RESULTS OF PATROLS FOR BEACHED SEABIRDS CONDUCTED IN SOUTHERN AFRICA IN 1983

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ABSTRACT

During 1983 regular beach patrols by the African Seabird Group were conducted in nine areas of the Cape Province, South Africa and South West Africa/Namibia. A total of 1 136 seabirds of 33 species was recovered over a total distance of 1 678 km, an average of 0,68 birds/km. The most abundant species was the Cape Cormorant *Phalacrocorax capensis* (515 specimens, 45 %). Single specimens of Antarctic Fulmar *Fulmarus glacialoides*, Little Shearwater *Puffinus assimilis* and Black Tern *Chlidonias niger* were recovered. Twelve ringed birds representing three species were recovered. Forty-five non-seabirds were recovered. Fluctuations in the mortality of Cape Cormorants since 1977 show a strong correlation with phenomena observed during environmental anomalies of the Southern Oscillation. Localized effects of oil from the wreck of the *Castillo de Bellver* are discussed.

INTRODUCTION

This is the seventh annual report on patrols for beached seabirds conducted by the African Seabird Group since 1977 (Cooper 1978, Avery 1979, 1980, 1981, 1982, 1984). For the first time data are available from the Skeleton Coast Park, South West Africa/Namibia.

RESULTS

During 1983 regular monthly surveys were restricted to seven localities in the Cape Province, South Africa and two areas in the Skeleton Coast Park, South West Africa/Namibia (Fig. 1, Table 1). Although data for the Skeleton Coast Park were collected on a monthly basis from between Cape Fria and Cape Cross, the areas covered varied. Because of this fact and the distances involved the surveys have been divided into two units, one north of the Hoanib River mouth and the other south of Terrace Bay. A new survey was initiated by G.E. Rudings at Noordhoek Beach on the Cape Peninsula (Fig. 1).

A total of 1 136 birds of 33 species was found over a total of 1 678 km patrolled. This represents a density of 0,68 seabirds/km (Table 1), a figure that is clearly influenced by the nature and length of the Skeleton Coast Park surveys. If the Skeleton Coast Park surveys are excluded, the density rises to 1,45/km which, although one of the highest densities recorded so far, is more consistent with survey results prior to the Skeleton Coast Park surveys (Cooper 1978, Avery 1979, 1980,

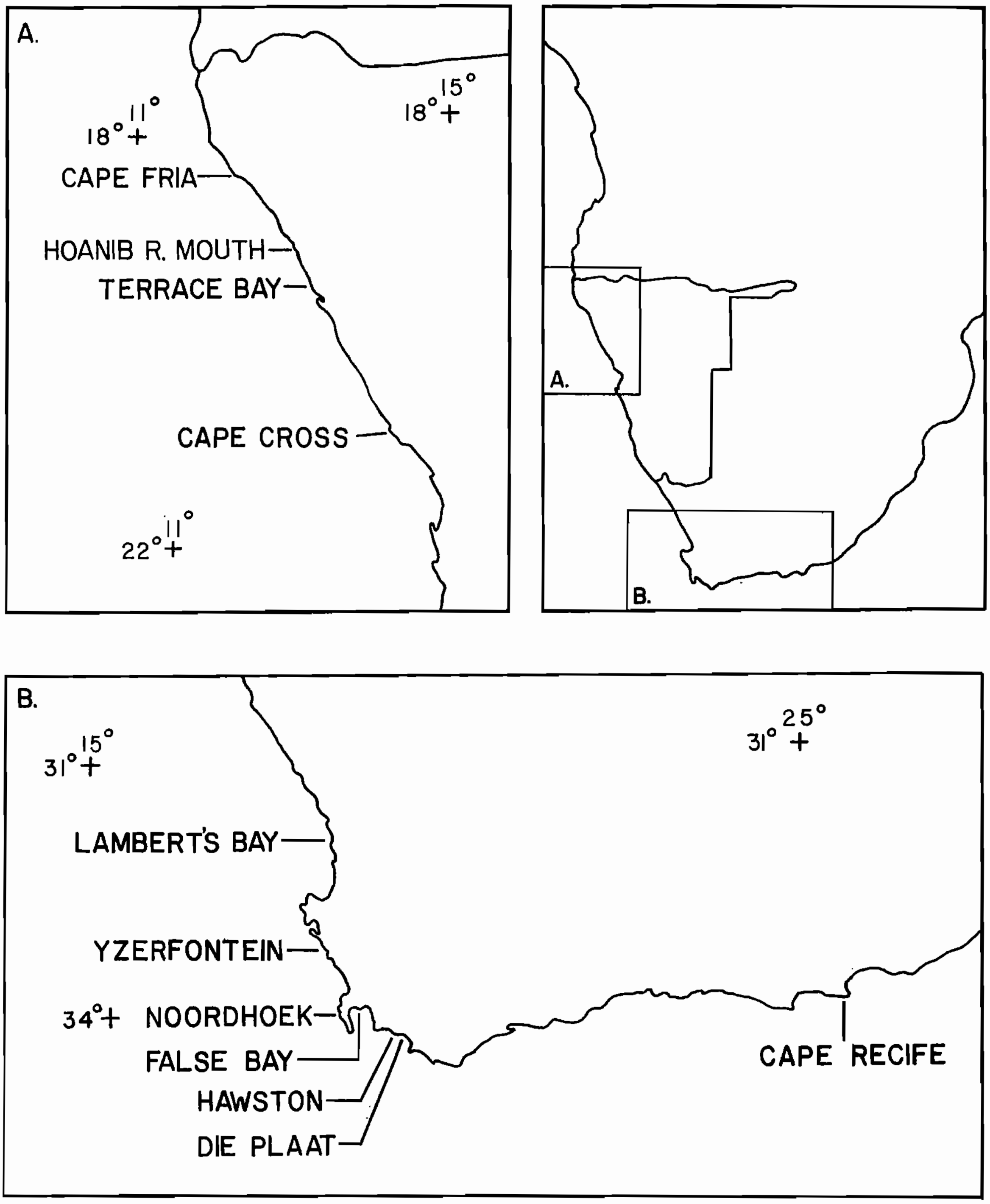

Figure 1

Localities of regular monthly patrols for beached seabirds in southern Africa in 1983

TABLE 1

PATROLS FOR BEACHED SEABIRDS, 1983: AREAS COVERED

Area	Length (km)	Distance covered (km)	No. Seabirds	No./km	Transport	Organizer
S.C.+ Park north	-	400	26	0,07	vehicle	S.Braine
S.C. Park south	-	560	69	0,12	vehicle	R.Loutit
Lambert's Bay*	1	12	110	9,17	foot	A.Berruti
Yzerfontein	15	180	352	1,96	vehicle	G.Avery
Noordhoek**	4,5	54	7	0,13	foot	G.E. Rudings
False Bay	20	240	369	1,54	foot	G.Avery
Hawston	5	60	30	0,50	foot	S.T. Baron
Die Plaat	5	60	26	0,43	foot	S.T. Baron
Cape Recife	5	60	47	0,78	foot	J.A. Spearpoint/ B. Every
Various	-	52	100	1,92	foot/ vehicle	-
Total	-	718	1 041	1,45	-	-

+ Skeleton Coast Park
* excluding September
** initiated February

1981, 1982, 1984). Only 52 km were covered on non-regular patrols in the southwestern Cape.

The most abundant seabird found was the Cape Cormorant *Phalacrocorax capensis* (515 specimens, 45 %) followed by the Jackass Penguin *Spheniscus demersus* (124 specimens, 11 %), the Cape Gannet *Sula capensis* (96 specimens, 8 %), Kelp Gull *Larus dominicanus* (70 specimens, 6 %), Sooty Shearwater *Puffinus griseus* (44 specimens, 4 %) and the Common Tern *Sterna hirundo* (32 specimens, 3 %). Six of the 33 species made up 77 % of the specimens found. As previously, much the same species were commonest although the proportions have varied from year to year (Avery 1982).

Single specimens of Antarctic Fulmar *Fulmarus glacialoides* and Little Shearwater *Puffinus assimilis* were recovered from False Bay. A single specimen of the Black Tern *Chlidonias niger* was recovered from the southern area of the Skeleton Coast Park. There were no large prion *Pachyptila* spp. wrecks during 1983.

Twelve ringed birds were recovered (Table 3). The majority of the specimens, from Yzerfontein, were juvenile Cape Gannets ringed nearby by members of the Sea Fisheries Research Institute. One specimen, ringed at Bird Island, Algoa Bay in the eastern Cape, was recovered at Yzerfontein within a month of ringing after travelling some 900 km. A Sandwich Tern *Sterna sandvicensis* (X500761) and Common Tern (1104235) were recovered eleven years and a Common Tern (259635) twelve years after ringing.

Forty-five non-seabirds were found, only two of which were shorebirds (Table 4). Members of the Columbidae were again the most abundant (73 %).

DISCUSSION

If the effect of the increased distances covered in South West Africa/Namibia is taken into account it is clear that the pattern of results continues to be relatively consistent with a low density of seabirds in most localities from year to year in spite of the influence of periodic wrecks and mass mortalities. Species composition remains consistent for the more common coastal birds although actual proportions vary. The regular occurrence of large numbers of the Columbidae is presumably a result of their use of coastal cliffs and islands for breeding and exhausted homing pigeons being blown off course.

The occurrence during the summer of 1982-83 of an exceptionally well-marked El Nino/Southern Oscillation event (Barber & Chavez 1983) had far-reaching global effects on various taxa, particularly pelagic fish and seabirds such as cormorants. The African Seabird Group was particularly interested in whether the effects on birds monitored in the southern Benguela ecosystem (Duffy *et al.* 1984) were also reflected by seabird mortality recorded during west coast beach surveys. Although the results obtained from beach patrols vary annually they nevertheless reflect very closely the relative proportions of common breeding species on the west coast (Fig. 2 in Avery 1984, G. Avery unpubl. data). It is reasonable, therefore, to use these data on seabird mortality as indices of relative Jackass Penguin,

TABLE 2

PATROLS FOR BEACHED SEABIRDS, 1983: SPECIES COMPOSITION

Species	S.C.P. North	S.C.P. South	Lambert's Bay	Yzerfontein	Noordhoek	False Bay	Hawston	Die Plaat	Cape Recife	Various	Total
Jackass Penguin *Spheniscus demersus*	1	0	4	43	0	29	4	9	15	19	124
Wandering Albatross *Diomedea exulans*	0	0	0	0	0	0	0	0	0	2	2
Shy Albatross *Diomedea cauta*	0	0	0	0	0	1	0	0	0	0	1
Blackbrowed Albatross *D. melanophris*	2	2	0	5	0	0	0	0	0	0	9
Yellownosed Albatross *D. chlororhynchos*	1	0	0	1	0	1	0	0	0	0	3
Albatross indet. *Diomedea* sp.	1	0	0	3	0	0	0	0	1	0	5
Giant petrels *Macronectes* spp.	0	0	0	0	0	1	0	0	0	0	1
Antarctic Fulmar *Fulmarus glacialoides*	0	0	0	0	0	1	0	0	0	0	1

Pintado Petrel *Daption capense*	0	0	0	1	0	0	0	0	0	0	1
Broadbilled Prion *Pachyptila vittata*	0	0	0	2	1	0	0	0	0	0	3
Antarctic Prion *P. desolata*	0	0	0	15	0	1	0	0	1	2	19
Slenderbilled Prion *P. belcheri*	0	0	0	0	0	1	0	0	0	0	1
Prion indet. *Pachyptila* spp.	0	0	0	11	0	1	0	0	0	10	22
Whitechinned Petrel *Procellaria aequinoctialis*	1	1	0	7	0	5	0	0	4	7	25
Cory's Shearwater *Calonectris diomedea*	0	0	0	0	0	1	0	0	0	0	1
Great Shearwater *Puffinus gravis*	0	1	0	0	0	1	0	0	0	0	2
Sooty Shearwater *P. griseus*	0	1	1	9	0	29	2	0	0	2	44
Little Shearwater *P. assimilis*	0	0	0	0	0	1	0	0	0	0	1
Wilson's Stormpetrel *Oceanites oceanicus*	0	0	0	0	0	1	0	0	0	0	1
Cape Gannet *Sula capensis*	7	22	4	65	2	48	8	9	13	16	194
Whitebreasted Cormorant *Phalacrocorax carbo*	0	3	0	1	0	9	2	0	0	0	15

Cape Cormorant *P. capensis*	11	27	88	138	2	191	9	7	8	34	515
Bank Cormorant *P. neglectus*	0	0	1	4	1	3	0	0	0	0	9
Crowned Cormorant *P. coronatus*	0	0	0	3	0	2	0	0	0	0	5
Cormorant indet. *Phalacrocorax* spp.	0	0	1	0	0	0	0	0	0	0	1
Kelp Gull *Larus dominicanus*	0	0	9	30	1	21	0	0	1	8	70
Hartlaub's Gull *L. hartlaubii*	0	0	2	2	0	5	0	0	0	0	9
Swift Tern *Sterna bergii*	0	0	0	0	0	2	0	0	0	0	2
Sandwich Tern *S. sandvicensis*	0	4	0	0	0	4	1	1	0	0	10
Common Tern *S. hirundo*	2	5	0	9	0	10	4	0	2	0	32
Arctic Tern *S. paradisaea*	0	2	0	3	0	0	0	0	0	0	5
Black Tern *Chlidonias niger*	0	1	0	0	0	0	0	0	0	0	1
Tern indet. *Sterna* spp.	0	0	0	0	0	0	0	0	2	0	2
TOTAL	26	69	110	352	7	369	30	26	47	100	1 136

TABLE 3

RECOVERIES OF RINGED BIRDS: 1983

Species	Number	Ringing locality & date	Recovery site	Date
Cape Gannet *Sula capensis*	906932	Marcus Island, 19 Oct 1983	Yzerfontein	26 Nov 1983
	917395	Malgas Island, 21 Feb 1983	Yzerfontein	19 Mar 1983
	922397	Malgas Island, 21 Feb 1983	Yzerfontein	21 Apr 1983
	922410	Malgas Island, 21 Feb 1983	Yzerfontein	19 Mar 1983
	928974	Malgas Island, 23 Feb 1983	Yzerfontein	19 Mar 1983
	929237	Malgas Island 14 Jan 1983	Yzerfontein	19 Feb 1983
	927324	Bird Island, Algoa Bay, 17 Mar 1983	Yzerfontein	21 Apr 1983
	933798	Bird Island, Algoa Bay, 26 Feb 1983	Swartklip, False Bay,	07 May 1983
Sandwich Tern *Sterna sandvicensis*	XS 00761	Farne Islands, England, 14 Jul 1972	Die Plaat	17 Dec 1983
	1104235	Griend, Holland 29 Jan 1972	Toscanini, Skeleton Coast Park	27 Oct 1983
Common Tern *S. hirundo*	259635	Dassen Island, 16 Dec 1971	Yzerfontein	24 Dec 1983
	BB 47111	Dassen Island, 12 Nov 1983	Yzerfontein	24 Dec 1983

TABLE 4

NON-SEABIRDS FOUND DURING BEACH PATROLS: 1983

Species	Number
Reed Cormorant *Phalacrocorax africanus*	1
Grey Heron *Ardea cinerea*	1
Sacred Ibis *Threskiornis aethiopicus*	1
Greater Flamingo *Phoenicopterus ruber*	1
Greywing Francolin *Francolinus africanus*	1
Turnstone *Arenaria interpres*	1
Sanderling *Calidris alba*	1
Rock Pigeon *Columba guinea*	19
Feral/Homing Pigeon *C. livia*	10
Cape Turtle Dove *Streptopelia capicola*	2
Laughing Dove *S. sengalensis*	2
Marsh Owl *Asio capensis*	1
Black Swift *Apus barbatus*	1
Cape Wagtail *Motacilla capensis*	1
Fiscal Shrike *Lanius collaris*	1
European Starling *Sturnus vulgaris*	1
Total	45

Cape Gannet and Cape Cormorant populations. This permits examination of the data for long term population changes which can be compared with the biological and physical trends associated with exceptional Southern Oscillation events.

The relative proportions of Jackass Penguin, Cape Gannet and Cape Cormorant from Yzerfontein were calculated for each year between 1977 and 1983 and compared with the annual densities of all species recorded on west coast surveys (Koeberg, Yzerfontein, Elands Bay, Lambert's Bay) (Fig. 2). The peak in density shown by the combined west coast surveys during 1982 reflects the initiation of the Lambert's Bay survey and the concomitant occurrence of a mass mortality of Cape Cormorants there (Avery 1984). The Yzerfontein data provide continuous information. The beach surveys were initiated in the second half of 1977 and the density and mortality values, particularly for Cape Cormorants, are consequently different than would have been the case for the full year. Data for the whole year would have increased the number of Cape Cormorants at the expense of Jackass Penguins. Cape Gannets would have remained relatively stable. Density would be affected less because the months of highest mortality (October-April) are more or less evenly spread, with slightly higher values in the first half of the year which might raise the density (G. Avery unpubl. data).

It is evident from Fig. 2 that the proportions of Jackass Penguins and Cape Cormorants not only vary considerably from year to year but do so inversely. Cape Gannets show very little fluctuation, and tend to follow the same pattern as the Jackass Penguin. Assuming that the 1977 Cape Cormorant value should be at least slightly higher, this species reflects an initial downward trend in mortality to 1979, after which there is a steady increase to 1982 with an abrupt downswing to 1983. The Jackass Penguin follows an almost exactly inverse trend. Density, which is clearly influenced by fluctuations of Cape Cormorants, follows a trend similar to that of this species. The patterns of density and Cape Cormorant mortality (Fig. 2) correlate strongly with fluctuations of mean summer sea surface temperatures and warm events recorded for the west coast of the Cape Peninsula (Fig. 8 in Walker *et al.* 1984) and some trends in Pilchard *Sardinops ocellata* and Anchovy *Engraulis capensis* recruitment in the Benguela region for the same period (Fig. 6 in Shannon *et al.* 1984). The available data suggest, therefore, that the drop in overall beached-seabird density and Cape Cormorant mortality from 1977 is consistent with the occurrence of the relatively strong Southern Oscillation in 1976 (Rasmusson 1984) and which was preceded in the northern Benguela system by a localized mass mortality of Cape Cormorants in 1975 (Crawford *et al.* 1980). La Cock (in press) has shown that peaks of Cape Cormorant mortality often occur, as illustrated by Fig. 2, in the year preceding a warm event.

That Jackass Penguins and Cape Gannets are not as adversely affected by warm events (Duffy *et al.* 1984) is evident from the inverse relationship shown by the mortality of these species to that of Cape Cormorants (Fig. 2). The mortality of Cape Gannets, which have a varied diet and a very large foraging range (Cooper 1984), shows little variation and this species is not adversely affected by environmental anomalies. Jackass Penguins, which can forage in small groups on smaller, varied, dispersed and deeper prey (Wilson in press), are clearly well

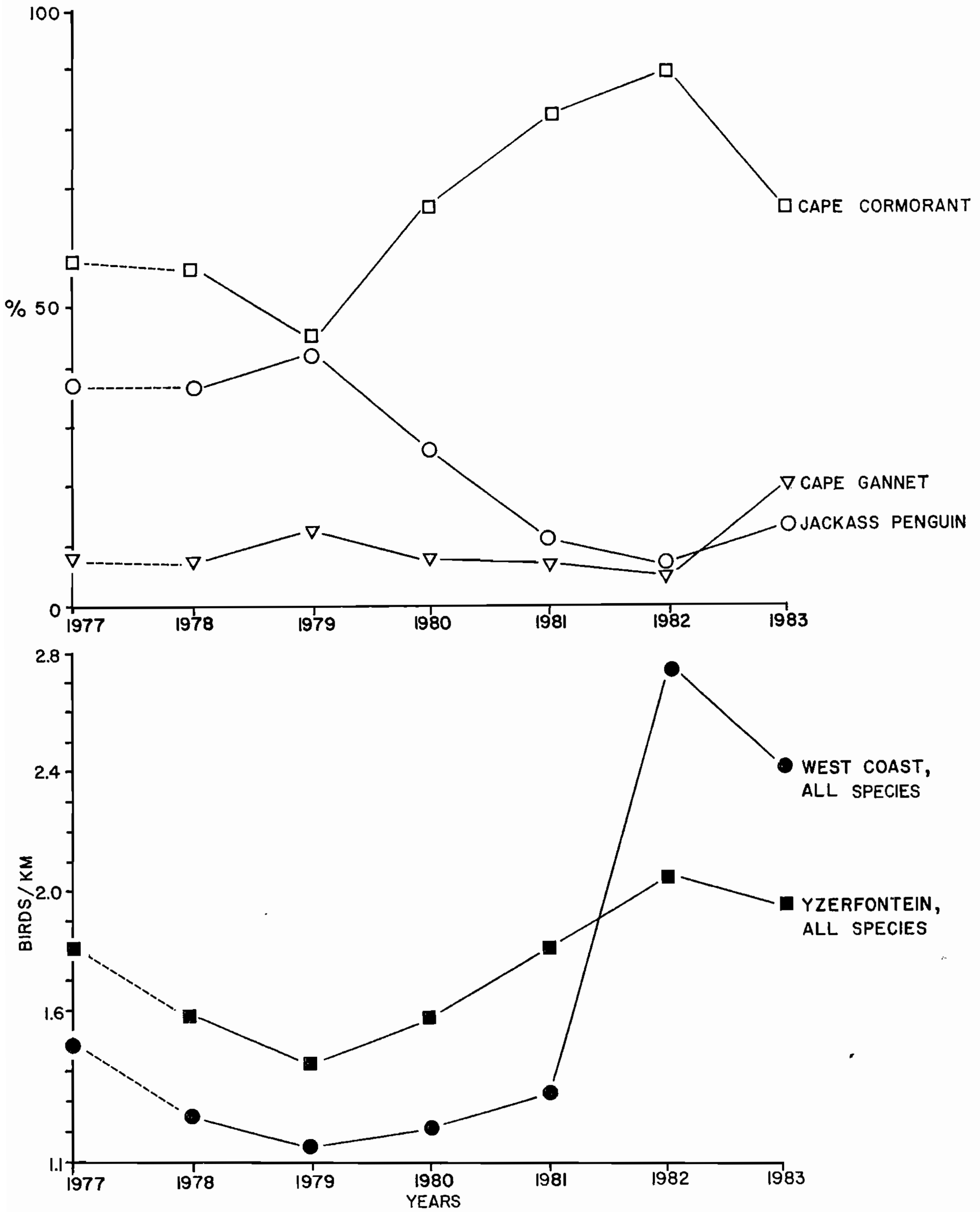

Figure 2

Relative proportions of Jackass Penguins, Cape Gannets and Cape Cormorants and densities (birds/km) of all birds recorded on west coast beach patrols between 1977 and 1983 adapted to anomalous environmental conditions since their mortality drops significantly during these events. By contrast, Cape Cormorants, being adapted to foraging in very large groups on large shoals of pelagic fish, are highly sensitive and vulnerable to changes in the food supply within foraging distance of breeding islands (Duffy *et al.* 1984). Consequently, mortality of this species increases dramatically when shoals of pelagic fish become smaller and more dispersed under anomalous conditions (Duffy *et al.* 1984). The increase in Jackass Penguin and Cape Gannet mortality during years when Cape Cormorant mortality is low is difficult to explain. It may be that some form of competitive pressure is exerted, possibly on juveniles of these species, when cormorant populations increase.

The results obtained so far suggest very strongly that long term monitoring of beached seabirds, particularly Jackass Penguins and Cape Cormorants, provides data which closely reflect conditions leading up to and during strong Southern Oscillation events. Beach surveys could, therefore, provide a simple and relatively inexpensive index of pelagic fish stocks and enable scientists to predict large-scale environmental anomalies.

The effects of the breaking up of the Spanish supertanker *Castillo de Bellver* off the coast of Saldanha Bay on 7 August 1983 were evident on a nonregular extension (9 km) of the regular Yzerfontein patrol. Two unoiled Whitechinned Petrels *Procellaria aequinoctialis* were found on 23 July. However, on 20 August seven Whitechinned Petrels, two obviously oiled and three showing slight traces of very fine oil or fuel (detectable more by smell than visually) were found. One oiled specimen was found on 24 September. At the same time, 1 400 heavily-oiled Cape Gannets were removed from islands in Saldanha Bay by the Sea Fisheries Research Institute for rehabilitation. In addition, two to three times this number were lightly oiled (A. Berruti pers. comm.) No oiled gannets were found on beach patrols, but at their roosting places a reasonably accurate assessment of the impact of the oiling on the population could be made. Whitechinned Petrels on the other hand, were beaching almost directly opposite the area where pollution first occurred, some 40 km offshore. The impact of the disaster on the west coast population of this species is therefore impossible to assess although lower densities and the fact that they may not immerse themselves during feeding to the same extent as gannets would tend to minimize the problem.

It is always most gratifying to have new surveys established, especially in South West Africa/Namibia for which we have not previously received any data. Several regular surveys have been terminated, however, and the overall distance covered has dropped. It would be extremely useful in the light of the data on the effects of the Southern Oscillation, if members who are able to would initiate their own surveys. This would increase coverage of the coastline and our ability to monitor the effects of environmental changes.

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