

SOME OBSERVATIONS ON SEABIRDS BREEDING IN THE TSITSIKAMMA COASTAL NATIONAL PARK.

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Abstract — In 1980 and 1981 more than 50 pairs of kelp gulls *Larus dominicanus*, 70 of Cape cormorants *Phalacrocorax capensis* and 20 of whitebreasted cormorants *P. carbo* nested in the Tsitsikamma Coastal National Park. Kelp gulls were breeding in the Park in the mid 1960's but no records could be found of breeding by Cape cormorants prior to 1980. The earliest record for nesting by whitebreasted cormorants was 1971 and the population apparently increased in the late 1970's. Small numbers of African black oystercatchers *Haematopus moquini* nested in the park in 1980 and 1981. Brown mussels *Perna perna* and limpets *Patella* spp. dominated their hardshelled diet. Whereas oystercatchers at St Croix Island fed mainly on organisms from the mid intertidal region, those at Tsitsikamma appear to have favoured molluscs from the lower tidal range.

Introduction

The Tsitsikamma Coastal National Park (TCNP) on the southern coast of the Republic of South Africa includes a number of coastal cliffs, offshore stacks and small islands suitable for seabird breeding (Underhill 1978; Brooke, Cooper, Shelton & Crawford 1982; Cooper, Brooke, Shelton & Crawford 1982; Crawford, Shelton & Cooper 1982). In 1980/1981 and 1981/1982 nests were censused between October and January and in 1982 an analysis was made of shells at feeding piles of African black oystercatchers *Haematopus moquini*. Results are presented and discussed in this report.

Methods

The entire coastline of the TCNP was surveyed from the National Parks Board's patrol boat *Natpark II* in an attempt to pinpoint breeding localities. Particular lookout was kept for rock faces dyed white by guano. Additionally, rangers patrolling the mainland were asked to report on breeding seabirds. Nest sites were counted through binoculars from the *Natpark II* and from the shore to ensure coverage of all aspects.

In 1980 three counts of nests of kelp gulls *Larus dominicanus* were made from the mainland between 21 October and 7 November. Onset of breeding by kelp gulls is known to vary between southern African colonies (Crawford, Cooper & Shelton 1982). The highest counts were obtained on 7 November and accepted as an esti-

mate of the breeding population. In 1981 counts from the shore were conducted on 13 November by which time 47% of the nests contained chicks. Nests of Cape cormorants *Phalacrocorax capensis* and whitebreasted cormorants *P. carbo* were censused at the same time as those of kelp gulls. At Algoa Bay breeding activity of Cape cormorants has been recorded from July through March and of whitebreasted cormorants from October through July (Randall, Randall, Batchelor & Ross 1981). In the TCNP nests of African black oystercatchers were recorded in December and January. The breeding season for this species at Algoa Bay lasts from January to March (Randall & Randall 1982).

The quarterly reports of nature conservators and wardens of the TCNP since its inception in 1964 were searched for records of breeding by seabirds, as were relevant publications.

All shells in feeding piles at three nest sites of oystercatchers at Beyer's Island near the mouth of the Geelhoutbos River (Fig. 1) were collected at spring low tide on 26 April 1982. At spring low tides Beyer's Island is separated from the mainland by a shallow stretch of water, but access by wading is sometimes possible. Maximum dimensions of shells, generally lengths but in the case of *Turbo sarmaticus* widths, were later measured with dial calipers.

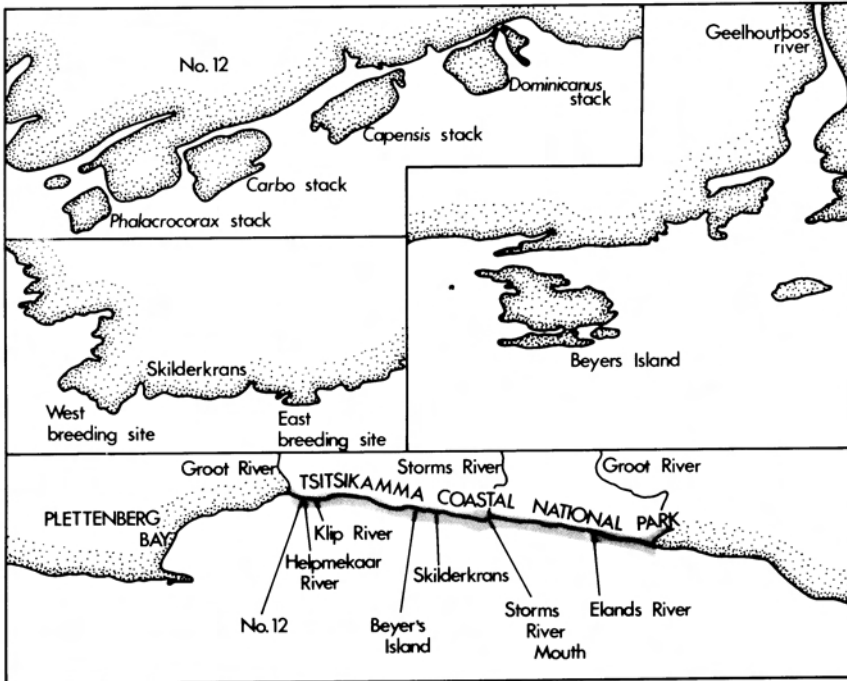


Fig. 1. Locations of breeding colonies of seabirds in the Tsitsikamma Coastal National Park.

Diets of pairs of African black oystercatchers at Beyer's Island were compared using the χ^2 test. The same test was also used to compare the diets of oystercatchers at Tsitsikamma and at St Croix Island, Algoa Bay.

Results

In both 1980 and 1981 there were more than 50 nests of kelp gulls, 70 of Cape cormorants and 20 of whitebreasted cormorants (Table 1). However, there was a reduction in the number of breeding pairs of all three species between 1980 and 1981, most of which can be attributed to decreases in the numbers of nests at No. 12.

Table 1

Numbers of nests of kelp gulls, Cape cormorants and whitebreasted cormorants counted at various localities in the Tsitsikamma Coastal National Park, 1980-1981

Locality	<i>Larus dominicanus</i>		<i>Phalacrocorax capensis</i>		<i>Phalacrocorax carbo</i>	
	1980	1981	1980	1981	1980	1981
No. 12 <i>Phalacrocorax</i> stack	—	3	—	15	—	—
<i>carbo</i> stack	13	14	—	11	—	10
<i>capensis</i> stack	31	14	2	45	15	1
<i>dominicanus</i> stack	6	5	75	1	9	5
Mainland cliffs	13	9	—	—	—	—
Total	63	45	77	72	24	16
Helpmekaar River. Stack at mouth	2	1	—	—	—	—
Klip River. Stack at mouth	—	2	—	—	—	—
Skilderkrans West	—	—	—	—	7	1
East	—	3	—	—	—	5
Total	—	3	—	—	7	6
Elands River. Stack at mouth	*	—	*	—	*	1
Total	65	51	77	72	31	23

* Signifies no count

One nest of African black oystercatchers was observed in the rest camp area at Storms River on 8 December 1980. It contained two eggs. Parents were in attendance until 24 December, when the nest was deserted and eggs were missing. In January 1982 three nest sites were observed on Beyer's Island and on 3 January 1982 a single nest (2 eggs) in the rest camp area at Storms River Mouth. The latter nest was deserted in late January, again without trace of eggs or chicks.

A total of 577 mollusc shells representing 14 species were recorded in the three feeding piles of oystercatchers. The limpet *Patella argenvillei* was numerically the dominant item at two sites and overall constituting 36% of all of prey items collected (Table 2). The brown mussel *Perna perna* dominated at the third feeding pile and constituted 28% of the overall diet. The limpet *Patella cochlear* was an important prey item at all three localities but the other nine species never contributed more than 6%.

Table 2

Relative abundance of prey, expressed as percentages, in the feeding piles of African black oystercatchers at Beyer's Island (1982) and at St Croix Island (1981)

Prey species	Beyer's Island, Tsitsikamma Coastal National Park			St Croix Island, Algoa Bay	
	Site 1	Site 2	Site 3	All sites combined	(Randall & Randall 1982)
<i>Perna perna</i>	5,10	7,06	38,58	28,25	90,53
<i>Haliotis midae</i>	1,02	—	—	0,17	—
<i>Fissurella mutabilis</i>	—	—	—	—	0,14
<i>Patella cochlear</i>	38,78	20,00	24,87	26,52	0,85
<i>P. granularis</i>	2,04	3,53	4,57	3,99	7,21
<i>P. argenvillei</i>	42,86	67,06	27,41	35,88	—
<i>P. barbara</i>	5,10	—	0,25	1,04	0,80
<i>P. miniata</i>	2,04	1,18	0,25	0,69	0,06
<i>P. longicosta</i>	3,06	1,18	0,76	1,21	0,05
<i>P. oculus</i>	—	—	2,03	1,39	0,07
<i>Siphonaria capensis</i>	—	—	0,25	0,17	0,04
<i>Turbo sarmaticus</i>	—	—	0,76	0,52	—
<i>Burnupena lagenaria</i>	—	—	—	—	0,03
<i>Thais dubia</i>	—	—	0,25	0,17	0,22
<i>n</i>	98	85	394	577	3 108

There was a significant difference between the diets of the three pairs of oystercatchers nesting at Beyer's Island $\chi^2=89$; 6 degrees of freedom; $p<.001$, and also

between the combined diets of birds breeding at St Croix Island (Randall & Randall 1982) and at Beyer's Island $\chi^2=1\ 904$; 4 degrees of freedom; $p<.001$.

Size of prey of African black oystercatchers feeding at Beyer's Island ranged from 10 mm to 64 mm with 74% of the items falling between 28 mm and 48 mm (Fig. 2). Items less than 28 mm were mainly *Patella granularis* and small *P. cochlear* and over 48 mm large *Perna perna*. Prey of intermediate size consisted of *Perna perna*, *Patella argenvillei* and *P. cochlear*.

Discussion

The TCNP was proclaimed in 1964 and in an early survey of its avifauna Skead & Liversidge (1967) refer to the kelp gull as nesting "on islands offshore." Ten nests were counted at No. 12 on 19 October 1971 and 50 on 2 November 1975 (Crawford *et al.* 1982). The 1971 count was at an early stage of breeding and probably low for this reason. The 1980 count of 63 nests (Table 1) included some observed from the sea. Therefore comment on population trends is difficult. In November 1974 one nest was observed at Storms River Mouth, the two eggs hatching after 30 and 31 days (Crawford *et al.* 1982). Breeding has also occurred on stacks at the mouths of the Helpmekaar and Klip Rivers and at Skilderkrans (Table 1). Considerable numbers of kelp gulls, probably from the No. 12 colony, were often seen scavenging at the camp site near the construction of the bridge over the Bloukrans River in 1981 and 1982. Kelp gulls were also often seen accompanying handline fishing boats between Nature's Valley and No. 12 (*pers. obs.*).

Although Skead & Liversidge (1967) recorded the presence of Cape and whitebreasted cormorants in the TCNP, they made no mention of breeding by either of these species. The earliest record of breeding by whitebreasted cormorants in the TCNP was 19 October 1971 when seven nest sites were counted at No. 12 (Brooke *et al.* 1982). Nests were observed at the same locality on 6 December 1974 and there were *ca.* 10 on 21 November 1975 (Brooke *et al.* 1982). About 30 nests were counted on 30 January 1978 (Underhill 1978) and 24 (all observed from the mainland) in October and November 1980 (Table 1). Thus the breeding population appears to have increased during the late 1970's.

Underhill (1978) made no reference to nesting by Cape cormorants. Breeding of Cape cormorants at St. Croix Island takes place mainly from August to December, but chicks have been recorded as late as March (Randall *et al.* 1981). The census by Underhill (1978) in January 1978 may therefore have fallen outside the breeding season of Cape cormorants. Alternatively the absence of records of breeding by Cape cormorants in the TCNP prior to 1980 may be a true reflection of the situation in earlier years. There have been recent large increases in numbers of Cape cormorants and other seabirds breeding at localities east of Cape Point (Crawford & Shelton 1981).

From 1980 to 1982 African black oystercatchers nested at Storms River Mouth and at Beyer's Island. Nests at Storms River Mouth were deserted in successive years. Protection of nesting sites from access by humans during the breeding season has been suggested as one of two measures necessary for the conservation of African black oystercatchers (Summers & Cooper 1977). Numbers of tourists visiting

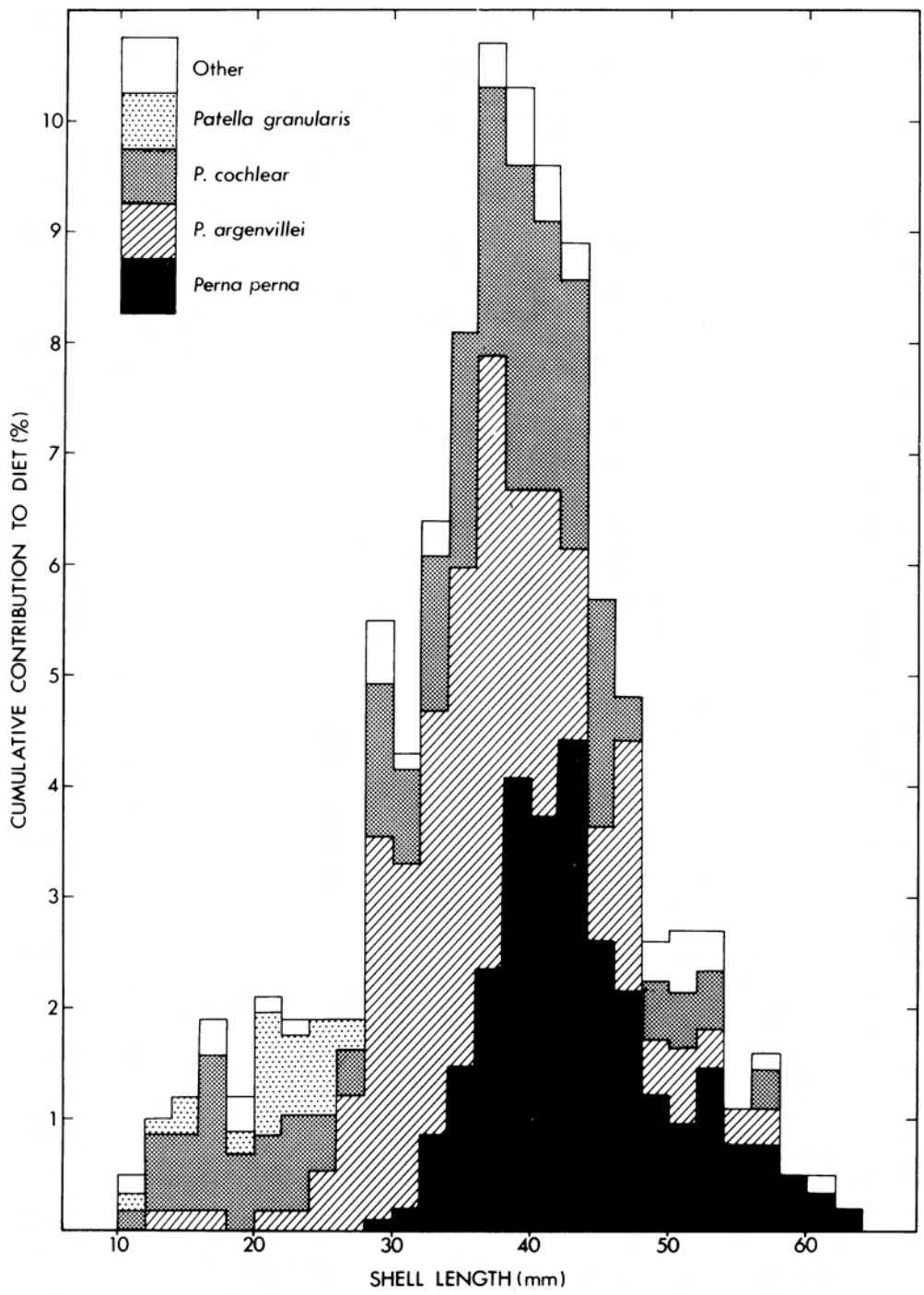


Fig. 2. Contribution of size categories of prey to the diet of African black oystercatchers at Beyer's Island, Tsitsikamma Coastal National Park.

Storms River Mouth are especially high during the December/January holiday season.

The hardshelled diet of African black oystercatchers in the TCNP comprised mainly intertidal molluscs from the rocky shore (Table 2). A similar situation obtained at St Croix Island (Randall & Randall 1982) but on sandy beaches near Port Elizabeth sand mussels *Donax serra* were the only food item recorded (McLachlan, Wooldridge, Schramm & Kuhn 1980). At St Croix Island the brown mussel *Perna perna* dominated the diet at each of three nest sites investigated. *Patella granularis* was the second most abundant organism (Randall & Randall 1982). By contrast in the TCNP the limpet *P. argenvillei* (not recorded at St Croix Island) was the most numerous food item (Table 2). Brown mussels and *P. cochlear* were also eaten in large numbers. Diets of oystercatchers at St Croix Island and in the TCNP were statistically different. At St Croix Island oystercatchers appear to have fed mainly on organisms from the mid intertidal region, but at Tsitsikamma molluscs from the lower tidal range were dominant. Diets at individual nest sites at Beyer's Island also differed significantly. At one site brown mussels dominated but at the other two limpets from the lower tidal range constituted 88% to 89% of prey items. Dominance of the diet of oystercatchers by one prey form is a frequently observed phenomenon (Randall & Randall 1982).

Size of prey eaten in the TCNP was similar to that observed at St Croix Island (Randall & Randall 1982). At St Croix Island African black oystercatchers selected the larger mussels (Randall & Randall 1982) and comparison of Fig. 2 with the size range of mussels sampled at nearby Storms River in January 1982 (Crawford & Bower 1983) suggests that they also did at Beyer's Island.

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