Inshore small-mesh trawling survey of the Cape south coast. Part 4. Contributions to the biology of some Teleostei and Chondrichthyes

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The distributions of eight teleosts and four Chondrichthyes trawled off the Cape south coast are given. The teleosts include *Pagellus natalensis, Pomadasys olivaceum, Lithognathus mormyrus, Trachurus* spp., *Galeichthys* sp., *Atractoscion aequidens, Cheimerius nufar* and *Sphyraena africana.* The Chondrichthyes are Squalidae, *Myliobatis aquila, Rhinobatos annulatus, Dasyatis pastinacus* and *Callorhinchus capensis.* Incidental observations on the biology of these species are also given. Extensive inshore marine nursery areas for the teleost species were identified. The importance of this with respect to inshore trawling is noted.
S. Afr. J. Zool. 1984, 19: 180 – 188

Die verspreidings van agt beenvissoorte en vier kraakbeenvissoorte wat langs die Kaapse suidkus getreil is, word gegee. Die beenvisse sluit in *Pagellus natalensis, Pomadasys olivaceum, Lithognathus mormyrus, Trachurus* spp., *Galeichthys* sp., *Atractoscion aequidens, Cheimerius nufar* en *Sphyraena africana.* Die kraakbeenvisse is Squalidae, *Myliobatis aquila, Rhinobatos annulatus, Dasyatis pastinacus* en *Callorhinchus capensis.* Uitgebreide mariene grootwordgebiede vir die beenvisspesies naby die kus, is geïdentifiseer. Die belangrikheid hiervan met betrekking tot kustreilvissery word aangedui.
S.-Afr. Tydskr. Dierk. 1984, 19: 180 – 188

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The specific aims of the survey (of which this is Part 4) are outlined in Part 1 of this series (Wallace, Kok, Buxton & Bennett 1984). Briefly, the trawling survey was designed to investigate the possible occurrence of inshore marine nursery areas for fish that were considered primarily dependent on estuarine nursery areas. In addition, several commercially important linefish were caught, some of which are dealt with in Part 3 (Smale 1984).

Most studies on the biology of South African ichthyofauna have concentrated on species that are either commercially important or easily accessible, hence the well-researched estuarine and intertidal faunas. Little is known of the majority of our marine fish. With this in mind, this study provides some information on fish that occur in the shallow marine environment.

Methods

The survey was conducted along the southern Cape coast between Algoa Bay (33°53′S/26°28′E) and St Sebastian Bay (34°06′S/22°09′E). Trawl depth ranged between 4,5 and 97,0 m, most of which was between 10 and 40 m. Trawling was restricted to soft substrates to avoid net damage. Details of the fishing gear, procedure and catches are given in Wallace *et al.* (1984).

Catches at each station were subsampled to determine the length composition of approximately 50 fish. Length-frequency histograms are expressed as the total catch per 10-min trawl (CPUE) in selected areas and depth. CPUE for a particular length class is therefore the total catch in that length class divided by the total effort in the selected area or depth.

Prey items were separated, identified as far as possible, weighed and counted. In those species where prey items were fragmented numbers were omitted and prey were represented by frequency of occurrence only.

Results

Osteichthyes

Pagellus natalensis Steindachner, 1902

There is some confusion as to the taxonomic status of the red tjor-tjor, *Pagellus natalensis*. Smith (1965) considered this fish to be endemic to southern Africa occurring from 'about Mossel Bay to Madagascar'. Druzhinin (1975), however, published an account of the biology of *P. natalensis* from the Gulf of Aden region.

The length composition of *P. natalensis* caught between Mossel Bay and Algoa Bay are expressed as catch per 10-min trawl in Figure 1. This represents a total of 25 710 fish with

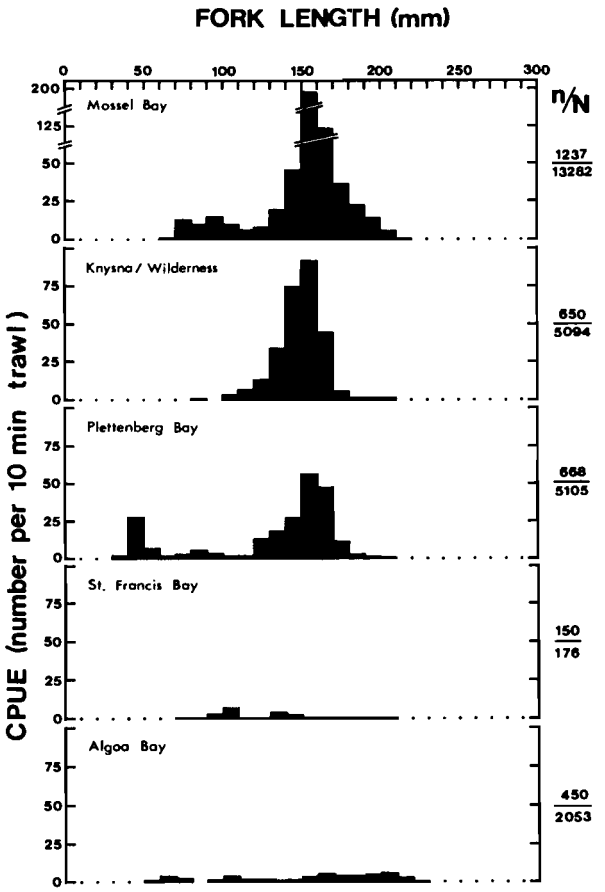

Figure 1 Length composition of *Pagellus natalensis* expressed as catch per 10-min trawl in different areas.

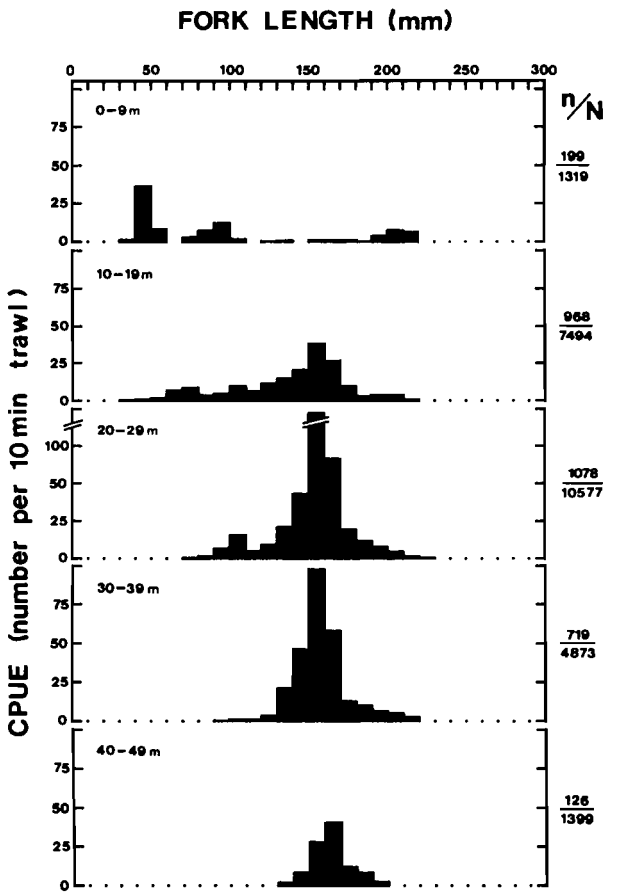

Figure 2 Length composition of *Pagellus natalensis* expressed as catch per 10-min trawl at depth intervals down to 50 m.

a length range between 36 and 290 mm fork length (FL). Most of the fish were between 70 and 210 mm except at Plettenberg Bay where smaller fish (39 – 69 mm) were caught on the May cruise. Highest catch rates were obtained in Mossel Bay with a gradual decline towards Plettenberg Bay. Catch rates dropped sharply in St Francis Bay and Algoa Bay.

Catch rate as a function of depth is summarized in Figure 2. In the 0 – 9 m depth class the catch rate was generally low except for the large catch of juveniles off Plettenberg Bay in May. These fish comprised 91% specimens caught at this depth and 22% of the total catch in the Plettenberg Bay area.

Overall, most of the fish below 100-mm length were caught at depths of less than 20 m. Size range was inversely proportional to depth owing to an increase with depth in the minimum size of fish caught. Modal sizes for the various depth classes were fairly constant, between 150 and 160 mm. Finally, catch per unit effort increased to a maximum in the 20 – 29 m depth interval, declining with further increase in depth.

The gut contents of 171 *P. natalensis* between 79 and 205 mm (FL) were examined. Of these only 40 had food in the stomach and 97 were empty. Hindgut contents were therefore included in the analysis in spite of the possibility of underestimating soft-bodied prey. The results presented in Table 1 show that small crustaceans are the most important prey group followed by echinoderms, polychaetes, fish and molluscs. There was little difference in the prey represented in the guts of fish taken from different areas although *Echinocardium* spp. were more abundant in fish taken west of Plettenberg Bay.

The composition of the diet suggests that this fish is a fairly

Table 1 Prey of *P. natalensis* represented as % frequency of occurrence and dry mass

Prey item	% F	Mass (g)
Pisces	20,3	2,41
Syngnathidae	2,7	0,18
Gobiidae	1,4	0,04
Echinodermata	24,3	4,55
Echinocardium spp.	14,9	4,21
Ophiuroidea	14,9	0,24
Holothuroidea	1,4	0,10
Crustacea	67,6	2,96
Brachyura	27,0	0,08
Anomura	8,1	0,46
Macrura	8,1	0,03
Mysidacea	14,8	0,62
Amphipoda	9,5	0,41
Isopoda	10,8	0,26
Copepoda	8,1	0,36
Mollusca	17,6	1,40
Cephalopoda	4,1	0,04
Gastropoda	6,8	0,55
Pelecypoda	6,8	0,81
Annelida (Polychaeta)	45,9	3,12
Cnidaria	5,4	0,03
Algae	1,4	0,01
Unidentified remains	33,8	3,29
Total	171	12,43

unspecialized benthic carnivore capable of feeding over both sandy and rocky substrates. The high percentage of empty stomachs in these diurnally caught fish also infers that *P. natalensis* may be a nocturnal predator.

Pomadasys olivaceum Day, 1875

The piggy, *Pomadasys olivaceum*, is a common inshore fish in southern Africa found from False Bay to Madagascar (Smith 1965). It has also been reported from India and probably extends along the entire east African coast. Much is known of its biology, particularly off the Natal coast where it is an important angling species (Joubert & Hanekom 1980; Joubert 1981a,b) and in Algoa Bay where it forms a major component of the surf zone fish community (Lasiak 1982). They are occasionally found in estuaries but regarded as stenohaline vagrants (Tabot 1955; Wallace 1975; Winter 1979).

The distribution of catch per unit effort of the 22 644 *P. olivaceum* taken between Mossel Bay and Algoa Bay is summarized in Figure 3. The size range of the fish caught, between 6 and 288 mm total length (TL), was generally similar in all of the sampled areas although modal sizes and catch rates differed considerably. Highest catch rates were obtained in Mossel Bay, particularly of fish between 130 and 170 mm. Further east catch rates declined while the proportion of juvenile fish in the catch increased. Juveniles were caught on all four cruises supporting the observations of Joubert (1981a) who found ripe individuals between March and December, suggesting an extended breeding period.

A clear trend in the catch rate with depth is summarized in Figure 4. CPUE was greatest in the 0 – 9 m depth class where together with the 10 – 19 m depth class most of the juvenile fish were caught. Similar results were obtained by Joubert

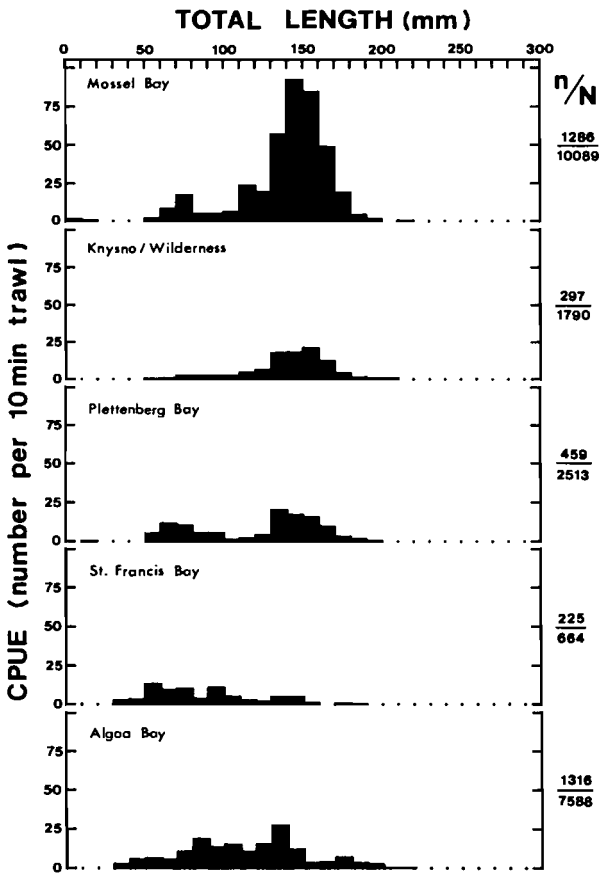

Figure 3 Length composition of *Pomadasys olivaceum* expressed as catch per 10-min trawl in different areas.

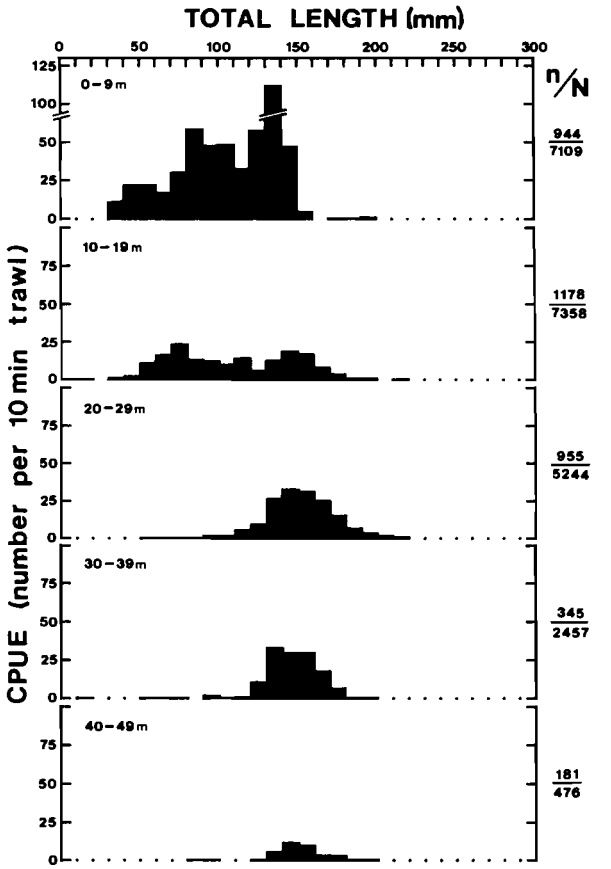

Figure 4 Length composition of *Pomadasys olivaceum* expressed as catch per 10-min trawl at depth intervals down to 50 m.

(1981a) in Natal where juvenile fish are most abundant on inshore reefs. At depths greater than 19 m the fish caught were almost exclusively adults in the 100 – 200 mm size range.

The stomachs of 36 *P. olivaceum* between 78 and 182 mm were examined, three of which were empty. Only five prey taxa were recognized and are summarized as percentage frequency of occurrence in Table 2. Crustaceans formed the major identifiable group of organisms, the most important being the mysid *Mesopodopsis slabberi* (55%). These results are consistant with the findings of Lasiak (1982).

Table 2 Prey of *L. mormyrus* and *P. olivaceum* represented as % frequency of occurrence

Prey item	*L. mormyrus*	*P. olivaceum*
Crustacea		
Paguridae	–	18,8
Amphipoda	13,9	12,5
Isopoda	–	12,5
Mysidae	55,6	6,2
Remains	5,6	37,5
Echinodermata		
Echinocardium spp.	–	18,8
Ophiuroidea	–	12,5
Polychaeta	5,6	18,8
Mollusca		
Pelecypoda	2,8	6,3
Shell/sand/mud	–	31,3
Unidentified remains	2,8	–
Total	23	36

Lithognathus mormyrus (Linnaeus, 1758)

Lithognathus mormyrus (sand steenbras) is a wide-ranging species on the west African coast from the Mediterranean to the Cape. It is found on the east coast as far as Natal and also in the Red Sea, but has not been reported from tropical east Africa (Smith 1965; Bauchot & Hureau 1981). This fish has received little attention in South Africa except in a study of surf-zone ichthyofauna in the Eastern Cape (Lasiak 1981, 1982, 1983).

L. mormyrus were well represented in catches taken between Mossel Bay and Plettenberg Bay but remarkably few were caught east of this area. These results are summarized in Figure 5 showing the distribution of catch per 10-min trawl. The 13 572 fish caught ranged in size from 57 to 259 mm (TL) except for a single speciman of 15 mm taken in Plettenberg Bay. The very low catch rates recorded in St Francis Bay and Algoa Bay were particularly interesting. Lasiak (1982) showed that *L. mormyrus* was a very important component of the surf-zone ichthyofauna in Algoa Bay. Since sampling in this survey and Lasiak's study were conducted during the same year it would suggest that the distribution of *L. mormyrus* is sensitive to some physical or environmental factor/s, limiting it to extremely shallow water in this area.

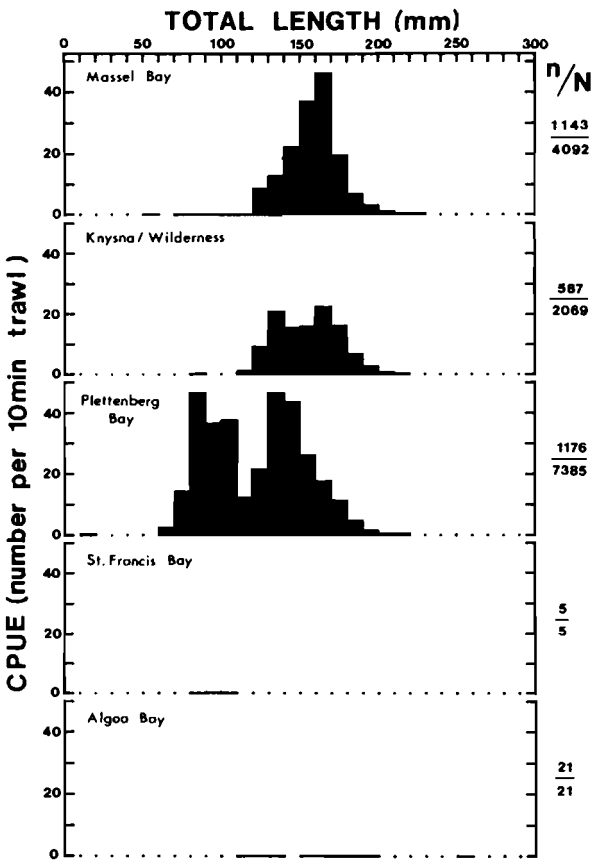

Figure 5 Length composition of *Lithognathus mormyrus* expressed as catch per 10-min trawl in different areas.

There is a clear trend in the depth distribution of *L. mormyrus* (Figure 6). In spite of a wide range in size, the majority of the fish were above 120 mm. Of these, the highest catch rate was in the 30 – 39 m depth class. Using the growth rate reported by Lasiak (1982) these would represent fish of age class 1 and above. Most of the smaller fish were taken in shallow water between 5 and 9 m depth interval. With few exceptions, no fish of age-group nought (below 72 mm) were caught, although these fish are common in the surf zone (Lasiak 1981, 1982).

Stomachs of 23 *L. mormyrus* between 140 and 159 mm (TL) were examined, seven of which were empty. The results summarized in Table 2 are consistant with the findings of Frogolia (1977) and Lasiak (1982), both of whom concluded that *L. mormyrus* was a benthic feeder, preying on animals that live in and over a sandy substrate.

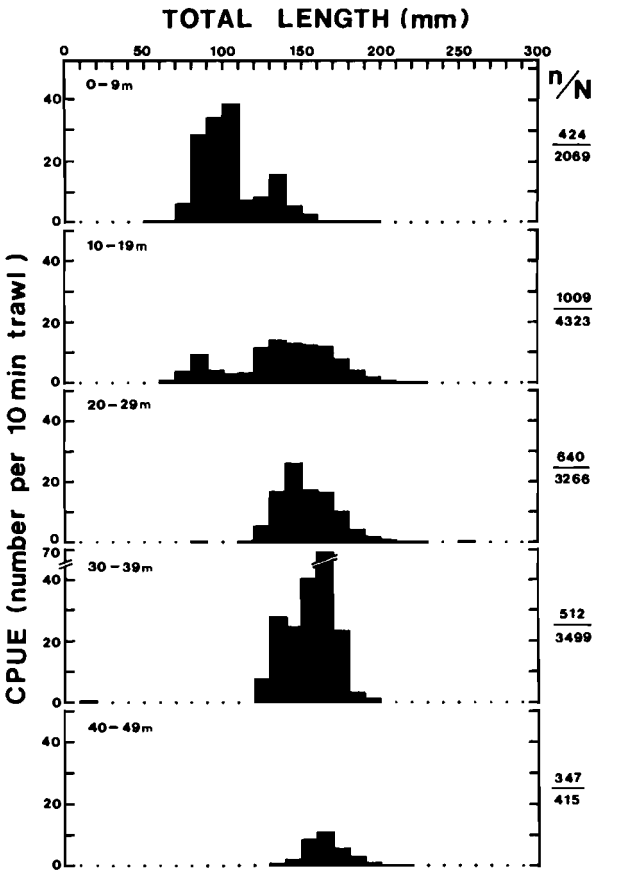

Figure 6 Length composition of *Lithognathus mormyrus* expressed as catch per 10-min trawl at depth intervals down to 50 m.

Trachurus spp.

There is some debate as to the number and taxonomic status of species of the genus *Trachurus* in southern African waters (Berry & Cohen 1972). In a review of southern African horse-mackerel, Nekrasov (1978) considers *T. capensis* a sub-species of *T. trachurus* and *T. margaretae* a synonym of *T. delagoa*. Initially only *T. trachurus capensis* was recognized in our catches, but a re-examination of preserved material revealed both *capensis* and *delagoa*. For this reason we have limited our discussion to the genus *Trachurus*.

The size range trawled was from 23 mm to 478 mm. Fish <75 mm TL, which are probably less than one year old (Geldenhuys 1973), were found at all depths down to 50 m. These small fish were most abundant in the shallow trawls (Figure 7). Larger fish (>150 mm TL) dominated the catches in depths between 20 m and 39 m. According to Geldenhuys (1973) these fish would be three years and older.

Highest catch rates were obtained in Plettenberg Bay, where large numbers of adults and juvenile horse-mackerel were caught. Catches in the other areas were low and consisted mainly of adult fish above 150 mm TL. Catch rates of small

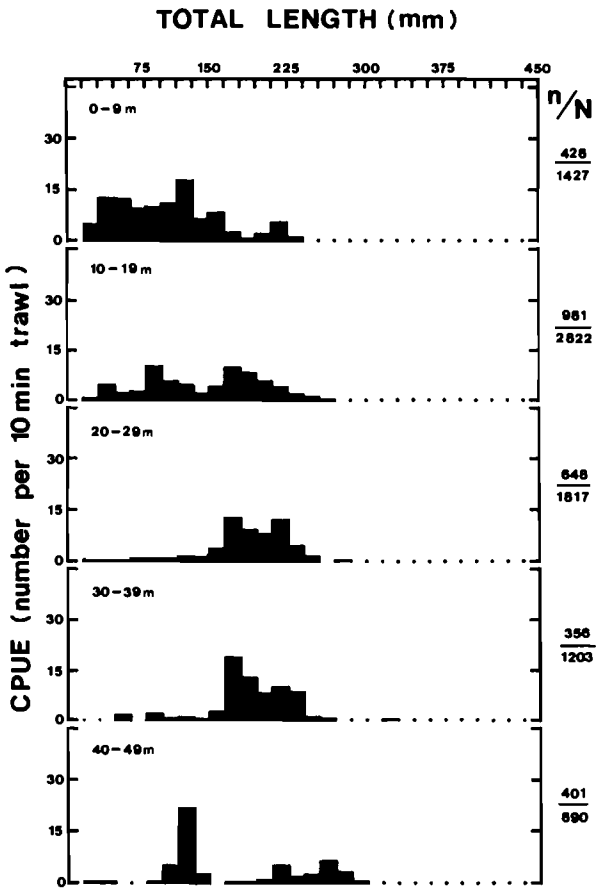

Figure 7 Length composition of *Trachurus* spp. expressed as catch per 10-min trawl at depth intervals down to 50 m.

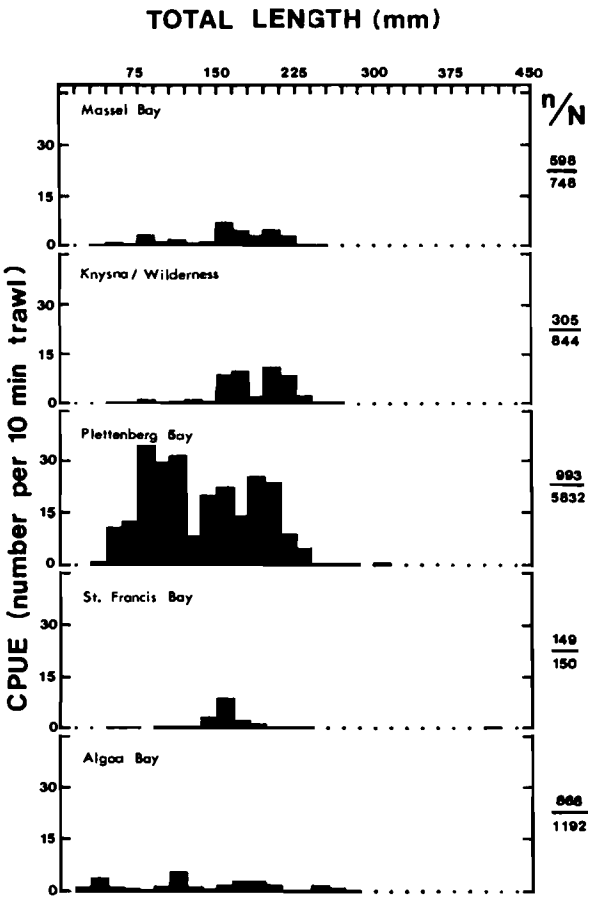

Figure 8 Length composition of *Trachurus* spp. expressed as catch per 10-min trawl in different areas.

fish (<75 mm TL) were greatest in Plettenberg Bay and Algoa Bay (Figure 8).

Galeichthys sp.

In a recent revision of the Ariid species of southern Africa, Taylor (in press) recognized two species off the southern Cape coast. The white sea-catfish, *Galeichthys feliceps*, found between Walvis Bay and Natal, and the black sea-catfish, *G. ater*, which occurs on the south coast as far east as Port Alfred. Re-examination of the preserved specimens taken in this study revealed only *G. feliceps*. This supports the observations of line fishermen who report catching 'vaaljassies' (*G. ater*) in deep water and 'blinkjassies' (*G. feliceps*) in shallow water (Hecht pers. comm.), but does not exclude the possibility that *G. ater* may have been present in some of the catches.

Galeichthys sp. were most abundant in Algoa Bay where high catch rates of both juveniles and adults were recorded (Figure 9). Catches in the other areas were low and consisted of adults only. A number of brooding males with either eggs or larvae in their mouths were caught particularly on the May cruise.

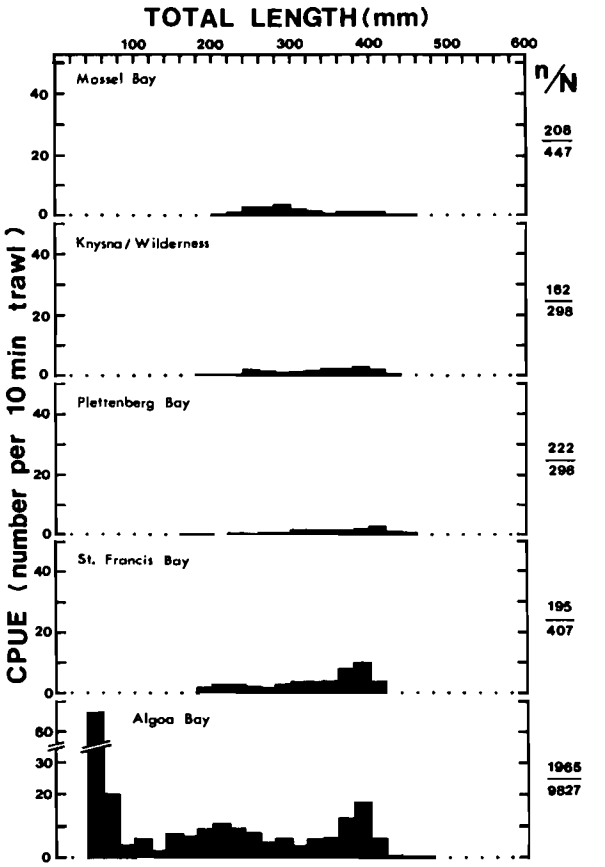

Figure 9 Length composition of *Galeichthys* sp. expressed as catch per 10-min trawl in different areas.

Catches of adult fish at different depths down to 50 m were fairly constant (Figure 10). Juveniles on the other hand were most abundant in shallow water where very high catch rates of fish <100 mm were recorded notably in Algoa Bay in February.

Cheimerius nufar (Ehrenberg in C&V, 1830)

Cheimerius nufar (santer) is a widely distributed Indo-Pacific species (Smith 1965) which is important in the South African

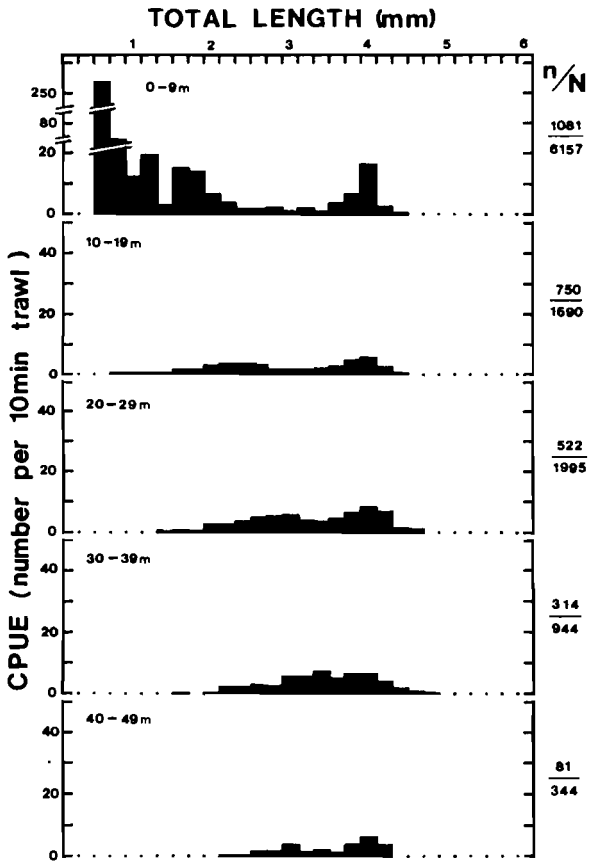

Figure 10 Length composition of *Galeichthys* sp. expressed as catch per 10-min trawl at depth intervals down to 50 m.

line fishery (van der Elst 1981; Coetzee & Baird 1981; Smale & Buxton in press).

A total of 112 juvenile *C. nufar* were trawled from depths of 7–33 m between Algoa bay and Mossel Bay. The fish ranged in length between 77 and 265 mm (FL). *C. nufar* were infrequently represented in catches because they are usually found adjacent to or over reefs (Smale 1983).

Seventy-one of the 77 stomachs examined contained food remains (Table 3). Mysidacea were the dominant prey, represented by *Acanthomysis* sp., *Afromysis* sp., *Mysidopsis* sp. and *Mesopodopsis slabberi*. With the exception of *M. slabberi* these prey species are substrate-associated, often occuring near reafs (Wittmann 1977; Wooldridge, pers. comm.). A single goby was found in a *C. nufar* of 141 mm while the unidentified teleosts were found in specimens of 120–133 mm. The results suggest that juveniles feed close to reefs. The importance of invertebrates in the diet of juvenile *C. nufar* is different to that of adult fish. Druzhinin (1975) found that *C. nufar* of 181–720 mm in the Gulf of Aden fed mainly on teleosts. Similarly Coetzee & Baird (1981) found that cephalopods and fish dominated the diet of adults caught by shore anglers from St Croix Island, Algoa Bay.

Table 3 Prey of *C. nufar* expressed as percentage frequency (%F), number (%*N*) and mass (%M)

Prey item	%F	%*N*	%M
Polychaeta	2,8	0,1	0,5
Crustacea			
Mysidacea	100,0	97,8	81,9
Amphipoda	12,7	0,2	0,9
Macrura	36,6	1,7	9,2
Stomatopoda	2,8	<0,1	0,8
Unidentified	4,2	0,1	0,4
Teleostei			
Gobiidae	1,4	<0,1	2,9
Unidentified	4,2	0,1	3,4
Totals	71	5710	4,589

Argyrozona argyrozona (Valenciennes, 1830)

The carpenterfish *A. argyrozona* is endemic to South Africa between Saldanha Bay and Port St Johns. It is a suprabenthic species occurring over reefs down to 100 fathoms and is important to the commercial and recreational fisheries in South Africa (Nepgen 1977; Smale & Buxton, in press).

The length range of the 42 fish caught was 91–325 mm FL. Ten of these, between 93 mm and 242 mm, had food in their stomachs. Prey identified emphasized the importance of mysids (Table 4). This differed from the diet of large *A. argyrozona* which take larger crustaceans, cephalopods and pelagic fish (Nepgen 1977).

Table 4 Prey of *A. argyrozona* expressed as percentage frequency (%F), number (%*N*) and mass (%M)

Prey item	%F	%*N*	%M
Crustacea			
Mysidacea	100,0	98,2	71,6
Macrura	10,0	1,2	20,5
Mollusca			
Octopus spp.	10,0	0,6	7,9
Totals	10	164	0,587

Atractoscion aequidens (Cuvier, 1830)

A. aequidens (geelbek) are found on the African coast from the Gulf of Guinea southwards to Natal and on the southern and eastern Australian coasts (Chao & Trewavas 1981). Little is known of the biology of this highly prized linefish (van der Elst 1981). Twenty-eight specimens of 72–393 mm FL were caught mainly in Algoa Bay between 4,5 and 45 m.

Stomach contents were recovered from 18 of the 20 specimens examined (Table 5). Mycidacea were major prey of fish caught in Algoa Bay especially from shallow stations whereas teleost prey dominated in St Francis Bay. The smallest *A. aequidens* with teleost prey measured 143 mm although mysids were taken over the entire range. Smale (1983) found that

Table 5 Prey of *A. aequidens* expressed as percentage frequency (%F), number (%*N*) and mass (%M)

Prey item	%F	%*N*	%M
Crustacea			
Mysidacea	61,1	97,2	42,0
Macrura	5,6	0,2	7,6
Unidentified	5,6	0,2	0,3
Osteichthyes			
Pomadasys olivaceum	27,8	2,1	43,8
Cynoglossus capensis	5,6	0,2	6,3
Total	18	471	1,905

mysids were absent in the diet of large *A. aequidens* which took fish and squid.

Sphyraena africana Gilchrist & Thompson, 1909

The African barracuda, *S. africana* appears to be distributed throughout the Indo-Pacific although its taxonomy is not entirely clear (de Sylva 1973). Lasiak (1982) also classified *S. africana* as a piscivore of the surf-zone in Algoa Bay. Fourteen specimens of 54 – 244 mm were caught mainly off Mossel Bay. The stomachs of the 13 specimens examined contained post-larval clupeids and engraulids (86% of prey mass) and one *Engraulis capensis* (14%).

Chondrichthyes

Cartilaginous fish, although not numerically abundant, were an important component of the catch in all areas sampled because of their large size. Some 2 985 specimens representing 12 families made up 2,8% of the total catch (Table 1 Wallace *et al.* 1984). With the exception of representative samples sent to the J.L.B. Smith Institute of Ichthyology most of the elasmobranchs were identified, counted and returned to the sea alive. For this reason the more difficult groups (e.g. Squalidae and *Mustelus* spp.) were often only identified to genus. A summary of catch and depth distribution is given in Table 6. The Squalidae were the most numerous group totaling 25% of the chondrichthyan catch. The four most numerically abundant species are discussed below.

Myliobatis aquila (Linnaeus 1758)

Common in all areas and depths the eagleray, *M. aquila*, made up 20% of the Chondrichthyes caught. The highest catches were taken in November which included a number of juveniles with disc widths between 150 – 200 mm. Wallace (1967) recorded this ray between Table Bay and Natal.

Rhinobatos annulatus (Müller & Henle, 1841)

The lesser guitarfish, *R. annulatus* comprised 10% of the catch. Catch rates were different between seasons, the highest catch (49%) being in February and the lowest in November (4%). This variation may be attributable to the migratory behaviour

Table 6 The seasonality and depth range of elasmobranch catches taken by the R.V. *Thomas B. Davie*

Species	Depth (m)	Feb	May	Aug	Nov	Total
Carcharhinidae						
Carcharhinus brachyurus	12 – 51	4	–	2	4	10
C. obscurus	29	1	–	–	–	1
Galeorhinus galeus	9 – 36	–	2	2	22	26
Mustelus spp.	5 – 97	77	69	21	22	189
Rhizoprionodon acutus	31	–	–	–	1	1
Sphyrnidae						
Sphyrna zygaena	13 – 42	–	3	24	2	29
Odontaspidae						
Odontaspis taurus	27 – 29	1	–	–	1	2
Scyliorhinidae						
Halaelurus natalensis	7 – 84	44	50	32	9	135
Haploblepharus edwardsii	19	–	–	–	1	1
Poroderma africana	27 – 73	–	–	3	4	7
Poroderma marleyi	27 – 46	–	–	1	1	2
Poroderma pantherinum	16 – 48	–	3	1	–	4
Squalidae						
Squalus spp.	6 – 97	78	122	450	86	736
Pristiophoridae						
Pliotrema warreni	41	1	–	–	–	1
Rhinobatidae						
Rhinobatos annulatus	5 – 73	142	114	23	13	292
Rajidae						
Raja clavata	9 – 97	14	28	11	14	67
R. miraletus	5 – 84	51	44	18	18	131
R. alba	5 – 84	37	17	14	10	78
Myliobatidae						
Myliobatis aquila	5 – 73	171	128	88	221	608
Pteromylaeus bovinus	22 – 31	–	–	–	1	1
Dasyatidae						
Dasyatis brevicaudatus	80 – 84	1	–	–	–	1
D. pastinacus	5 – 49	140	36	54	35	265
Gymnura natalensis	5 – 49	8	3	1	18	30
Torpedinidae						
Narke capensis	7 – 45	21	11	4	26	62
Torpedo fuscomaculata	5 – 73	48	16	6	37	107
Torpodo sinuspersici	16 – 20	–	–	–	1	–
Callorhinchidae						
Callorhinchus capensis	6 – 70	80	31	35	52	198

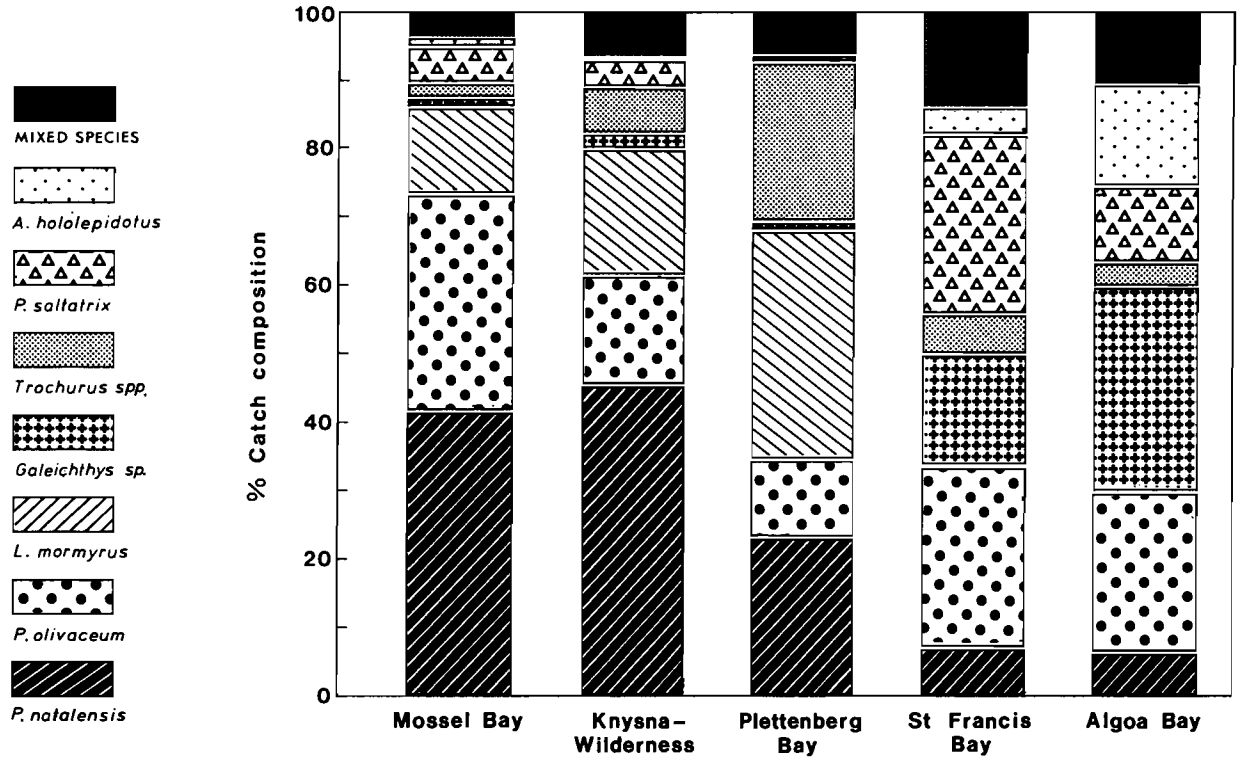

Figure 11 Relative abundance of species taken between Mossel Bay and Algoa Bay by the R.V. *Thomas B. Davie*.

of adults (Rossouw 1983).

Dasyatis pastinacus (Linneaus, 1758)

D. pastinacus (blue stingray) made up 9% of the chondrichthyan catch most of which (53%) were caught in February. Lower numbers on the other cruises may be related to an offshore migration in winter (Rossouw 1983). The majority of the blue stingray catch was taken in Algoa Bay where they are also a very important component of shore-angler's catches (Rossouw 1983).

Callorhinchus capensis (Dumeril 1865)

Elephantfish, *C. capensis* made up 7% of the Chondrichthyes catch most of which were caught in February and November. The stomachs of four fish were found to contain a variety of crabs and bivalves. One fish was kept alive on board ship where it was observed to use its enlarged pectorals to swim.

Discussion

These feeding studies, including Smale (1984), emphasize the importance of mysids in the diet of juvenile fish, particularly in species that are piscivorous as adults (*A. hololepidotus, A. aequidens, C. nufar, P. saltatrix* and *M. capensis*). Prey diversity in these juveniles was low. Mysids were also important in the diet of *L. mormyrus* but less so in *P. natalensis* and *P. olivaceum*, both of which showed higher prey diversity and are known to feed over both reef and sand.

Only seven of the 27 elasmobranch and 80 teleost species recorded during the survey contributed significantly to the overall catch (Figure 11). The relative abundance of these species showed some geographical variation, *P. natalansis* and *L. mormyrus* being most abundant in the west while *Galeichthys* spp., *P. saltatrix* and *A. hololepidotus* were more common in the east. *Trachurus* spp. and *P. olivaceum* were well represented in all areas. The many juveniles caught demonstrated an extensive marine inshore nursery area between 5 m and 30 m for these fish (Table 7).

Table 7 The depth range over which juveniles of numerically important species were found

Species	Length range (mm)	Depth range (m)
Argyrosomus hololepidotus	15 – 165 TL	< 30
Lithognathus mormyrus	50 – 120 TL	< 20
Pagellus natalensis	30 – 100 FL	< 20
Pomadasys olivaceum	10 – 120 TL	< 20
Pomatomus saltatrix	30 – 130 FL	< 30
Galeichthys sp.	30 – 120 TL	< 20
Trachurus spp.	15 – 90 TL	< 20

Whereas *A. hololepidotus* and *P. saltatrix* are important commercial and recreational line fish, little effort has been made to exploit the other five species listed above. At present *L. mormyrus* and *Pagellus* spp. are exploited commercially on the east African coast while *P. olivaceum* and *Galeichthys* sp. are caught by line fishermen throughout their distributional range. The high catch rates recorded for the fish in this study, suggest their potential for exploitation. This would need to be carefully researched to avoid interfering with the nursery function of this area.

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