisheries Research Organization's vessel Manihine on routine cruise no. 270. This proceeded more or less directly between the points listed below:

	<u>Depart</u>		<u>Arrive</u>
September	14 Mombasa	September	21 Remire (Amirantes)
	22 Remire		22 D'Arros (Amirantes)
	23 D'Arros to St Joseph (Amirantes)		to D'Arros (Amirantes)
	24 D'Arros	September	24 Desroches
	26 Desroches		26 Mahé (Seychelles)
	28 Mahé		28 Coetivy
	29 Coetivy	October	2 Farquhar
October	3 Farquhar		5 Cosmoledo
	6 Cosmoledo		7 Astove
	8 Astove		8 Assumption and Aldabra
	9 Aldabra		12 Latham Island, off the East African coast 97 km south of Zanzibar

Methods

While at sea a discontinuous watch was kept for birds and this covered most daylight hours. Where possible, specimens that came close to the ship were collected. The opportunity was also taken to collect birds on the islands visited, though the time spent was too short to permit more than cursory records to be made. Once a bird had been collected, it was labelled, sealed in a polythene tube, and deep-frozen. The collection was kept in this state until arrival at Nairobi, where specimens were thawed and skinned.

Nomenclature follows Watson et al. (1963).

List of species seen and/or collected

Oceanites oceanicus (Kuhl)

Two sightings, one at lat. 05°0'S, long. 48°30'E on 19 September 1967, and the other at 04°40'S, 54°20'E, were believed to be this species.

Puffinus pacificus Gmel.

A total of 13 were seen at sea between 4°02'S, 47°40'E and 05°0'S, 52°50'E, but none were seen in the immediate vicinity of Remire Island. They were numerous around D'Arros and St Joseph Atoll and breeding on Fouquet Island of the latter group. They were seen frequently at sea between Desroches and Mahé and between Mahé and Coetivy. They became progressively less numerous en route from Coetivy to Farquhar, and the last was seen at approximately 09°50'S, 51°35'E. Three specimens were obtained at St Joseph, comprising one male and two females. Both females were taken from nesting burrows. Of these, one had recently laid, the egg being collected, but the other did not appear to be in breeding condition, the ovaries being very small. This suggests that non-breeding birds also frequent the nesting grounds. The male collected had enlarged gonads. The nesting ground visited on Fouquet was situated in the midst of a coconut plantation and covered the greater part of the island. Burrows were seldom more than 4 ft (1.3 m) in length or 1 ft (0.3 m) in depth at the deepest point. They were so close together that walking across the colony was rendered difficult. For the greater part, burrow entrances were in the open, but some were concealed under fallen palm fronds or piles of coconut husks. The island's human inhabitants stated that the breeding season was October to December and that annually at least 600 nestlings were taken as rations. They also stated that the continued existence of the nesting colony was entirely due to the complete absence of rats on this particular island. When caught the two specimens taken from burrows made a goatlike bleat. Stomach contents of one comprised a few cephalopod beaks, the second contained a few fish bones, while the third was empty.

Puffinus lherminieri Less.

Several were seen on 23 September 1.6 km north of D'Arros, and a few were seen at sea between Desroches and Mahé. Some 24 were seen south of Mahé within 65 km of the island.

Phaethon lepturus Lacép. and Daudin

A mature male in non-breeding condition was taken at 4°0'S, 44°40'E. Another was seen at 4°25'S, 48°0'E, and two were seen at 4°35'E, 50°0'E. All these birds seen at sea were flying in an easterly direction. On land four were recorded on Remire island, and six on Resource Island of St Joseph Atoll on 23 September. Several were seen at Aldabra. The stomach contents of the one collected were both fish and cephalopod remains.

Sula leucogaster Bodd.

One specimen was secured on Cosmoledo and another on Latham Island. Small numbers were seen off Farquhar, Cosmoledo and Aldabra atolls and around Astove. They were numerous at Latham Island where a small number were nesting. Young were present in all stages from newly hatched to fully fledged. Some birds were brooding. Both specimens taken were females in nonbreeding condition. The stomach of one was full of gastropods.

Sula sula (Linn.)

This species was common around Cosmoledo, Astove, Assumption and Aldabra where it was by far the most numerous booby. It was also recorded at sea at approximately 4°25'S, 49°0'E, in company with Sooty Terns Sterna fuscata. One immature was collected at the latter position, two more at sea off Farquhar Atoll, and two mature males were taken at Cosmoledo. One of the latter was in breeding condition. Both mature birds had empty stomachs, but all three immatures contained fish remains.

Sula dactylatra Less.

Several immatures were seen at sea at approximately 04°25'S, 50°20'E, of which one was collected. Several mature birds were also seen at sea at 4°40'S, 51°30'E, of which one was also collected. On both occasions they were accompanied by many Sterna fuscata. Off Astove Island three matures were seen and they were very numerous around and on Latham Island. As with Sula leucogaster they were breeding, and in all stages from newly laid eggs to fully fledged young. This was the most numerous of the two boobies. Nests of both species were intermixed. The mature male taken at Latham Island had enlarged gonads, another two collected at sea were not in breeding condition. The stomach of the Latham Island specimen contained some twenty cephalopod beaks, one of the other had cephalopod beaks and fish bones, while the third was empty.

Fregata minor Gmel.

This species was seen on all islands visited except Mahé. Single birds were occasionally seen at sea between 4°0'S, 44°40'E and Remire Island. A mature male in full breeding condition was taken 320 km west of Remire. An immature was taken on St Joseph. Stomachs of both were empty.

Fregata ariel (Gray)

Seen on all islands except Mahé with F. minor. None were seen at sea, but this might be due to misidentification with the latter.

Ardea cinerea Linn.

A total of three were seen at Remire Island, 15 on St Joseph Atoll, one on Goelette Island, Farquhar Atoll, three at Astove, of which two were recently fledged, and they were numerous at Cosmoledo and Aldabra.

Bubulcus ibis (Linn.)

This species was recorded from Farquhar Atoll, Cosmoledo, Astove and Aldabra. On Goelette Island, Farquhar, a small colony of four nests in a stunted Casuarina tree contained six fully fledged young. A mature female was collected, not in breeding condition, with stomach content of grasshoppers, flies, a centipede (Liogryllus sp.) and many spiders (Latrodectus sp.) The specimen almost lacks any buffy plumes. Its wing-length is 235 mm.

Egretta garzetta (Linn.)

This species was common on the reefs of Cosmoledo and was seen at Astove, Assumption and Aldabra.

Butorides striatus (Linn.)

Common on all the islands of St Joseph Atoll in the Amirantes, and seen on all islands visited in the Farquhar and Aldabra groups except Assumption. The specimen collected, a female, was obtained at St Joseph and was not in breeding condition.

Perdix sp.

A large partridge was observed on Coetivy, but it was not identified specifically. It was almost certainly an exotic introduction.

Charadrius leschenaultii (Less.)

Seen in small numbers on all islands visited except Desroches, Mahé and Coetivy. A female was collected at Remire.

Squatarola squatarola (Linn.)

Recorded in pairs from all islands except Desroches, Mahé and Coetivy. None collected.

Calidris testacea (Pallas)

Small numbers were observed on Farquhar Atoll, and on all of the Aldabra group. A female collected on Goelette Island, Farquhar, was in very poor condition with several engorged ticks, as yet unidentified, which were collected. Its stomach contained fine insect fragments.

Crocethia alba (Pallas)

Small numbers on all islands visited except Desroches, Mahé and Coetivy. The specimen, a male, was obtained at Resource Island, St Joseph Atoll, Amirantes. Its stomach contents were insect fragments and white grit.

Arenaria interpres (Linn.)

Seen in all islands except Coetivy in parties of 6-50. The species was by far the most common palaeartic migrant. Many were seen at sea on 21 September. All were flying due east overtaking the ship. They flew as widely scattered individuals rather than in flocks. Three specimens collected were taken on D'Arros Island in the Amirantes. The stomach contents included small crustacea, grit and small insects.

Actitis hypoleucos (Linn.)

Eight were seen on Menai Island, Cosmoledo.

Tringa nebularia (Gunn.)

Six were seen on the reefs of St Joseph Atoll, Amirantes.

Numenius phaeopus (Linn.)

Whimbrel were seen on Remire in the Amirantes, Farquhar, Cosmoledo and Astove. On these islands they were common. The specimen collected, a female, was obtained on Menai Island, Cosmoledo.

Dromas ardeola (Payk.)

Twelve were seen on St Joseph reef, Amirantes, of which three were collected. A flock of about 100 was seen at Menai Island, Cosmoledo. Gonads of those collected were small, and stomach contents were whitish crabs.

Thalasseus bergii (Licht.)

About 200 were seen on Remire Island in groups of up to six. Several were seen on Goelette Island, Farquhar Atoll, and a few at Cosmoledo and Aldabra. Four specimens were taken at Remire. Of these none were in breeding condition; all contained fish remains in their stomachs.

Sterna dougallii Montagu

Six were seen on Goelette, Farquhar Atoll, from which two were obtained. The ovaries of one specimen were small, and stomach content nil.

Sterna albifrons (Pallas)

One specimen of this species was seen flying eastwards mid-way between Mombasa and Remire. Several small groups of up to 6 and one of about 50 were recorded on Goelette Island, Farquhar. A flock of more than 100 was seen on the eastern shore of Assumption. All six specimens taken were from Goelette; they were not in breeding condition, and the stomach contents were entirely fish remains.

Sterna fuscata Linn.

This species was by far the most frequently sighted bird on the cruise. It was seen in large flocks, small parties and singly every day at sea except 11 October (between Aldabra and Latham Island). On the eastward leg from Mombasa to Remire they were sighted at least once every two hours of observation and often very much more frequently. The species occurred around every island visited. On Goelette Island, Farquhar, a large breeding colony was visited. Several thousand young birds, all more than half fledged and the majority fully fledged, were present and indicated the end of the breeding season. Outstanding were the large number of dead and dying juveniles, apparently affected by starvation. Apparently a large number of noddies Anous stolidus had also nested on this island, but fledging had taken place earlier. Bailey

(1968) makes a similar observation on Desnoeuvs Island, Amirantes. There were fewer immature noddies on the ground, but they outnumbered Sterna fuscata in the air. Both species were very tame. The Farquhar islanders take at least 1000 eggs annually from this ternery and probably many more. Another large colony was recorded on Wizard Island, Cosmoledo Atoll. Here all had fledged, and there were very few young about. There was little evidence of the massive mortality recorded from Farquhar. A total of four specimens were taken, one from Remire and three from Farquhar. None were in breeding condition. All stomach contents were fish remains.

Sterna anaethetus Scop.

This species was very numerous on Remire Island, Amirantes, and was seen on D'Arros and St Joseph, Amirantes. It was not recorded elsewhere. A total of four was obtained on Remire. Of these one had slightly enlarged testes, the others were inactive. Stomach contents were entirely fish remains.

Sterna sumatrana Raffles

One specimen was seen on Resource Island, St Joseph Atoll, and 50 were seen on Goelette, Farquhar Atoll. Two specimens were collected on Goelette, one of which, a female, was in breeding condition. Stomach contents were entirely fish remains.

Gygis alba (Sparrm.)

Recorded as very common on Remire, D'Arros, St Joseph and Desroches (Amirantes) as well as on Cosmoledo, Astove and Aldabra. A number were seen 65 km out to sea between Mahé and Coetivy. All four specimens were taken on Remire. All were in breeding condition. Stomach contents of all were fish remains in which a Sardinella sp. was recognised.

Anous stolidus (Linn.)

This species was recorded from every island visited, and was often seen up to 65 km from land. It was particularly numerous around the Amirantes and was breeding on Goelette Island, Farquhar, as described in the section on Sterna fuscata above. All three specimens were taken at Remire. One was a male and two were females, none obviously in breeding condition. In two the stomachs were empty and one contained small fish.

Anous tenuirostris (Temmm.)

Only recorded from Remire Island, where it was by far the most common bird. On the western side of the island it was present in such numbers that the eight specimens were taken with a shot intended for one. It is of interest that all eight were females with very small ovaries. Though more likely coincidence, it is possible that the species exhibits some segregation of sexes when not breeding. The stomachs of all but one contained small fish.

Streptopelia picturata (Temm.)

Some were seen on D'Arros and St Joseph (Amirantes) but were nowhere numerous. The majority of those seen were associated with the small patches of native vegetation. Two females were taken. These are discussed by Benson (1970a).

Geopelia striata (Linn.)

This species is common on North Island, Farquhar Atoll. One male was collected in breeding condition.

Foudia madagascariensis (Linn.)

This species was the only passerine seen on Remire Island, and was numerous on D'Arros, Resource and St Joseph Atoll. One taken on Remire was in non-breeding dress with only a few red feathers on the head, and one from St Joseph was in breeding plumage with a little olive on the nape.

Passer domesticus (Linn.)

This introduced species is very common on D'Arros, Resource and St Joseph Atoll. A female was collected at the latter locality.

Cisticola cherina (Smith)

This species was numerous on Menai Island, Cosmoledo Atoll, and on Astove. Three males were collected on Menai Island, and two males on Astove. For a full discussion of specimens of this and the next two species, see Benson (1970b).

Nectarinia sovimanga (Gmel.)

The one species was recorded on Menai Island of Cosmoledo Atoll, Astove, Assumption and Aldabra, and appeared to be the only Nectarinia species on these islands. Ten specimens of N. s. buchenorum (Williams) were collected on Menai Island and Astove.

Zosterops maderaspatana (Linn.)

This species was observed on Astove (only six specimens seen) and on Aldabra, where it appeared numerous. The two specimens collected were obtained on Astove.

Corvus albus Muller

No attempt was made to secure specimens of this species. However a pair was recorded on Menai Island, Cosmoledo, another on Astove, six individuals were seen on Assumption, and at least 24 during the short stay on Aldabra.

Weights

When it did not interfere with other scientists' activities specimens were weighed before freezing. It was not possible to weigh every specimen, but the following table gives the records made; weights

were also recorded of all the specimens of Cisticola cherina, Nectarinia sovimanga and Zosterops maderaspatana. These are included in Benson (1970b).

<u>Species</u>	<u>Sex</u>	<u>Weight (g)</u>		
<u>Puffinus pacificus</u>	♂	325		
	♀	335	350	
<u>Phaethon lepturus</u>	♂	350		
<u>Sula sula</u>	♀	1750		
<u>Bubulcus ibis</u>	♀	320		
<u>Butorides striatus</u>	♀	180		
<u>Arenaria interpres</u>	♂	83	107	
	♀	100		
<u>Dromas ardeola</u>	♀	285	295	
<u>Thalasseus bergii</u>	♂	325	345	350
	♀	350		
<u>Sterna albifrons</u>	♂	45	50	56
	♀	42	45	
<u>Sterna fuscata</u>	♂	190		
	♀	170	180	
<u>Gygis alba</u>	♀	102		
<u>Anous stolidus</u>	♂	160		
	♀	195		
<u>Anous tenuirostris</u>	♀	110	115	120
<u>Geopelia striata</u>	♂	56		
<u>Foudia madagascariensis</u>	♂	15	16	
<u>Passer domesticus</u>	♀	24		

Discussion

Observations and collections made at sea were too infrequent to permit any statistical analysis of results. Similarly the time spent ashore was too short to permit any certainty of complete records. Thus the apparent absence of a species in this list from any area or island cannot be taken to mean that it did not occur.

Of the 18 species of sea birds seen only 8 were seen more than 64 km from land. These were Oceanites oceanicus, Puffinus pacificus, Phaeton lepturus, Sula sula, S. dactylatra, Fregata minor, Sterna fuscata and S. albifrons.

The outward voyage from Mombasa to Remire was associated with a strong south-easterly wind and an eastward flowing current (counter-equatorial). The greatest variety of pelagic bird sightings and the highest number were made on this stretch. S. fuscata was particularly common. It appeared, subjectively, that at least 90 per cent of birds seen on this leg were flying east or southeast.

The return journey from Aldabra to Latham Island coincided with a westward-flowing current and somewhat reduced southeasterly winds. Bird sightings were very infrequent and comprised a few S. fuscata only. On 11 October no sightings were recorded at all. It thus appeared that much more birdlife was associated with the counter-equatorial current.

The only palaeartic migrants seen at sea were Arenaria interpres. As already stated, these were flying due east toward Remire. The greatest number of such species (8) was seen in the Aldabra atoll, which is the southernmost island on the cruise and the nearest to Africa. The flight direction of A. interpres and the distribution of species suggest that palaeartic migrants might reach the Amirantes, Seychelles and Aldabra Islands from the African mainland to the west and not from Asia. If such is the case sea crossing is greatly reduced.

Moreau (1940) was of the opinion that Sula leucogaster did not occur on Latham Island and that S. dactylatra was the only species present there. The current data prove conclusively that both species inhabit and breed on Latham Island.

The land birds collected are better discussed by workers in a position to compare them with other collections because of their evolutionary and taxonomic interest. They have been discussed by Benson (1970).

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These records would not have been possible without the permission of the Director of the East African Marine Fisheries Research Organisation, Mr B. Bell. His co-operation and assistance are gratefully acknowledged. I would like to express my appreciation for assistance and encouragement to A. L. Archer, C. W. Benson, A. D. Forbes-Watson, M. Gwynne, N. Merrit, and the skipper of the Manihine, M. Williams. I am indebted to Dr R. H. Carcasson who, as Curator of the National Museum of Kenya, requested me to make the collection and identified some stomach contents; also for his permission to publish this report.

Summary

Observations are presented of 40 bird species recorded on a one-month cruise in the western Indian Ocean during September and October 1967. The cruise included stops in the Amirantes group, Seychelles, Aldabra group, and Farquhar.

At sea the greatest number of bird sightings was associated with the counter-equatorial current.

It is suggested that palaeartic migrants may reach the Amirantes, Seychelles and Aldabra groups from the African mainland.

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Observations are presented of 45 bird species recorded on a one-month cruise in the western Indian Ocean during September and October 1967. The cruise included stops in the Amirantes group, Seychelles, Aldabra group, and Zanzibar.

At sea the greatest number of bird sightings was associated with the counter-equatorial current.

It is suggested that palaeoecological records may reach the Amirantes, Seychelles and Aldabra groups of the African mainland.