

On the Sea Birds Observed during the Third Indian Antarctic Expedition

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ABSTRACT

The avian fauna of the southern oceans is rich and varied especially south of the sub-tropical convergence where the ocean is more productive at all the levels. The author had the opportunity of watching the sea birds between Mauritius and Antarctica during the Third Indian Expedition to the Antarctica (1983-'84). The birds observed generally belonged to penguins, albatrosses, petrels, prions, noddies, fulmars, terns and skuas. A total of 34 species were observed which come under 22 genera and seven families of which eight species were found to occur in the Antarctic continent and the adjacent sea.

The birds were found to have definite geographical limits in distribution. Some species namely Brown noddy, Dove prion, Kerguelen petrel, Blue petrel, Southern fulmar and Wilson's storm petrel were quite remarkable in having a very narrow geographical range. The wandering albatross, although appeared in small numbers seemed to range maximum latitudinally. Others which had a wide latitudinal range were the petrels which were numerically abundant too.

INTRODUCTION

The southern oceans south of the sub-tropical convergence is highly productive at the primary level on account of the strongly developed water currents and the associated upwelling of the nutrient rich sub-surface water. This leads to the multiplication of the zooplankton and other animals of the higher taxa which in turn form the forage, directly or indirectly, for a variety of marine animals at various levels of the food web including the sea birds. The Antarctic continent and the islands present in the higher latitudes provide suitable habitat for the breeding of sea birds. Thus the availability of rich food and undisturbed shelters make it congenial for the flourishing of a variety of bird populations in the southern oceans.

The author had the opportunity of watching the sea birds between Mauritius and Antarctica during the Third Indian Expedition to Antarctica in 1983-'84 period. Broadly, the species identified could be categorised into two; the birds observed enroute and those found in Antarctica and the adjacent sea. As a result of the observations 34 species belonging to 22 genera and seven families have been identified.

MATERIAL AND METHODS

A binocular of the power of 50 x 30 was used for watching the birds. They were watched in flight and some of them while resting or swimming in water. The identification of the species was done based on structure of body, colour of plumage, patterns of colour, flight characteristics, structure and colour of beaks and other similar distinguishable characters. Watching of birds was carried out mainly

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between Mauritius and Antarctica. However, while on return voyage observations could not be done north of 54°29' S owing to other priority assignments. The identification of birds was done mainly based on literature by Tuck and Heinzel (1980) and Harrison (1983).

SPECIES OF BIRDS IDENTIFIED

Family Spheniscidae

Genus *Aptenodytes*

Species 1. *A.forsteri* (Emperor penguin)

Three birds of emperor penguin were seen between 68°16'S and the Antarctica. Another two were found at 61°32'S on 7th March during the return journey. All were found standing on sea ice.

Species 2. *A.patagonica* (King penguin)

A solitary bird of this species was found swimming near the ship at 55°26'S on 9th March.

Genus *Pygoscelis*

Species 3. *P.adelie* (Adelie penguin)

Large numbers of adelie were sighted both on land and in the sea. However, none occurred on the sea ice or in the sea during the return journey. In December, they started appearing from 68°16'S and were present upto Antarctica. Over 100 birds were almost residents in the area where the expedition landed.

Genus *Eudyptes*

Species 4. *E.chrysolophus* (Macaroni penguin)

A single bird was found swimming near the ship on 4-3-'84 at about 68°00'S, was identified as Macaroni penguin. No other sighting of this bird during the entire expedition.

Family Diomedidae

Genus *Diomedea*

Species 5. *D.exulans* (Wandering albatross)

This circumpolar southern species was found to have the widest latitudinal range during the present studies. They were observed during the onward and return journeys. In December, the summer month, the latitudinal range was noted between 29°14'S and 54°17'S. The southern limit was seen to be further extended to 68°30'S towards the beginning of winter in March. In spite of the wide latitudinal range the number of birds seen was less, being 14 during the onward journey and seven during the return journey. Out of the five birds observed on 18th January, one was a two year old juvenile and another five year old. Sighting of this bird from north of 10°S or even from northern latitudes has been reported by Bourne (1967) and Robertson (1980).

Species 6. *D.chrysostoma* (Grey-headed albatross)

This was a commonly sighted bird though in lesser numbers. 12 birds were seen from 18th to 23rd December during the onward journey, with the maximum sighting four birds on 19th and three birds on 22nd. Only one bird each was observed on 8th and 9th March. Their overall latitudinal range varied between 40°00'S and 58°57'S. Next to wandering albatross this was the species which occurred over a wide latitudinal in summer with the exception of only white chinned petrel. The southern limit was extended by 98 nautical miles towards south in March.

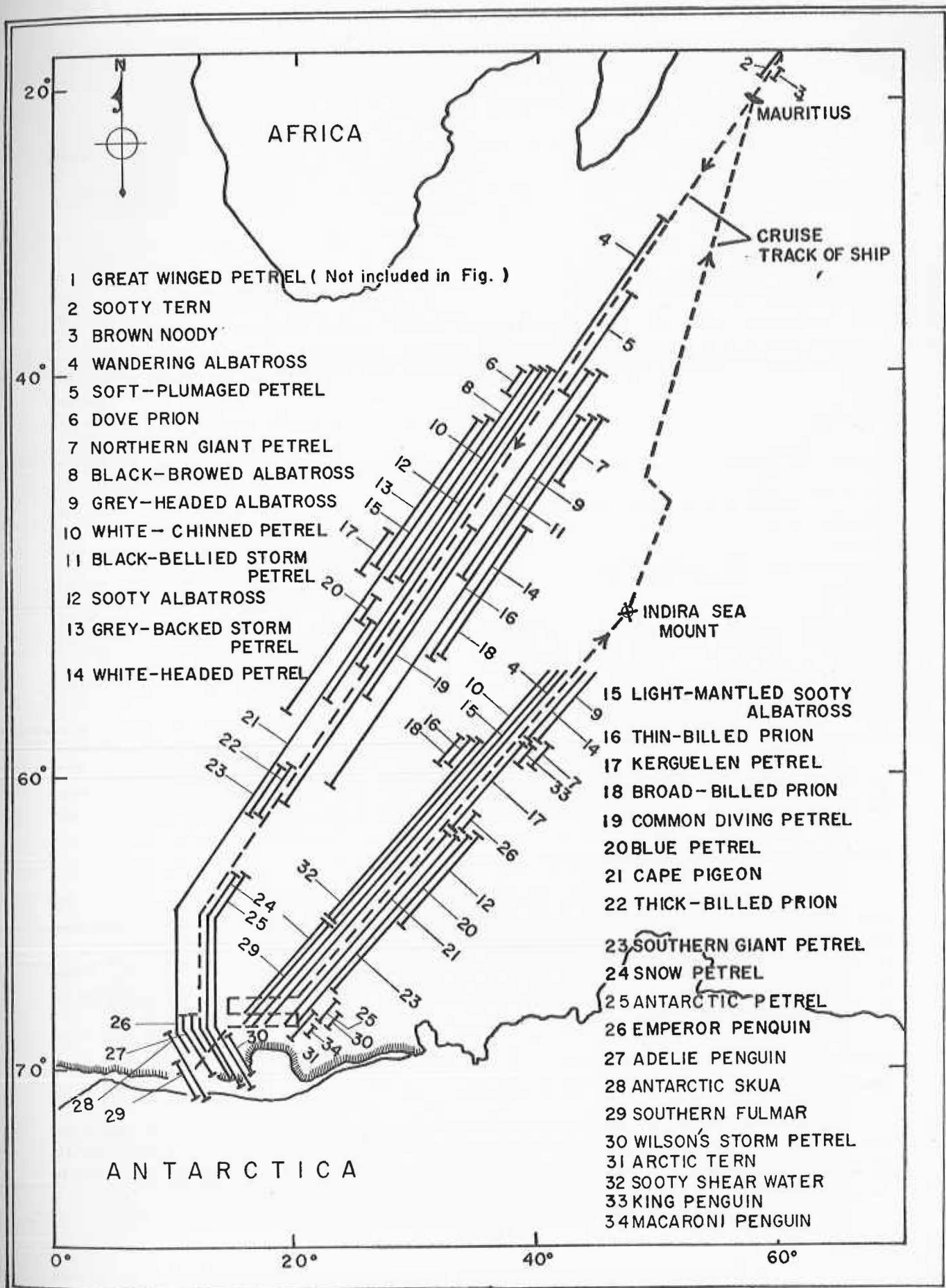


Fig. 1. Latitudinal limits of sea birds observed during the expedition.

Species 7. *D.melanophris* (Black-browed albatross)

Though a commonly distributed, circumpolar bird of wide latitudinal range in the southern oceans, the black-browed albatross was observed on two days only along with the Sooty albatross and the Northern giant petrel. One specimen each was seen on 18th and 19th December between 40°00'S and 45°17'S. There was no sighting during the return journey.

Genus *Phoebastria***Species 8. *P.fusca* (Sooty albatross)**

Among the albatrosses observed, this species was the one found rarer. Only four birds were seen during the onward journey on 18th and 19th December. Also they were found restricted to a very narrow latitudinal belt between 40°S and 47°17'S. However, a single bird was found at latitude 63°35'S during the return journey thus indicating its wide distribution. Cousteau (1974) observes that while most albatrosses stay between 20° and 60°S, the Sooty albatross range upto Antarctica.

Species 9. *P.palpebrata* (Light-mantled sooty albatross)

This was a species rarely observed during December, but were quite significant in having a wide ranging distribution in March along with the wandering albatross. During summer their latitudinal range was quite narrow between 42°30'S and 49°39'S. In winter they were found to have extended their distribution far south upto 68°30'S. While only three birds were seen in December, 11 were sighted in March.

Family Procellariidae**Genus *Macronectes*****Species 10. *M.giganteus* (Southern giant petrel)**

Though in small numbers, the southern giant petrel was found distributed over a wide latitudinal range and was observed during onward and return journeys. A single bird was observed on 23rd December at 69°30'S. Another six birds were sighted on three days from third to sixth March between 63°35'S and 68°30'S. These birds were found to move northwards towards the beginning of winter.

Species 11. *M.halli* (Northern giant petrel)

During summer, these birds were observed along with Sooty albatross in fewer numbers on 18th and 19th December between 40°00'S and 45°17'S. Two birds each were seen on both the days after which they disappeared. The normal latitudinal range suggested by Harrison (1983) extends as far south as Antarctic convergence. A single bird was sighted on the return voyage too at 57°12'S. These birds were found to glide in the air with occasional wing flaps. They used to feed in water churned up by the propeller of the ship.

Genus *Fulmarus***Species 12. *F.glacialoides* (Southern fulmar)**

Eventhough these were found during both onward and return trips more were seen during the latter. But while their latitudinal range was more towards the south in December (68°58'S to 70°01'S), their distribution in March was found between 60°19'S and 68°00'S, thus showing a tendency to move towards north with the advent of the winter.



Plate 1. 1 & 2. Ventral and dorsal views of Antarctic petrel. (a specimen fell and died on the ship's deck)
 3 & 4. Ventral and dorsal views of Wilson's storm petrel (a specimen fell and died on the ship's deck)
 5. A group of Adelie penguins at their resting place near the coast.

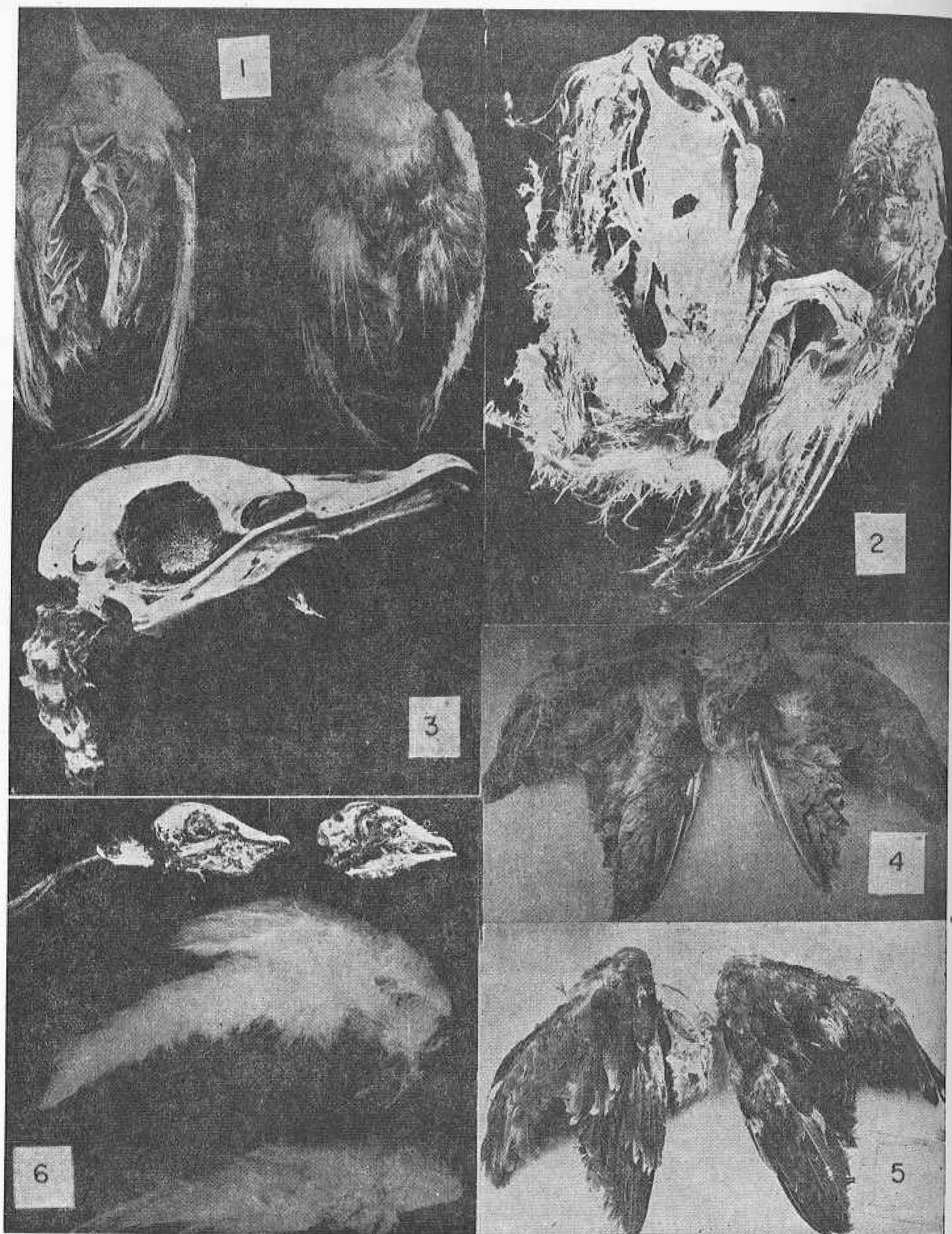


Plate II. Bird remains collected from the Schirmacher mountains. 1. Ventral and dorsal views of a juvenile Antarctic skua. 2. Ventral view of another juvenile skua. In both the specimens the belly was found cut open. 3. Skull and cervical vertebrae of a specimen of skua. 4 & 5. Ventral and dorsal views of a pair of wings of skua. 6. Skulls and wings of snow petrel.

Genus *Puffinus*

Species 13. *P.griseus* (Sooty shear-water)

This bird was found during the return trip only. However, they appeared in large numbers on 7th March at 61°32'S after which they disappeared. A single specimen was sighted again on 9th March.

Genus *Daption*

Species 14. *D.capensis* (Cape pigeon)

This species also had a wide latitudinal range in December and was seen almost upto Antarctica. However, when compared to March the occurrence was sparse. While only 29 birds were seen during a period of five days between 52°06'S and 69°30'S in December, 81 birds were seen in March with the maximum occurrence of 50 on 5th March. The southernmost limit of the species was the same in both the months.

Genus *Pagodroma*

Species 15. *P.nivea* (Snow petrel)

The Snow petrel was one of the birds found upto Antarctica. They occurred abundantly from 25th to 28th December during the onward journey. They were quite common over the coastal areas of the continent and were sighted both during summer and early part of the winter. They were sighted upto 6th March during the return journey. Eventhough there was no change in their northern limit of distribution in December and March, their population had highly thinned out during the latter month. Thus while hundreds of such birds were sight-recorded in December, only 10 birds were seen in March. A numerical estimate of the birds was not made during the stay of the expedition in Antarctica for fear of counting the same birds seen everyday.

Genus *Thalassoica*

Species 16. *T.antarctica* (Antarctic petrel)

This was the only species which occurred consistently through summer to the early part of winter from 63°23'S to 70°01'S and also over the continent. Maximum sightings were made on 26th December when hundreds of them folked around the ship. While in Antarctica this was a frequently seen bird. During the return trip large numbers of them were seen around 68°S.

Genus *Halobaena*

Species 17. *H.caerulea* (Blue petrel)

This circumpolar species was one of the commonest species observed in large numbers during the return journey. About 225 birds were seen on three days from 5th to 7th March between latitudes 60°19'S and 67°24'S with an increasing trend towards the south. During the onward trip only a single bird of this species was sighted at 57°19'S. They are known to migrate as north as 20°S during the austral winter (Meeth & Meeth, 1977).

Genus *Pachyptila*

Species 18. *P.vittata* (Broad-billed prion)

This circumpolar bird was a moderately present species during December. A total of 50 birds were observed during three days from 20th to 22nd December from 42°30'S to 54°17'S. Maximum number of 40 were seen on 21st December. In March they were recorded from further south around 57°12'S. However, only 10 birds were sighted on 8th March.

Species 19. *P.desolata* (Antarctica prion)

This small sized circumpolar bird was found in dense flock on 18th December between latitude 40° and 41°S. Surprisingly they were not found on the subsequent days nor were they sighted during the return trip in March.

Species 20. *P.belcheri* (Thin-billed prion)

This was another abundant bird species observed during the expedition. They were first seen at 42°30'S in hundreds on 19th December. On the next two days only about 50 each of the birds were seen with no sighting on 22nd December. Again on 23rd they reappeared in hundreds. These suggest that it is a flocking bird. This species was sighted only once (two birds) in March around 57°12'S. However, they were found to withdraw their distributional range in March towards north.

Species 21. *P.crassirostris* (Thick-billed prion)

Only a single specimen was observed during the entire expedition. The bird was seen on 23rd December at 61°12'S.

Genus *Procellaria***Species 22. *P.aequinoctialis* (White-chinned petrel)**

In summer even though found in small numbers, this species was found over a wide latitudinal range. They are found from 18th to 23rd December with nil records on 19th, 21st and 22nd. A total of only six birds of this circumpolar species were seen of which four numbers, were sighted on 23rd. On the other hand this was a very common species observed during the return journey. A total of 108 birds were sighted during four days from 6th to 9th March between 54°29'S and 64°40'S. From its summer limit of 57°19'S the distributional range was found extended upto 64°40'S.

Genus *Pterodroma***Species 23. *P.macroptera* (Great-winged petrel)**

This circumpolar species of the southern ocean was the first bird observed since the author started his regular bird watching during the expedition. The latitudinal range of this bird according to Harrison (1983) is between 20° and 40°S. However, during the present observations, four birds were seen between 13°50'S and 16°07'S on 9th December. Since the present observed limit extends far north of the recorded conventional limit, it needs to be further confirmed by regular observation.

Species 24. *P.lessoni* (White-headed petrel)

The summer and winter ranges of this circumpolar species in no way overlapped. Eight birds were seen between 19th and 22nd December with the maximum of five on 22nd. However, no bird of this species was sighted on 21st. Their southern limit in summer was 54°17'S while in March it reached upto 58°57'S. In March seven birds were seen on 8th and 9th.

Species 25. *P.brevirostris* (Kerguelen petrel)

This was a species which was frequently sighted in March though over a narrow latitudinal range. Fifteen birds were each seen on 7th and 8th March between 57°12'S and 61°32'S whereas only a single bird was found in December at 49°39'S.

Species 26. *P.mollis* (Soft-plumaged petrel)

This species which enjoys a discontinuous distribution in the Atlantic and Indian Ocean was found restricted to a very narrow range during the present observations. Three birds each were sighted on 17th and 18th December between 35°S and 41°S.

Family Hydrobatidae

Genus *Bulweria*

Species 27. *B.bulwerii* (Wilson's storm petrel)

The northern limit of this bird in December was almost the same as that of Southern fulmar. Eventhough frequently seen, this small bird appeared in small numbers. A few of them were seen in March also as north as 66°30'S.

Genus *Garrodia*

Species 28. *G.nereis* (Grey-backed storm petrel)

Altogether 22 birds were sighted on 19th and 20th December between 42°30'S and 49°39'S with the maximum of 20 on the latter date. No sighting during the return journey.

Genus *Fregetta*

Species 29. *F.tropica* (Black-bellied storm petrel)

A single specimen of this bird was seen on 19th December around 42°30'S. No sighting while on return trip.

Family Pelicanidae

Genus *Pelicanoides*

Species 30. *P.uricatrix* (Common diving petrel)

Eventhough sighted over a wide latitudinal range of 48°00'S to 61°12'S they never occurred in large numbers. This species was not sight recorded during March. In December a single bird was seen on 20th after which the next sighting was on 23rd when six specimens were observed.

Family Sternidae

Genus *Sterna*

Species 31. *S.paradisaea* (Arctic tern)

These were observed right from the Antarctic continent upto 67°33'S during the return journey only. A total of 35 birds were seen.

Species 32. *S.fuscata* (Sooty tern)

Hundreds of birds of this species were observed north of Mauritius on 9th and 10th December between 13°50'S and 16°07'S.

Genus *Anous*

Species 33. *A.stolidus* (Brown noddy)

About 150 birds of this pantropical species were observed around Mauritius on 10th December within a close range (19°00'S and 19°18'S). These birds are usually found around islands in the Atlantic, Indian and Pacific oceans and enjoy wide distribution. However, during the present observations they were not found south of Mauritius.

Family Stercorariidae**Genus Catharacta****Species 34. *C. antarctica* (Antarctic skua)**

A very frequently seen bird in Antarctica and in the adjacent sea but in smaller numbers. During the way to Antarctica 18 birds, including one which came and rested in the ship, were sighted from 68° 58'S southward. These birds were seen also at the Schirmacher mountains, about 70 km from the coastal Antarctica.

DISCUSSION

The present studies indicated that the sea bird fauna of the area under observation was rich and varied south of the sub-tropical convergence, especially south of 40°S latitude. Some of the birds observed were found to enjoy a wider latitudinal range; the striking example being the Wandering albatross which ranged between 29°14'S and 54°17'S in December, 1983 (Fig. 1). In March they were sighted further south, from latitude 68°30'S northwards at a time when the winter had just set in in the southern hemisphere. The other species which showed wider latitudinal ranges during the present observations were the Grey-headed albatross, Light-mantled sooty albatross, White-chinned pterel and Thin-billed prion which, however, were found always in smaller numbers (Fig. 1).

Some of the observed species were found to have a very narrow latitudinal range. Of them while some namely Dove prion and Antarctic petrel were remarkable for their large numbers, others were represented by few numbers. Only one specimen each of the Black-bellied storm petrel and Thick-billed prion, King penguin and Macaroni penguin could be seen during the entire period of the expedition.

In March, 1984, in spite of the prevailing winter conditions in the southern hemisphere the distributional limits of 10 species as noticed in December, 1983 during the onward journey to Antarctica was found to have extended further southward. They included, apart from the Wandering albatross, the Northern giant petrel, Broad-billed prion, Cape pigeon and Southern giant petrel. In fact more number of species were seen to be present between latitude 60° and 65°S towards the beginning of winter than during the summer.

There were also a few species which were found to have extended their latitudinal range further northwards as noticed during the return voyage. The species thus observed were the Emperor penguin Southern fulmar and Wilson's storm petrel. The Sooty tern, Black-browed albatross and Northern giant petrel which were found in very small numbers shared the same latitudinal range which was too narrow.

The Dove prion was found on one day only during the onward journey. However, when occurred the species was represented by large numbers. Four species namely the Arctic tern, Sooty shearwater, King penguin and Macaroni penguin were sighted during the return journey only.

Three species of birds were observed around Mauritius. Of them the Sooty tern and Brown noody were represented by large numbers. The Great winged petrel was found sparsely.

Out of the five species of albatrosses sighted, the Wandering albatross was the commonest. They were first sighted on 16th December, 1983 around 29°14'S. However, the birds never appeared in large numbers. Once sighted they were found to follow the ship for hours together picking up the garbage thrown out from the ship. Most of the Wandering albatrosses sighted were sub-adults or juveniles while a few were adults. Their effortless flights even in stormy conditions without even a single wing flap were remarkable.

Four species of prions namely Dove, Thin-billed, Thick-billed and Broad-billed prions were identified. These small birds were the most abundant. Their identification was often difficult especially when they were found in herds making active flights just above the water surface.

At about 1500 hrs on 20th December around 49°30'S, while the ship was cruising, one bird of the species Antarctic skua perched on the main deck of the ship. It drank the snow melt fresh water present on the deck, took rest for some time and flew away. Three species of birds namely Sooty tern, Antarctic petrel and Wilson's storm petrel fell on the deck in the early mornings after hitting against the ship's communication antennae. On 10th December, at about 0500 hrs, one sooty tern fell on the deck. After some time the bird flew away. The second incident happened in the morning of 4th March when one specimen each of Antarctic petrel and Wilson's storm petrel fell on the deck. The birds were caught and examined carefully for their morphological features.

Antarctic petrel: Medium size; total length 40 cm; wing span 96 cm; head, upper neck and back brown; sides of neck and throat slightly paler; upper wings brown showing a broad white outer area; upper tail coverts and tail white; tip of tail feathers black; major part of underwing white; chest and belly white; bill black; legs yellowish grey.

Wilson's storm petrel: Very small; total length 18 cm; wing span 37 cm; bill black; upper parts brownish black; tail black and square but rounded towards tip; legs long and slender; webbs yellowish; a clear patch of white feather above the rump.

Out of the four species of penguin observed, two species namely Emperor penguin and Adelie penguin were found on the sea ice and on the shelf ice. The Adelie were observed in the sea also, feeding actively by diving. This was the species of penguins often met with especially in groups of 10 to 30 or even more.

A group of about 100 Adelie penguins was seen to have made an almost permanent habitat on hardened cement blocks, free of ice at one of the old Russian dumps very close to the shelf edge. They were observed very closely for their behaviour and temperaments. The Adelie in group were not so gentle as they appeared to be. Even bleeding birds were seen in this group. Their inquisitiveness brought them near to the ship as soon as it reached the shelf.

The skuas are real scavengers. They were found following the ship picking up wastes thrown out from the galley. This habit was found also when the ship was moored near the ice shelf. On the shelf the skuas were found teasing the penguins. At the mountainous region these birds used to visit the waste dumping place, to pick up whatever edibles they could find.

In the Schirmacher mountains, in a rocky valley, the remains of dead birds were found scattered over a small area. The species belonged to Snow petrel, Antarctic skua and Wilson's storm petrel. While most of the specimens were in a deteriorated condition, the others intact revealed that they were hunted upon by some predatory birds, as the belly portion was found cut open in all the cases. The inner parts were eaten away. It is quite possible that during the lean months of poor food supply the skuas eat upon other birds and also smaller ones of the same species. The remains of the birds were found scattered in small numbers elsewhere also.

During the First Indian Expedition to Antarctica, Parulaker (1983) had made some observations on sea birds as a result of which 13 species were identified. Of these nine are in common with the present list. The remaining four species namely Yellow-nosed albatross, Antarctic tern, King shag and Dominican gull, have not been sighted during the present observations. The occurrence of King shag near to the Antarctic continent as reported by Parulaker (1983) is highly improbable.

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