Notes on marine fishes collected in the vicinity of Bosluisbaai

by

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ABSTRACT

Short notes are given on 37 species of fish collected from the northernmost part of the Skeleton Coast Park. The majority of the fish were of Atlantic warm water origin, with a smaller number of southern African endemics. Of the 37 species, eight were cartilaginous fish and 29 teleosts. Of the latter, 19 were collected in the sea, six from the Kunene River mouth, and four from both habitats.

CONTENTS

1 INTRODUCTION

Bosluisbaai is a shallow bay situated in the Skeleton Coast Park on the northernmost portion of the S.W.A. / Namibian coast-line at 17° 23′ S., 11° 45′ E. Situated some 14 km south of the Kunene River mouth, it lies within the southern African marine region as defined by Smith (1975), and for two main reasons was chosen as a base for collecting trips to the area. Firstly, it is the most northerly place on the West African coast, within the southern African region, where it is possible to launch and recover a small inflatable boat at all states of the tide. Secondly, the Bosluisbaai area is of interest since it lies close to, or, in the case of estuarine species, at the southern limits of the West African Zoogeographical Province.

In other respects, however, neither Bosluisbaai nor indeed any area of the northern Skeleton Coast Park is an ideal collecting station for shallow water fishes. There are no areas of underwater rocky reef, nor are there intertidal rocks with promising pools. The limited amount of available intertidal rock is flat schist with at best shallow pools. Many of these patches of intertidal rock are also somewhat ephemeral, often being covered with sand, which has limited the amount of algal and invertebrate growth. Finally, beach seining is impossible owing to the extremely fast and powerful north-flowing current.

The main physical features of the area are shown in Figure 1. Basically the area can be divided into four principal zones.

a. Sandy beaches north and south of Bosluisbaai. The surf is usually fairly heavy, but is somewhat reduced by off-shore sand-banks running parallel to the beach. To the south the beach profile is very flat. Quite large (up to 1 km) temporary lagoons form on the beach and may last for several months.

b. Areas of isolated rock which, as stated above, do not extend out into deeper water and are generally flat and featureless.

c. The bay of Bosluisbaai which has somewhat reduced wave action and no sand bar. At the northern end of the bay there is an extensive area marked on chart SAN 100 as "foul ground". Unfortunately this proved to be an area of shallow sand banks, possibly with a rock foundation.

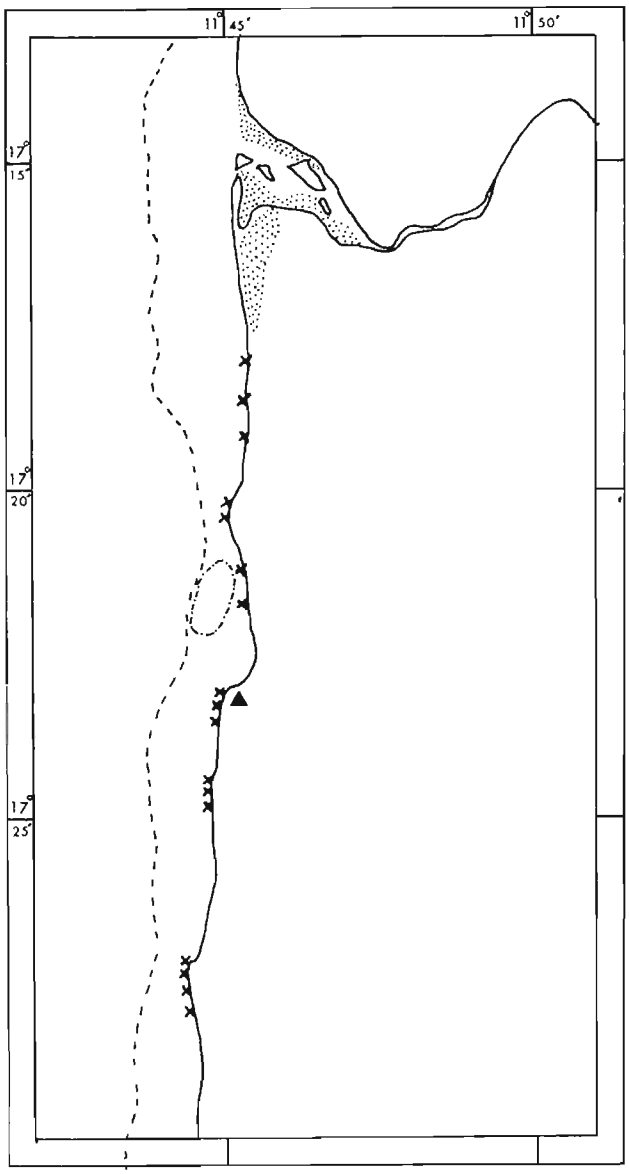


FIGURE 1: Study area, Bosluisbaai, mouth of Kunene River, and adjacent coast.

▲ Camp at Bosluisbaai
X Intertidal rock outcrops
– – – – 10 metre contour
. – . – . – area of foul ground
stippled area = flood-plains
(Based in part on chart SAN 100, 1969).

d. The Kunene River mouth. The mouth is wide (approximately 1 km), and in addition, especially on the south bank, there are extensive flood-plains. The river, however, lacks a true estuary (as defined by Day, 1981). The entire mouth area is completely fresh at all states of the tide. Even during the dry season when the river was at its lowest level and slow-flowing, no trace of salt water mixing could be found (using an AO Refractometer reading to 2°/oo). Even more than a kilometre north of the mouth the sea gave readings of only 4 – 5°/oo in the surf zone. Although no trace of typical estuarine invertebrates could be found, several species of estuarine fish were collected together with typical riverine species of *Barbus, Clarias,* and Cichlidae.

Sea temperatures varied widely from 16°C in winter to 22°C in summer, but 18 – 20°C appeared to be the normal summer range. The inshore water is greenish or greyish with a very low visibility, but off-shore, often within two nautical miles of the coast, clear blue oceanic water occurs.

The main collecting methods employed were gill-netting, using both mono- and multifilament nets with stretched mesh sizes of 49 to 171 mm (2 – 7 inches), nets set both in mid-water and on the bottom; rotenone in intertidal pools; and angling, both from the shore and from the boat.

Four visits were made to this isolated region: in October 1978, July 1979, March 1980, and March/April 1981. In addition, fish collected during two previous visits, in 1967 by M.-L. Penrith and the State Museum, and in 1969 by the State Museum and the South African Museum, are listed.

Owing to limited storage and transport space, only representative samples of the larger fish were kept, the majority being discarded after recording of length, weight, sex and reproductive condition, and stomach contents. In the field fork length was routinely used for measuring the length of teleosts, notch length (snout to caudal origin) for elasmobranchs.

The species discussed are limited to the marine and estuarine species collected, with one possible exception. In the Kunene River mouth, however, it was the norm rather than the exception to collect estuarine species together with true freshwater species, both in gill-nets and when using rotenone in pools at the edge of the river and on the flood-plains.

In the notes on species the following abbreviations are used:

SMP State Museum, Windhoek
SAM South African Museum
Lf Fork length
N.L. Notch length
L.S. Standard length

2 PREVIOUS WORK IN THE REGION

Prior to the present visits, no organised collecting of marine shallow water fish had been done in the region. Kensley & Penrith (1980) discussed the invertebrate fauna and listed intertidal fishes; M.-L. Penrith (1970) recorded some freshwater and estuarine fish from the Kunene River mouth; and Penrith & Penrith (1972) listed intertidal blenny records from the area. Finally, one fish, *Galeoides polydactylus,* has previously been reported (Penrith, 1980).

3 RESULTS

CARCHARHINIDAE

Carcharhinus brachyurus (Gunther), 1870

SMP 1587 (jaws)

This shark, the only species of large shark caught, appears to move inshore with the warmer blue water. In March 1980 it was common: in one night six (all of at least 1,5 metres N.L.) were found dead in a gill-net, with several others swimming nearby. The sharks were cut loose from the tangle of netting and towed to the edge of the breaker zone, where it was hoped they would be washed ashore. None, however, were.

Only example examined, a small ♀ of 933 mm (N.L.), collected in 1981 at the edge of the blue water. Immature, and stomach empty. Teeth 15 - 1 - 15 in both jaws, with the typical oblique cusps on all the upper teeth.

The species, locally known as the bronze whaler, is common along much of the coast from Sandvis (23° 20'S., 14°25' E.) northwards during periods of warm water. It is widely distributed in temperate seas throughout the world (Bass *et al.*, 1973).

Galeorhinus galeus (Linnaeus), 1758

SMP 1579

Only one example, a ♀ of 720 mm (N.L.), was collected.

The species is wide-ranging, being recorded in the eastern Atlantic from northern Europe (Compagno, 1977) to East London (Bass *et al.*, 1975).

Mustelus mustelus (Linnaeus), 1758

Not very common at Bosluisbaai. Only four examples collected, all netted outside the breaker zone.

Size range 636 - 937 mm (N.L.).

Sex ratio 3 ♀ ♀, 1 ♂. Two females mature with yolk sacs, but no obvious embryos.

Feeding on the swimming crab *Ovalipes* sp. (twice), squid, and prawn.

An eastern Atlantic species ranging to Natal.

Triakis megalopterus (Smith), 1839

SMP 1084 (jaw).

Common only during March/April 1981, when it was regularly collected by angling in the surf zone. Fourteen of 15 *Triakis* collected were taken during this visit. Size ranged from 680 to 1241 mm (N.L.).

The majority (64%) were female, but only two were gravid, containing small embryos.

Stomach contents almost exclusively octopus (66%). Other food was *Ovalipes* sp., *Liza* sp., and blennies.

Triakis megalopterus is a southern African endemic species, the most northerly definite record on the west coast being a few kilometres north of the Kunene River mouth (SMP 1084). Vilela (1923), however, recorded *Scyliorhinus canicula* (as *Scillium catulus)* from Moçamedes. This record is very probably based on an example of *T. megalopterus,* since none of the eastern Atlantic species of *Scyliorhinus* reaches south of the equator (Springer, 1973), and the southern African endemic *S. capensis* is not known from the west coast, with the exception of one very dubious record from Walvis Bay (Pauca, 1930).

Although *Scyliorhinus canicula* and *Triakis megalopterus* differ considerably, especially in the position and size of the dorsal fins, the colouring is similar, and this may have led to Vilela misidentifying the shark.

SQUALIDAE

Squalus megalops (MacLeay), 1882

SMP 1583, 1584, 1585, 1586

Common outside the surf zone, in water 5 metres or deeper.

Twenty collected, size range 353 - 474 mm (N.L.).

All except the smallest were female. The majority (63%) of the females were mature and gravid, containing either yolk sacs but no obvious embryos, or well-developed embryos. In all cases either three or four embryos were present. It is certain that the percentage of gravid fish should be higher, but several fish dropped embryos during handling in the nets.

Bass *et al.* (1976) record the size at maturity for female *Squalus megalops* as 55 cm (with occasional specimens gravid at 53 cm). It is assumed that this refers to total length. The Bosluisbaai material had unquestionably gravid females as small as 413 mm (N.L.), or 505 mm total length (SMP 1585). Size at maturity thus appears considerably smaller than in South African waters.

Only two fish had naturally acquired food, a small squid (*?Loligo* sp.), very digested, and an octopus tentacle.

Since there has, in the past, been considerable confusion over the species of *Squalus* present in southern African waters, a short description of the Bosluisbaai material is given.

Description

Body brown dorsally, no trace of white spots. Second dorsal markedly smaller than first, but with a spine as long as or longer than first dorsal spine. Nasal flap broad with a small bilobed flap (Fig. 2 a). Dermal denticles with a fairly broad base but with only a single elongate cusp (Fig. 2 b). Inner corner of pectoral fin not notably acute but inner edge markedly convex (as figured by Bass *et al.*, 1976, (Fig. 11). In four examples examined the distance tip of snout to inner edge of nostril was slightly less than (three) or equal to (one) the distance inner edge of nostril to front of pre-oral cleft.

Squalus megalops is a wide-ranging species on the west and east coasts of Africa and the Indo-Pacific (Bass *et al.*, 1976).

RHINOBATIDAE

Rhinobatos blochii Muller & Henle, 1841

SMP 1768

Occasionally taken by angling in the surf zone. Five examples examined.

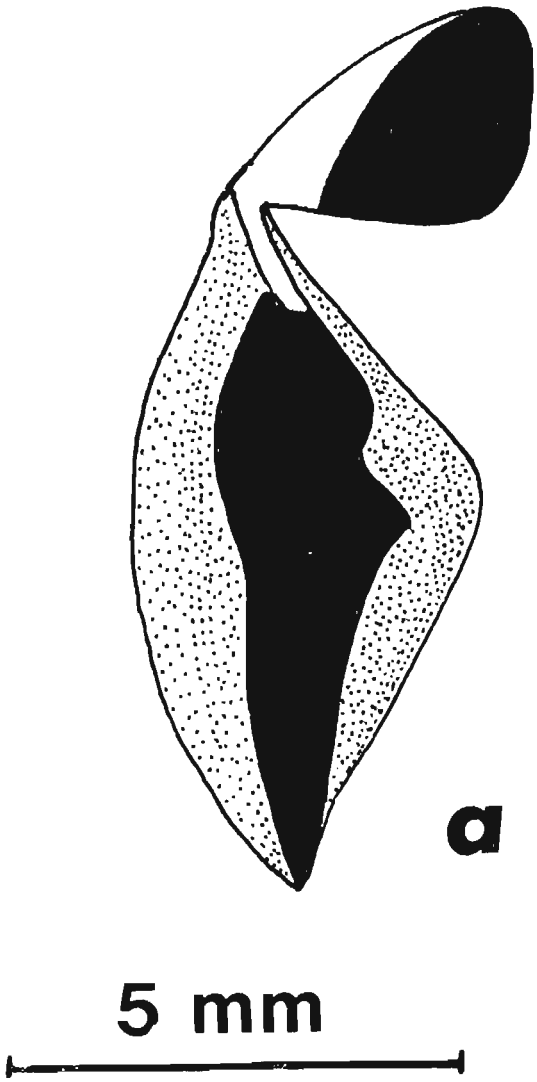
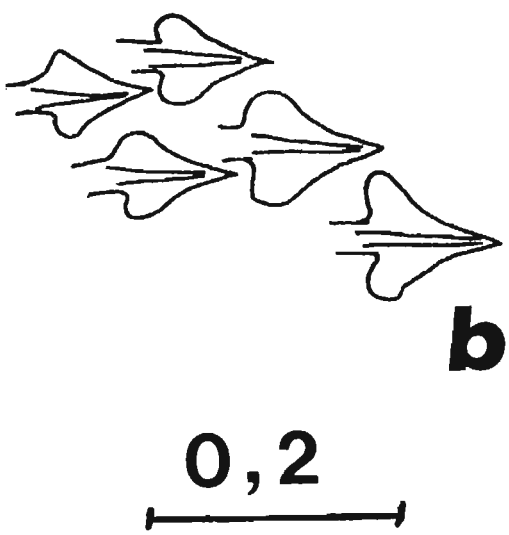


FIGURE 2: *Squalus megalops* (SMP 1585)
a. Nasal flap.
b. Dermal denticles.



Size range 378 - 600 mm. Comprising 3 ♀ ♀, 2 ♂ ♂, none of females gravid.

Feeding on *Ovalipes* sp. (2 examples), rest empty.

Rhinobatos blochii is the common sandshark on the west coast of southern Africa, ranging from the Cape (Barnard, 1925) to at least Bosluisbaai. It is not, however, listed in the most recent check-list of shallow water southern African fishes (Smith, 1975). Previously (Penrith, 1978), I listed Vilela's (1923) record of this species from Moçamedes in southern Angola as doubtful. Its presence at Bosluisbaai, however, makes the Moçamedes record entirely feasible.

RAJIDAE

Raja (Rostroraja) alba Lacépède, 1803

SMP 1588 (jaws). SMP 1637 (embryo).

One example, ♂, gill-netted in shallow (6 metres) water. Total length 1470 mm, width 1165 mm. 53/44 rows sharp cusped teeth.

Stomach contained remains of octopus with tentacles *ca.* 40 cm long.

One well-developed embryo (225 mm total length) removed from egg case found on beach.

Judging by the vast numbers of egg cases of this species which occur on the beaches to the north and south of Bosluisbaai, *Raja alba* is common in the area.

Raja alba is known from northern Europe to South Africa (Hulley, 1970).

MYLIOBATIDAE

Myliobatus aquila (Linnaeus), 1758

Occasionally present off-shore. Taken in mid-water in gill-nets. Not usually brought ashore. All caught were small immature examples.

Myliobatus aquila has a wide distribution in the eastern Atlantic, from southern Europe to the south coast of South Africa.

CLUPEIDAE

Sardinops ocellata (Pappe), 1853

None collected directly, but found in stomach of *Lichia,* and juvenile picked up after being dropped by gannet. Several large schools of juveniles seen in bay.

Sardinops ocellata, a southern African endemic, occasionally reaches southern Angola, being recorded from Porto Alexandre (Sanches, 1966).

Sardinella maderensis (Lowe), 1841

SMP 1578

Only one example collected, 219 mm L.S.

An eastern Atlantic species occasionally reaching as far south as Sandvis.

Depth 32%, head 24% of standard length. 41 scales in median lateral series. Pelvic fin with 1 unbranched, 7 branched rays.

ARIIDAE

Tachysurus feliceps (Valenciennes, in Cuvier & Valenciennes), 1840

SMP 1589, 1638

Taken both by angling in the surf zone and by netting (gill-nets set on the bottom) outside the surf and in the bay.

A total of 15 fish examined, size range from 135 to 352 mm (Lf).

Sex ratio 1 ♂ : 3,5 ♀ ♀. Some females with enlarged eggs in ovaries, but neither of two mature males examined was carrying eggs or juveniles in its mouth and had been feeding.

Half the fish examined had food in their stomachs. Food items included crabs (4 fish), remains of small fish (1 fish), brachiopods, *Discinisca tenuis* (1 fish), sea-weed (1 fish), and polychaete remains (1 fish).

Tachysurus feliceps has not been recorded north of the Kunene River mouth, with the exception of one dubious record from the Azores (Lampe, 1914), but must certainly occur in the southernmost portion of Angola. The definitely known distribution is from Natal to Bosluisbaai.

SERRANIDAE

Epinephelus guaza (Linnaeus), 1758

SMP 1603

Two very small juveniles from a shallow rock pool at northern end of the bay. Size 28 - 30 mm (L.S.).

Epinephelus guaza is common in the eastern Atlantic as far south as Moçamedes (Penrith, 1978), and is again present on the south and east coasts of South Africa from Knysna to Natal (Smith, 1961).

POMATOMIDAE

Pomatomus saltator (Linnaeus), 1766

SMP 1580

Not common, only two examples netted well off-shore.

Size 221 and 330 mm (Lf). Both immature.

Feeding on *Trachurus trachurus*.

A circumtropical species (Briggs, 1960).

CARANGIDAE

Caranx rhonchus St Hilaire, 1817

SMP 1572 - 5, 1592

Fairly common during March/April 1981. Only five examples collected, size range 164 - 169 mm (L.S.)

Caranx rhonchus is common in southern Angolan waters (Penrith, 1980), but has not previously been recorded from the southern African region. A short description of Bosluisbaai material is thus given below.

Description

Fairly deep-bodied fish, depth 3,5 - 3,6 in standard length, head slightly greater than depth, 3,2 - 3,3 in length. Eye 4,4 - 4,5 in head. Last dorsal and anal ray not completely separated from penultimate. Pectoral equal to head. Arrow-shaped patch of vomerine teeth. Well-developed palatine teeth. Gill-rakers on lower part of anterior gill arch 36 - 39. Lateral line armed scutes 22 - 24. Dark blotch on anterior portion of soft dorsal and dark spot on upper portion of operculum. In life has yellow sheen on sides of body.

Lichia amia (Linnaeus), 1758

SMP 1635 (2 juveniles)

Reasonably common in the open sea outside the breaker zone and very common in the mouth of the Kunene River. Two juvenile specimens seined in a large, 400 metre long, temporary beach pool (129 and 143 mm Lf). Twenty-two fish examined from the Kunene River mouth, and six from Bosluisbaai, size range 485 - 823 mm (Lf).

Sex ratio 1♂: 2,5 ♀ ♀. No ripe fish seen.

Of the 28 fish examined only four had food in the stomach. Food items were *Mugil cf. cephalus* (1 fish in Kunene), *Sardinops ocellata* (2 fish at Bosluisbaai), and unidentified fish remains (1 fish at Bosluisbaai).

Lichia amia has a wide distribution in the eastern Atlantic and reaches Natal on the east coast of South Africa (Smith, 1961).

Trachurus trachurus (Linnaeus), 1758

SMP 1596

Not common during visits to Bosluisbaai. The only material obtained consisted of juveniles from the stomach of a large *Argyrosoma hololepidotus* found stranded on the beach, and one badly digested example from the stomach of *Pomatomus saltator*.

A widespread species on the west coast of Africa, occurring also on the east coast of South America (Hureau & Tortonese, 1973).

SCIAENIDAE

Argyrosoma hololepidotus (Lacépède), 1802

SMP 1564, 1590

While always present, *Argyrosoma hololepidotus* was never found to be abundant, at least during the periods spent at Bosluisbaai.

Size range 518 - 1166 mm Lf. (14 fish caught).

All were immature except for the largest, a mature ♂.

Collected mainly by shore angling in the surf zone in Bosluisbaai and inshore of the sand banks outside the bay. A few were gill-netted outside the breaker zone,

and the largest was picked up after stranding on the beach while feeding. Only four of the fish examined contained food. Food consisted of *Caranx rhonchus, Trachurus trachurus, Mugil* sp., and unidentified bits of fish.

The distribution of *Argyrosoma hololepidotus* ranges from northern Natal to the region of the Congo where it is replaced by *A. regius*. Trewavas (1973) has remarked that *A. hololepidotus* may be only subspecifically distinct from *A. regius*.

CORACINIDAE

Coracinus capensis (Cuvier), 1829

SMP 1563, 1566, 1630

Not very common, collected only by angling in the vicinity of the outer edge of intertidal rocks. Catches markedly higher in winter. Juveniles taken by rotenone in intertidal pools.

Size range 72 - 392 (Lf).

Sex ratio 1 ♂ : 3 ♀ ♀ (adult fish only). None found to be ripe.

Stomach contents mainly red algae, with some containing the green alga *Ulva*, and small mussels, *Semimytilus algosus*.

Coracinus capensis is abundant in the southern portion of the Skeleton Coast Park (Penrith & Loutit, 1982), but its numbers appear to drop rapidly northwards. It has only once been recorded from Angola (de Franca & de Franca, 1968).

SPARIDAE

Diplodus sargus (Linnaeus), 1758

SMP 1565, 1604, 1634

Very common in the Bosluisbaai area. Occasionally gill-netted outside the breaker zone, but the majority collected by shore angling, usually close to rock outcrops. One juvenile from rock pool.

Size range 49 - 369 mm (Lf). 30 fish examined. The species appears to reach a larger size than further south on the coast. At Bosluisbaai 35% of the catch exceeded 325 mm (Lf), whereas at Sandvis, south of Walvis Bay, only 3% exceed this size.

Sex ratio 1 ♂ : 4,5 ♀ ♀. All stages of maturity were present during all visits. The species does not appear to have a fixed breeding time on the west coast.

The species is a voracious and omnivorous feeder at Bosluisbaai. All fish examined had distended stomachs. Food items as percentage of fish containing each item were: red algae (83%), *Semimytilus* (10%), *Balanus* (3%), *Patella* (3%), and jellyfish (7%).

Common on almost entire west coast of Africa and also east of Cape Agulhas.

Sarpa salpa (Linnaeus), 1758

SMP 1581, 1582, 1591

Not common; only five examples collected. All gill-netted in mid-water well off-shore.

Size range 176 - 345 mm (L.S.).

Previously (Penrith, 1978) I listed *Sarpa salpa* as being absent between Moçamedes and Saldanha Bay. This is now known to be incorrect. In addition to the Bosluisbaai catches, two records have been obtained from Terrace Bay (20° 03′ S.).

Lithognathus olivieri Penrith & Penrith, 1969

SAM 25326, SMP 1611

Only one example seen during the present survey. Gill-netted in surf zone but lost while removing from net.

The material listed under SAM 25326 consists of 6 examples of 25 collected about 4 km north of the Kunene River mouth. Taken by angling in the surf.

Some small juveniles 13,0 - 15,5 mm L.S. collected in sandy pools on the beach at the Kunene River mouth appear to be referable to this species.

SCOMBRIDAE

Auxis rochei (Risso), 1810

SMP 1576, 1577

Two examples only, collected March/April 1981. Both were taken in gill-nets set off-shore at green water/blue water boundary. Lengths 322 and 328 mm (Lf).

A circumtropical species widespread in the warmer waters of the eastern Atlantic, not previously recorded south of Moçamedes on the West African coast.

ELEOTRIDAE

Eleotris vittata Duméril, 1858

SMP 1640, 1641; SAM 25212, 25337, 25346.

A fairly common small fish in shallow pools and reed beds near the mouth of the Kunene River.

Size range 19,5 - 129 mm (L.S.).

Previously recorded from the Kunene River mouth by Penrith (1970). Ranges from about 14° 30′ N. to the Kunene River mouth.

Batanga lebretoni (Steindachner), 1870

SMP 439

Rare at the Kunene River mouth. Only known from one specimen (40 mm L.S.) previously recorded by Penrith (1970) from the Kunene River.

The distribution range is from approximately 16° 35′ N. to the Kunene River mouth.

GOBIIDAE

Awaous guineensis (Peters), 1876

SMP 1612, 1642; SAM 25213, 25341, 25342

Fairly common in shallow sandy pools at the mouth of the Kunene River.

Size range 15 - 67 mm L.S.

Previously recorded from the Kunene River mouth by Penrith (1970). *A. guineensis* is a tropical species known from about 08° 30'N. to the Kunene River.

Nematogobius ansorgii Boulenger, 1910

SMP 1507, SAM 25340

Fairly common in sandy pools and in reed beds at the mouth of the Kunene River.

Size range 35 - 64 mm L.S.

In the eastern Atlantic, *Nematogobius,* a genus containing only two species, is unique in possessing pairs of nasal and mental barbels. Specimens from the Kunene River mouth have well-developed barbels, the mental barbels being almost equal to the eye length, and a naked head.

Although it is listed here, it would be more accurate to class *Nematogobius ansorgii* as a true freshwater species, since it is apparently restricted to a fluviatile habitat, and not necessarily only in the region of the mouth. Fowler (1936) refers to *N. ansorgii* as a fluviatile species, and the type locality on the Bengo River is some 40 km up-river from the mouth. It is not listed by Poll (1967) in his tabular summary of the Angolan freshwater fishes, but does appear in the keys to marine fish of West Africa (Blache *et al.,* 1970). In the Kunene River it has only been found within three kilometres of the mouth.

The distribution is from the Kunene River northwards to Guinea Bissau (12° N.).

BLENNIIDAE

Pictiblennius cornutus (Linnaeus), 1758

SMP 1600, 1607

Only a small number were collected in rock pools north and south of Bosluisbaai. *P. cornutus* is normally found in the lower intertidal zone and the sublittoral fringe. The lack of rock pools at this level is believed to be the main reason for its scarcity; in addition, the species is here at about the extreme of its range.

Size range 41,0 – 59,5 mm L.S.

Previously the most northerly record of *P. cornutus* (a South African endemic) on the west coast was False Cape Frio, approximately 120 km south of Bosluisbaai (Penrith & Penrith, 1972).

Scartella cristata (Linnaeus), 1758

SMP 1567, 1601, 1606; SAM 25217

By far the most numerous blenny intertidally in the area. It inhabits the higher levels of the intertidal region. In the Bosluisbaai area suitable pools at this level of the intertidal region are present in quite large numbers, unlike the lower intertidal level. This factor is probably the main reason for *S. cristata* being the commonest blenny in the area.

Size range 14,1 - 75,0 mm L.S.

S. cristata has previously been recorded from the area (Penrith & Penrith, 1972). It is a widespread species occurring on both sides of the tropical Atlantic, in the Mediterranean, the western Indian ocean, and possibly the south Pacific.

Parablennius pilicornis (Cuvier), 1829

SMP 1605

Only a single example collected in a shallow rock pool. Like *Pictiblennius cornutus, P. pilicornis* normally inhabits the lowest levels of the intertidal region and the sublittoral.

Size 42,5 mm L.S.

P. pilicornis has previously been recorded (as *B. fascigula)* from Moçamedes to southern Europe and the Mediterranean, and from Rocky Point to the south and east (Penrith & Penrith, 1972). The synonymising of *P. fascigula* with *P. pilicornis* (Bath, 1973) extends the distribution of the species to the east coast of South America.

Lipophrys velifer (Norman), 1935

SAM 25371

No additional examples of this blenny have been obtained. The only record of the species from the Bosluisbaai area is the record of a 14 mm juvenile collected in 1968 (Penrith & Penrith, 1972).

It is a common blenny further north on the west coast of Africa, where it inhabits the higher levels of the intertidal zone. It appears to be extremely rare in the Bosluisbaai area, which is the southernmost limit of its range.

MUGILIDAE

Mugil cephalus Linnaeus, 1758

SMP 1610 (juveniles), SAM 25236

Extremely common in the mouth of the Kunene River, much less so in the sea. Juveniles collected in sandy flood-plain pools near the river mouth, and in a rocky pool about 6 km up-stream of the mouth.

A total of 21 fish examined, of which 18 were collected in the river mouth in one night.

Size range 363 - 473 mm (Lf). Juveniles ranged from 28 to 137 mm (Lf).

Sex ratio (adult fish) 1 ♂: 2,5 ♀ ♀. All fish with mature gonads, with exception of one ripe male.

Stomach contents not examined.

A circumtropical species (Briggs, 1960).

Mugil saliens hoefleri Steindachner, 1882

SMP 1593, 1632, 1633

Not common, but collected both in the sea (1 example) and in the mouth of the Kunene River (2 examples).

Size range 233 - 388 mm (L.S.).

A West African species not recorded south of Bosluisbaai.

Liza falcipinnus (Valenciennes *in* Cuvier & Valenciennes), 1836

SAM 25338

Not common, record based on three examples collected in a deep isolated pool in the Kunene River near the mouth.

A West African species, the Kunene River mouth being the southernmost record.

Liza aurata (Risso), 1810

SMP 1594, 1595, 1631

Taken in the sea only during March/April 1981, when it was fairly common. Also present, but rare, in the Kunene River mouth. *Liza aurata* is a species that jumps repeatedly, with the result that a few fish in a limited area can give a false impression of abundance. On arrival at Bosluisbaai in March 1981, I noticed that the bay appeared to contain hundreds of leaping fish. Actual catches over a period of five days were 28, 6, 2, 1, 0. Thereafter very few fish were seen jumping inside the bay. A total of 35 examples from Bosluisbaai examined.

Size range 282 - 466 mm (Lf).

Sex ratio 1,5 ♂ ♂:1 ♀. The only species of fish examined in the Bosluisbaai region where the males outnumbered the females. Male fish with very mature to ripe testes, females with mature but not ripe ovaries.

The species is provisionally identified as *Liza aurata*. It should be noted that specimens will also "key out" using Smith (1935, 1961) as *L. tricuspidens*, a species recorded, without comment, from Walvis Bay by Smith (1965). A short description of the Bosluisbaai material is therefore given.

Description

Body compressed and slender, dorsally grey-brown with 7 complete and 2 incomplete longitudinal stripes of the same colour on upper ⅔ of body. Pre-operculum with a bright gold patch, but no dark spot at pectoral angle.

Head 3,75 - 4 in standard length, depth 4 in length. Pectoral ¾ of head. Folded forward, pectoral reaches posterior margin of pupil.

Small axillary scale in pectoral angle. Teeth small, tricuspid. Adipose eyelid poorly developed, just extending over posterior margin of eye. Ventral margin of pre-orbital smooth (fig. 3). Fine, difficult to see scales on proximal half of second dorsal and anal fins.

Dorsal IV I + 8. Anal III 8-9. Lateral line scales 40 - 42.

The species is known from northern Europe to Sandvis, near Walvis Bay.

Liza richardsoni (Smith), 1846

SMP 1602

Fifteen juveniles collected in shallow, sandy-bottomed rock pool.

Size range 38,0 - 83,5 mm (L.S.).

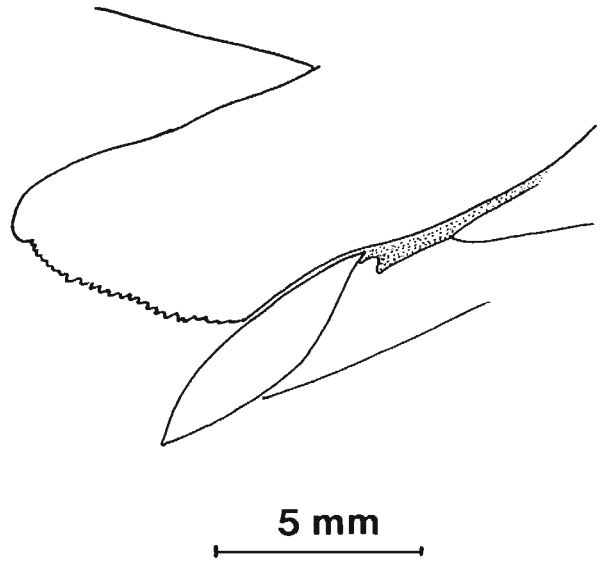


FIGURE 3: *Liza aurata* (SMP 1595). Ventral margin of pre-orbital.

No adults were collected, although gill-nets of a size suitable for this species, and highly successful further south, were regularly used.

A southern African endemic, present on the west and south coasts. It has apparently been recorded north to Moçamedes (as *Mugil ramada*) by Pellegrin (1912).

POLYNEMIDAE

Galeoides decadactylus (Bloch), 1795

SMP 1561

Apparently rare in the area. Only one example collected, by netting in surf zone (Penrith, 1980).

Widespread in West African waters, this is the southern known limit of the range.

BOTHIDAE

Citharichthys stampflii (Steindachner), 1874

SMP 1609, 1645

Small examples are not uncommon in both flood-plain pools and small beach lagoons near the mouth of the Kunene River. These pools and lagoons varied from freshwater to salinities close to normal sea-water.

Size range 16 - 110 mm L.S.

Has previously been recorded from the Kunene River mouth by Penrith (1970). The known range is Sierra Leone (08° 30′ N.) to the Kunene River.

4 DISCUSSION

As stated in the introduction, Bosluisbaai and the 14 km of coast north to the Kunene River mouth constitute not only the most northerly portion of the southern African marine region on the west coast, but in addition lie at or close to the southern boundary of the tropical/subtropical West African Faunal Province. From south to north

along the west coast there is a regular decrease in numbers of southern African endemics, whereas at the boundary of the West African Province there is a dramatic and sudden increase in the number of West African species. It was thus to be expected that the majority of species found at Bosluisbaai would be either fish with a wide distribution, or West African tropical species which had migrated south of the boundary. This was in fact the case, as is shown below.

a. Wide-ranging species, circumtropical or nearly so	6	
b. Species recorded from both sides of the Atlantic	3	23
c. East Atlantic tropical and temperate	9	
d. East Atlantic tropical	11	
e. Southern African endemics	8	

Of the 37 species of shallow-water fish collected at Bosluisbaai and vicinity, 62% are Atlantic species, of which roughly half (52%) are wide-ranging species, being found in tropical and temperate waters of both the northern and southern hemispheres. In all but one case (if *Liza aurata* is indeed separate from *L. tricuspidens),* the distribution of these fish extends well into the southern African region. They are in most cases absent or rare in the Namaqua Faunal Province, but reappear on the south and east coasts of South Africa east of Cape Point.

The remainder (48%) of the Atlantic species collected at Bosluisbaai are species confined to the tropical West African Province, and for all but one species Bosluisbaai, or the mouth of the Kunene River, is the southernmost limit recorded for the species. The one exception, *Sardinella maderensis,* has been found several times at Sandvis (Sandwich Harbour) (23° 20′ S., 14° 25′ E.) Of the 11 species of West African fish collected, five were estuarine species collected only at the Kunene River mouth, one was a marine species collected only in the river-mouth, and five were collected in the sea. Three of the five species collected in the sea were inshore pelagic species, one was limited to intertidal rock pools, and one was a species of sandy areas.

Of the eight southern African endemics collected, the Bosluisbaai records are the most northerly known records for four of the fish; the other four have previously been recorded from southern Angola (Penrith, 1978).

It must be emphasised that these notes and the discussion are based solely on the species collected in the Bosluisbaai area, and neither southern African endemics known to occur in the area but not collected (e.g. *Thyrsites atun* and *Engraulis capensis*), nor the West African species recorded from Walvis Bay by Smith (1965) are included. Smith gave the localities of his material as Walvis Bay, but it is not certain in all cases whether this was the actual locality or the port of unloading, and some of the material could have been collected much further north.

It is clear, however, even from the results of the relatively short periods spent collecting in the Bosluisbaai area, that a considerable number of West African fish species do, at least temporarily, enter the southern African marine region.

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Information on the genus *Sardinella* in the eastern Atlantic was kindly provided by Dr P.J. Whitehead (British Museum, Natural History).

Figure I is based on a tracing made from chart SAN 100. Publication is by permission of the Hydrographer: S.A. Navy.

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SHORT NOTE

A lectotype designation for *Sergentomyia (Sintonius) meilloni* (Sinton 1931) (Diptera: Psychodidae: Phlebotominae).

by

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Information obtained during my recent visit to the British Museum (Natural History), London (BMNH) reveals confusion regarding the type material of *Sergentomyia (Sintonius) meilloni* (Sinton 1931). A previous designation of the type material (Davidson 1979) was based on misleading data and requires revision.

In his original description, Sinton (1932) writes that he received four female and seven male specimens of this species from Letsitele, Tzaneen, South Africa. From the female material, he designated a type and three paratype specimens. As Sinton designated a type of each sex in the original description, all the above specimens have type status and are regarded as Syntypes until designated otherwise. The measurements of three additional male specimens were also taken into account in the description. These three specimens have no type status.

The material is deposited as follows:- The BMNH has two males, one of which is marked "Type" and one female marked "Co-type". The South African Institute for Medical Research (SAIMR) has one female marked "Co-type" and one male specimen. The remaining specimens in the type series are assumed to be in J.A. Sinton's collection, the whereabouts or even existence of which is unknown (R. Lane, personal communication, September 1980).

The correct type designation should be as follows: Lectotype ♂, (marked "Type"; in BMNH), South Africa, Letsitele, Tzaneen, (P243, de Meillon, 1.3.1932); Paralectotypes, 1 ♀ (marked "Co-type"; in SAIMR) and 1 ♀ (marked "Co-type"; in BMNH), data as for the Lectotype. The remaining unexamined type material as designated by Sinton must still be regarded as Syntype material until designated otherwise. It is surmised that Sinton marked the above material as "Type" and "Co-types" (written in red ink) after realising, or having had his attention drawn to the fact, that his original designation of the type material was a contravention of the "Règles internationales de la Nomenclature zoologique" (Paris, 1905).

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