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New Records and New Species of Fishes from South Africa, chiefly from Natal

(With Plates 6-11)

by

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To my wife, Margaret M. Smith I am indebted for the illustrations, two are reproduced from originals by Dr. Wright.

NEW RECORDS AND NEW SPECIES OF FISHES FROM SOUTH AFRICA, CHIEFLY FROM NATAL.

(With Plates 6-11)

by J. L. B. SMITH

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Southern Africa is unique in its oceanic situation and conditions. Virtually a southerly projection of the vast land mass in the northern hemisphere, Africa divides the Atlantic from the Indian Ocean sufficiently to keep the marine faunas largely separated. However its southern extremity does not reach such a high latitude as South America, and the currents that wash the southerly extremity cause fishes to converge on Southern African shores in unique fashion. In particular there seems to be constant accession of species from the rich fauna of the Indo-Pacific which makes the marine fauna of Natal one of the most interesting of any region.

The marine environment there lies between tropical and temperate, the sea is periodically too cold for corals, which in the open sea flourish only from some three hundred miles northwards, though there are small reefs within the shelter of Inhaca Island.

The powerful south-flowing warm Mozambique current not only causes the seas of Natal to attain, periodically at least, temperatures unusually high for such latitude, but also assists the penetration of Natal waters by the more hardy tropical fishes, so that the marine fauna of Natal has a very large tropical element. At the same time a number of more temperate species characteristic of cooler Cape seas spread northwards, so that the Natal fauna is most diverse, and is, broadly, composed of tropical and sub-tropical species unable to endure the cooler water further south, and the more temperate that do not favour the warmer seas further north. An interesting small element is composed of a few endemics very closely related to certain characteristic Cape fishes that are confined to the cooler seas of the Cape South Coast, several such pairs appear almost certainly to have developed simultaneously from a common ancestor, and while to some extent overlapping, remain largely separated territorially.

Especially since underwater exploration has developed along the shores of southern Africa, many amateur divers have become interested in seeking strange fishes and some of their discoveries have been remarkable, extending considerably our knowledge of the southerly range of many species and enriching the already remarkable South African fauna. Notable among a number of enthusiasts in and about Durban, Natal, is Dr. A. Wright, who has photographed and preserved many rare and interesting species, some of which are featured below. General interest in fishes constantly leads interested persons to preserve and send specimens caught or found on the shore, some have proved scientifically important and valuable.

Family Cirrhitidae.

Cyprinocirrhites polyactis (Bleeker, 1875)

(**Plate 6**, **A**, **B**).

Smith, 1951, Ann. Mag. nat. Hist. (12), **4**: 647, fig 3 (s. Madagascar).

This is one of the rarest as well as one of the most aberrant species in this family. First described from two specimens from the East Indies, it has been found at Timor, Japan, Australia, Philippines, and Madagascar, mostly only single specimens. The specimen described (**loc. cit**. above) from south Madagascar, 96mm standard length, taken in 60 fathoms, is the largest size known, equalled only by one from Vietnam (see below).

This species is now recorded from north Kenya and northern Mozambique. The most recent and surprising is a 90mm total length adult from Durban, the first from South African seas, none previously found so far south. These sources in the western Indian ocean have yielded a unique series of five specimens of fork lengths 38 and 40mm (Mozambique), 64mm (north Kenya), 77mm (Durban), and 113mm (Madagascar). These show that considerable changes take place with growth. In juveniles the body is more elongate, there are only four or five wide spaced triangular spiniform processes along the preopercle margin, there is a band of minute teeth on the vomer, none on the palatines, and the first dorsal ray is simple and normal. With growth the body deepens relatively, the number of preopercular serrae increases rapidly, and their shape changes, palatal teeth develop, while the first dorsal ray lengthens increasingly and becomes branched. The lateral line count is constant in the range 45-48.

Fowler (1943, U.S. Nat. Mus. Bull 100, **14** : 65, fig 11) described **C. stigma** based on a specimen quoted as "length 62mm" taken in 24 fathoms in the East Indies. This is stated to have depth 2.8 and L.l. 38. Randall (1963, Proc. U.S. Nat. Mus. **114** : 444) examined the type of **C. stigma** and considers it synonymous with **C. polyactis** Blkr. Fowler's illustration shows lengths; total 62, fork 53, standard 46 mm respectively. Randall (**loc. cit**) however from examination of the type quotes it as "a 42mm specimen", but that "the holotype of **C. *ui*** Tanaka (quoted as 110mm length) is about 50mm longer than the specimen of **C. stigma**". There are a number of apparent differences between the data given by Fowler (**loc. cit**) for **C. stigma** and the normal for **C. polyactis**, not satisfactorily accounted for by Randall. These are shown in bold type in the summary below. In view of the evidence here adduced it would appear that a re-examination of the type of **C. stigma** is desirable.

Data of **Cyprinocirrhites polyactis** and of **C. stigma**

A summary is given below. Data in bold type under **C. stigma** show divergence from **C. polyactis**.

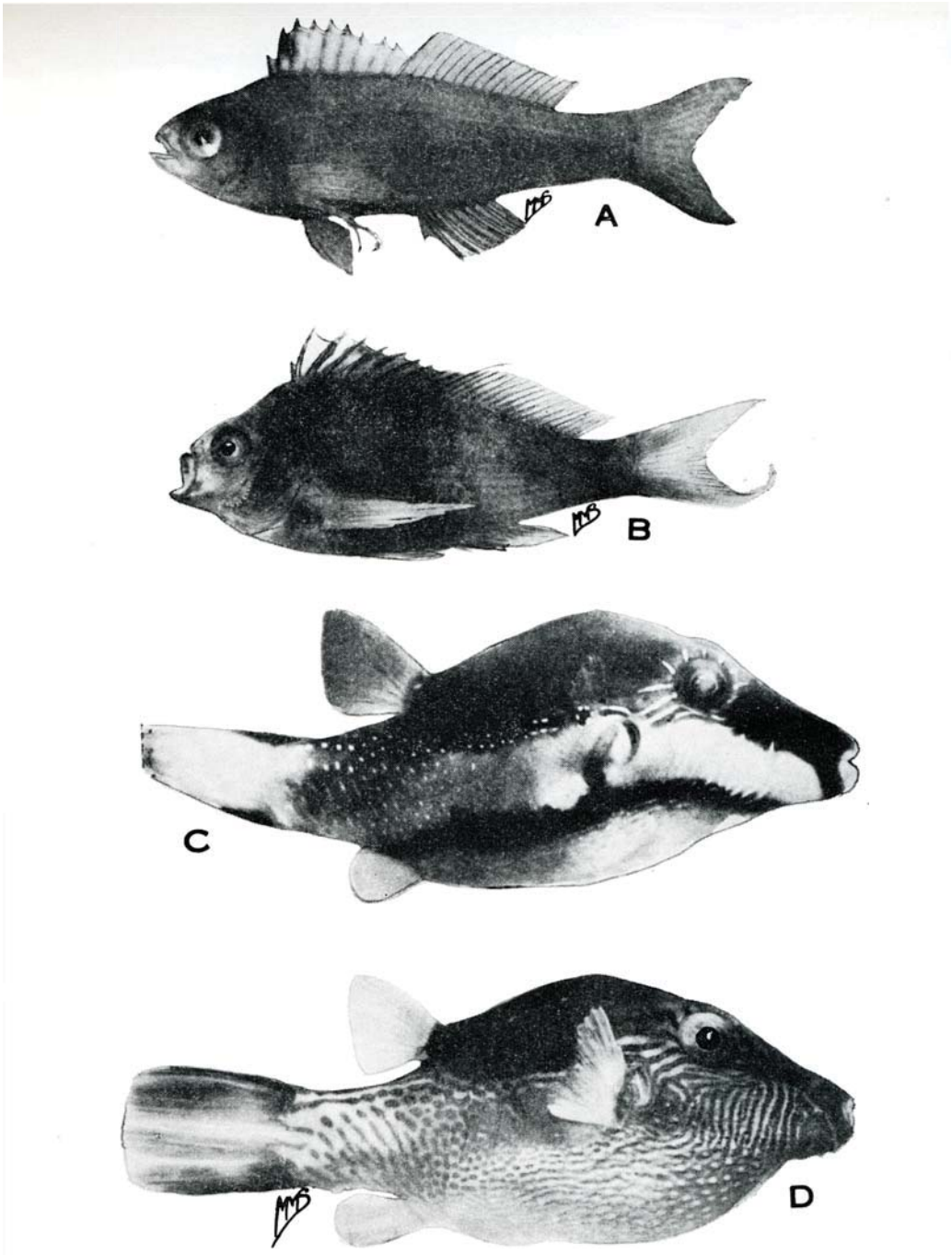

PLATE 6

A. B. **Cyprinocirrhites polyactis**, A. 50mm (Mozambique). B. 90mm (Durban).

C. D. **Canthigaster rostratus**, 70mm. C. Live (After photo by Dr. A. Wright). D. Preserved.

TABLE 1.

Standard length (SL) mm	Mozambique 35	Mozambique 37	Kenya 52	Durban 66	Madag 97	Fowler **C. stigma** E. Indies 46
Depth in S.L.	3.6	3.3	3.0	2.6	2.6	**2.8**
Head in S.L.	3.3	3.3	3.5	3.5	3.4	**2.8**
P in S.L.	2.7	2.8	2.8	2.7	2.6	2.8
Longest D. spine in S.L.	—	8	8	8	7.8	**5.0**
D X	16	16	17	17	17	16
A III	6	6	6	6	7	6
P	1,7,5	1,7,6	1,7,7	1,7,6	1,7,6	**1,8,5**
L. 1.	47	46	48	45	47	**38** (fig. 42)
Gillrakers	3+10	3+11	3+12	3+12	4+11	4+10
Preop. serrae	5	6	14	17	27	+15
1st dorsal ray	normal	normal	elong	elong	elong	**normal**
Maxilla length in head	3.3	3	3.2	3.5	3.2	3.5

The juveniles are brilliant orange-gold, but though a number of different workers have had specimens of this species, until recently there has, curiously, been no reliable account of the adult livery. Bleeker's colours (1876, Atl. Ich. **8** : Pl. 75, fig 1, Amboina) are clearly long postmortem. This has now been remedied by Fourmanoir in a recent interesting paper on the ichthyfauna of Nha-Trang (Viet-nam : 1965, Cahiers ORSTOM Oceanogr. No. Special. July : 62). Fourmanoir states a 136 mm specimen (the largest size recorded) to have been predominantly rosy, the back violaceus. The upper caudal lobe is bright orange, the lower less so. The pectorals are rose, spotted pale red. The anal and pelvics with ochre blotches, the filamentous dorsal ray is yellow.

While **C. polyactis** has from all previous accounts been shown as living in deep water, the juveniles, 38 and 40mm, from northern Mozambique, were taken by poison in a tide pool on a coral reef. For that reason they were suspected as possibly different, but all their data accords with their being juveniles of **C. polyactis**. It is possible that reproduction occurs in relatively shallow water.

This species resembles the normal small reef-haunting Anthiid fishes, and is likely to have similar or comparable habits.

Amblycirrhitus bimacula (Jenkins, 1903)

Cirrhitoidea bimacula, Smith, 1961, Sea Fishes. S.A. 4th Ed : 565, Pl 110, fig 393a (s. Mozambique). Smith and Smith, 1963, Fishes Seychelles: 13, Pl 96, G (Life colour).

The original specimen from Hawaii long remained almost unique and was regarded as a rare species, as it plainly is in the Pacific region. By contrast, it is now recorded as almost equalling in abundance along East Africa and in adjoining seas, the widespread **Cirrhitichthys oxycephalus** (Bleeker).

We have numerous specimens to 90mm length from many localities from Durban northwards to north Kenya, and at most islands from the Aldabras to Seychelles. As has previously been observed with other tropical fishes this appears to grow to a greater size in more southerly waters, the largest specimen we have is 90mm length from Bazaruto (21°S). Unlike other Cirrhitid fishes constantly found in the same area, this species apparently spends all its time in hiding in the coral or among rocks. During extensive underwater observations about reefs where we got this species by poison or explosives, not a single one was ever seen alive. It was not found to be abundant in any locality, it was rare to secure more than one or two at a time.

This species has been reported as lacking palatine teeth. Randall (1963, Proc. U.S. Nat. Mus. **114**: 427) contradicts this stating that palatine teeth are present. In specimens from the western Indian Ocean most of the length of the palatine is edentate but there is a small cluster of 3-5 minute teeth on the head of that bone.

Family Chaetodontidae

Forcipiger longirostris (Broussonet, 1782)

This unmistakable species, widespread in the tropical Indo-Pacific, has previously been known as far south as Inhaca (26°S) in southern Mozambique. A specimen has recently been found by Mr. A. R. Thorpe in Durban Bay.

Chaetodon guttatissimus Bennett, 1832

This rather rare fish is known only from the Indian Ocean and only few specimens have been found along East Africa, one or two about Inhaca. The species has however now been found to reach as far south as Durban.

Family Acanthuridae

Zebrasoma gemmatum (C & V, 1829)
(Plate 9, D)

Previously known from only few specimens, all from Mauritius, this rare species has now been found at Durban. A full account with description is being published elsewhere.

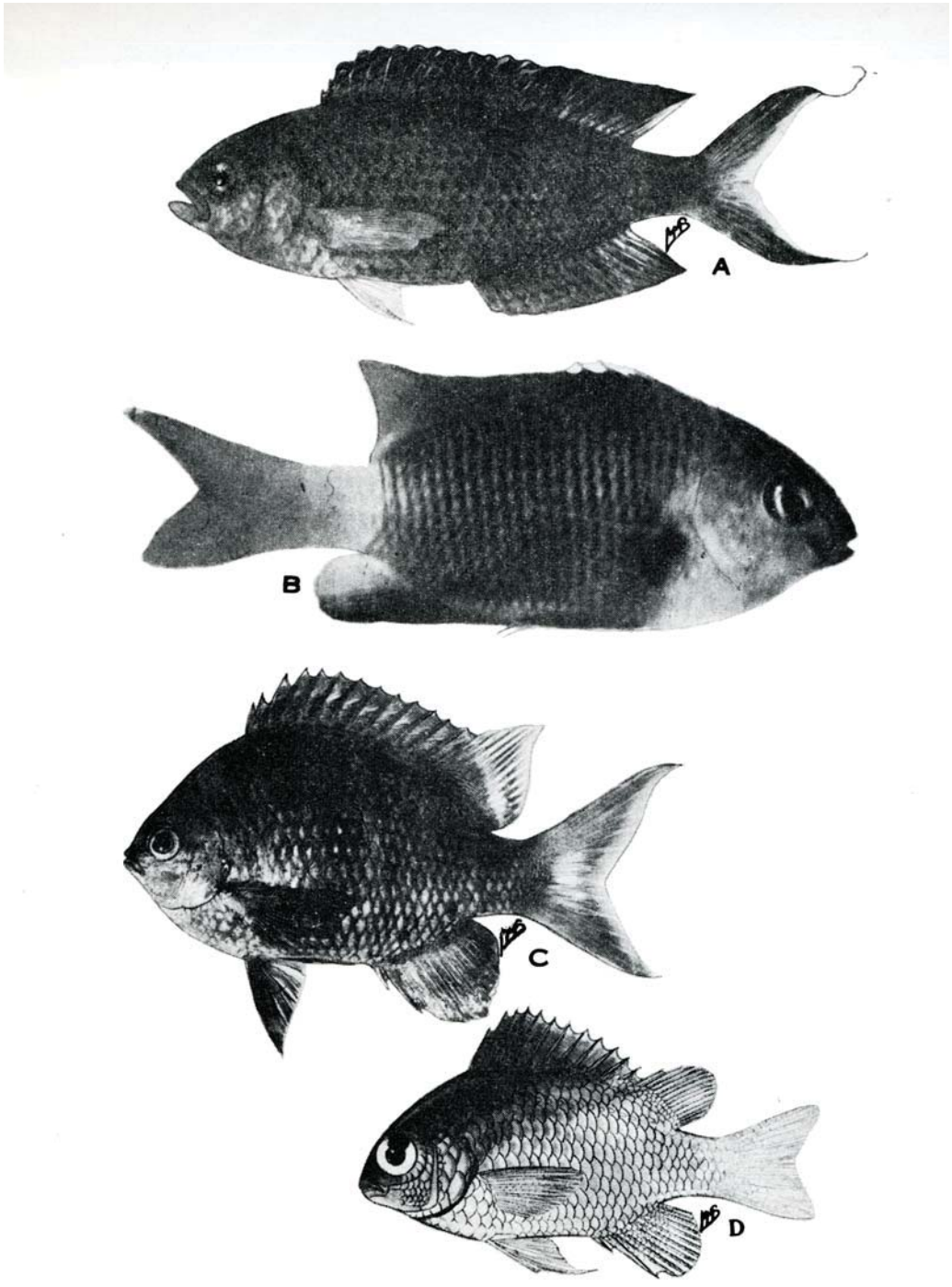

PLATE 7

A. **Lepidozygus anthioides,** 100mm. B. **Pomacentrus craticulus**, sp. nov. Type 48mm. C. **Abudefduf notatus**, 155mm. . D. **Abudefduf imparipennis**, 53mm.

Family Pomacentridae

Pomacentrus craticulus sp. nov.

(Plate 7, B).

D XIII 17. A II 13. P 1, 15,2 = 18. L. lines 18 — 21 + 9 — 10. L. Series 29. Tr 3/10, three series across the cheek, one on flange at angle. Gillrakers (3)2+1+12, total 18, three upper rudiments. Body oval. Depth 2.4, head 3.5 in standard length. Eye 2.9 in head, equals interorbital, slightly exceeds snout, 1.2 in postorbital part of head. About 15 fine serrae on hind preopercle margin, the angle rounded, entire. Gillrakers slender, rather short, less than filaments. The dorsal origin is distinctly behind the pectoral axil, the spines increase in length to the last, the soft fin is abruptly higher. The second anal spine is long and stout, the soft rays abruptly higher, the fin forms a rounded lobe. The pectoral reaches almost above the anus, it is as long as the head, the pelvics are subequal to the pectoral and reach beyond the anal origin. The caudal is emarginate. The scales are strongly ctenoid, predorsal they extend forward completely covering the interorbital to just beyond the nostrils, not to the tip of the snout. The sub-orbital is completely scaly with one series of scales, the preorbital is naked. The vertical fins are densely scaly, the pectorals basally scaly. The mouth is small, the maxilla partly concealed, extends to below the front of the orbit. Rather slender recurved incisiform teeth in a single series in each jaw, the rounded apices are slightly recurved.

Colour in life basally orange-brown, the head more or less uniform, with violet sheens about the eye and on the cheek, the iris reddish golden, with a vertical dark bar through the pupil and another over down half of the hind margin. Across the body from the shoulder to the hind margin of the dorsal base there are about 25 narrow parallel dark lines following the scale rows and running slightly obliquely down and forwards, they are slightly narrower than the inter-spaces, the hindmost few are fainter. The whole peduncle and the caudal are contrasted from the rest of the fish in brilliant golden yellow, the ventral surface of the body is margined in black from below the pectoral base to the end of the front of the anal fin, margined above on the lower part of the belly with violet. The front of the spinous dorsal is narrowly golden yellow, the membrane of most of the anterior third of the fin is black, with two small golden yellow patches above, the hinder two-thirds of the spinous fin is purplish grey, the soft fin is the same colour in front, somewhat lighter behind. The anal is dusky basally in front and along the front margin, the hindpart of the body of the fin is light hyaline. The pectoral is transparent hyaline, the base largely black, continuous with a black spot in the axil above. The pelvics are black with violet shades basally. As preserved, the fish is a light grey with narrow oblique stripes and the distinctly lighter peduncle and caudal. The pelvics and the outer margin of the anal as depressed are black.

Described from the type, 48mm total length, in this Department, captured by Dr. A. Wright underwater near rocks in 2-3 fathoms off Durban in May, 1964.

P.craticulus differs from all others known in the Western Indian Ocean in combination of meristic data and colouration. In data it is closest to **P. jenkinsi** Jordan & Evermann, 1902 known only from Hawaii and the Bikini area, apparently common there. By kindness of Drs. Gosline and L.P. Schultz I have been able to compare the type with specimens of **P. jenkinsi** ranging from 42-85mm total length, from Hawaii and Bikini, all dark brown to black. While agreeing closely in data of fins etc. with these Pacific fishes this Natal specimen differs in its distinctly less deep body, in a slightly more posterior insertion of the dorsal fin, and in the light yellow peduncle and caudal contrasted with the somewhat darker body. Dr. Gosline has examined a colour transparency of the type and has informed me that he can scarcely credit that this fish so colourful at 48mm length could possibly be identical with **P. jenkinsi**, for while the young of that species are more colourful than the sombre adults, metamorphosis in that respect is completed well before 50mm length. I have one specimen 42mm length from Bikini. This has body depth 1.9, the body and fins are dusky, almost black, and while the caudal is light dusky the peduncle is as dark as the body. The difference in colour or the lesser depth of the body each alone would have justified subspecific distinction for the African species, but in combination these are accepted as conferring specific rank. Further material from South Africa may possibly necessitate reversion to subspecific rank for this form.

This discovery is of special interest in once again stressing the close relationship between the marine fish fauna of east Africa and that of Hawaii. These two forms are most closely related, it may be assumed that quite recent speciation from remote isolation has given rise to the two forms.

Abudefduf notatus (Day, 1869)

(Plate 7, C)

Smith, 1960, **loc. cit.**: 332, Pl 30, E.

Previously recorded from southern Mozambique northwards, a specimen has been obtained at Durban by Dr. A. Wright.

Abudefduf imparipennis (Vaillant and Sauvage, 1875)

(Plate 7, D)

Smith, 1960, **loc. cit.**: 338, Pl 31, D (Life colours).

This rather rare and previously poorly known Pacific species was only in 1960 (above) recorded from the Indian Ocean, actually from northern Mozambique (14°S) to Seychelles. We have recently collected a specimen of this species on the Bizana coast (31°S), a remarkable find in that latitude, new to the South African fauna.

Lepidozygus anthioides, Smith, 1955

(Plate 7, A)

Smith, 1955, Ann. Mag. nat. Hist, (12), **8**: 888, Pl 20 (tropical W. Ind. Ocean): and, 1960, R.U. Ich. Bull 19: 321, Pl 31, K (life colours).

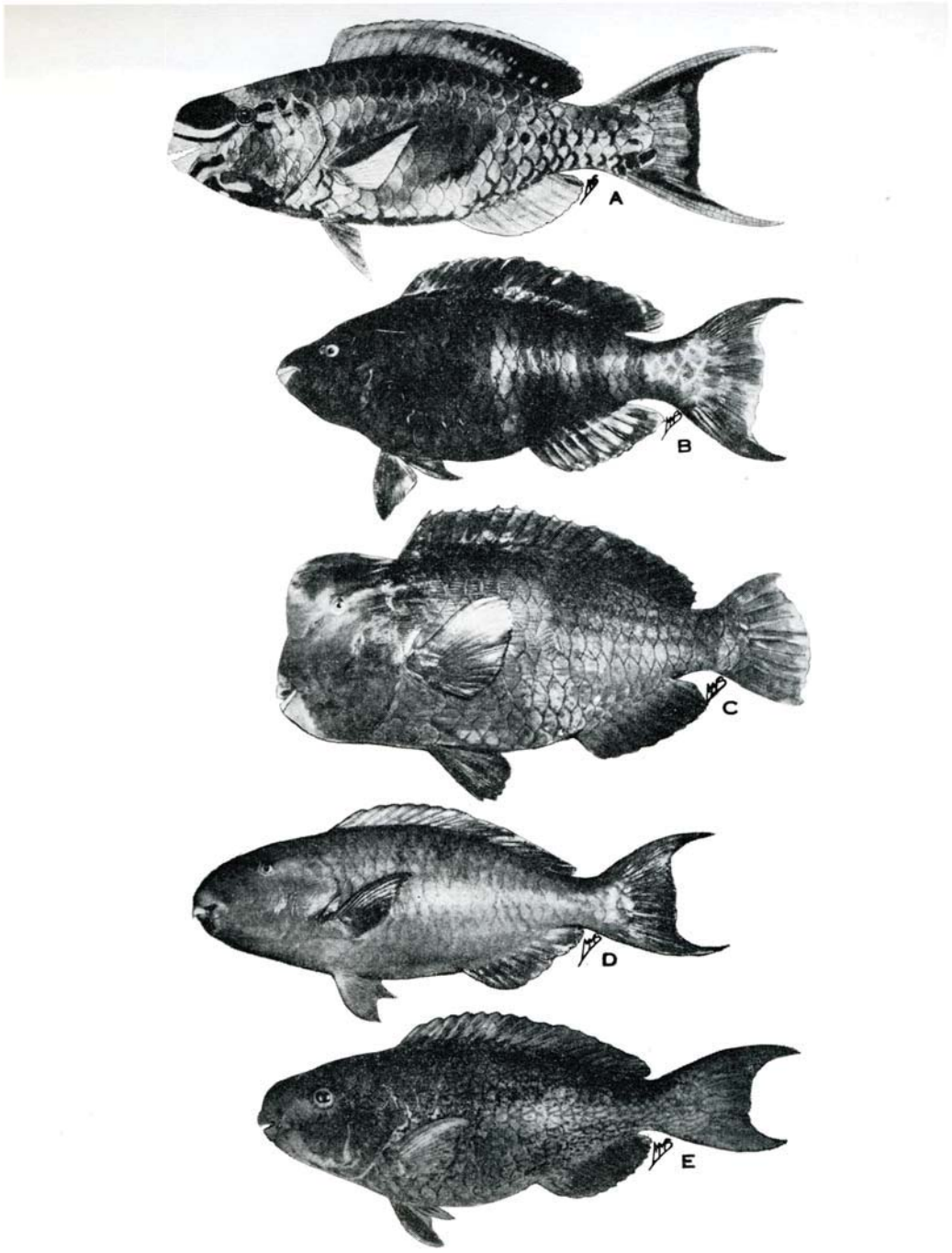

PLATE 8

A. **Callyodon africanus**, 30 ins. B. **Callyodon rubrofasciatus**, 18 ins. C. **Bolbometopon muricatus**, 44 ins. D. **Callyodon apridentatus**, 32 ins. E. **Callyodon rubroviolaceus**, 18 ins.

This characteristic small rather rare deepwater reef-haunting species was known to reach as far as 21°S in East Africa. Dr. A. Wright has now caught a specimen at Durban, remarkably far south for a species so typically tropical.

Family Callyodontidae

Bolbometopon muricatus (C & V, 1839)

(Plate 8, C)

Callyodon muricatus, Smith, 1953, Ann. Mag. nat. Hist. (12), **6** : 620, Pls 15-16 (Kenya).

Bolbometopon muricatus, Smith, 1956, R.U. Ich. Bull. **1**: 8, Pls 42, 45 (W. Ind. Ocean): and, 1959, **ibid**, **16**: 269, 278, Pls 42, 45 (W. Ind. Oc.). **Chlorurus gibbus** (**non** Ruppell, 1828), Schultz, 1958, U.S. Nat.Mus.Bull. **214**: 26, Pl 7 (Indo-Pacific).

This peculiar species has been shown to occur in the Red Sea, along much of East Africa to 20°S and over a great part of the tropical Indo-West Pacific ocean. Growing to close on 5 ft length and a weight of over 150 lbs, it is an unmistakable fish. In recent times an adult was clearly seen by Mr. C. S. Smith while diving at Inhaca Island, Delagoa Bay (26°S). This is the furthest south as yet recorded, but it may well be found to wander as far south as Durban.

Callyodon rubrofasciatus Smith, 1956.

(Plate 8, B)

Smith, 1956, **loc. cit.**: 10; and, 1959 : 279, Pl 43, I. (Life colours).

This striking red and black species, hitherto known only from the type (Kenya) has been identified by an expert underwater diver off Durban.

Callyodon africanus Smith, 1956

(Plate 8, A)

Smith, 1956, **loc. cit.**: 15 : and, 1959, **loc. cit.**: 280, Pl 42. A. (Life colours).

Previously found over the range Bazaruto to Seychelles, this unmistakable colourful large species has several times been clearly seen near Durban.

Callyodon (Scarops) rubroviolaceus (Bleeker, 1849)

(Plate 8, E)

Smith, 1956, **loc. cit.**: 11, Pl 43 (Life colours).

This widespread unmistakable species has now been found to be quite common about reefs in deepish water as far as 20°S in Mozambique, and has also been observed off Durban.

Callyodon apridentatus Smith, 1956

(Plate 8, D)

Smith, 1956, **loc. cit.**: 14, Pl 44, F (Life colours).

This rare species has been known only from Kenya. One has since been taken at Bazaruto (21°S), another at Inhaca (26°S), and divers have reported sighting this unmistakable fish underwater off Durban. No small specimens have ever been found. Unfortunately the few specimens that have hitherto been available for examination had all been cleaned, so that determination of sex was not possible. It is not unlikely that this is one of an hitherto unknown sexually dimorphic pair.

Family Blenniidae.

Omobranchus woodi (Gilchrist and Thompson, 1908)

(Plate 9, A-C)

Aspidontus woodi Gilchrist and Thompson, 1908, Ann. S.A. Mus. **6** : 105.

Petroscirtes woodi Barnard, 1927, Ann. S.A. Mus. **21** : 839.

In the absence of specimens, this rather rare species was wrongly synonymised (Smith 1949: 345) with **Omobranchus striatus** (Jatzow and Lenz), a similarly marked Mozambique species.

The type of **O. woodi** (G & T), came from East London. Regan (1917, Ann. Durb. Mus. **1** : 459) recorded the species from Durban, and I have recently seen a specimen collected by Professor B. Allanson in Tongaland (27°S).

O. banditus is not only a smaller species than **O. woodi** but differs in having a lower occipital crest, fewer teeth, and lacks the marked lower labial flap that characterises **O. woodi**. The latter has recently been found in certain stony localities in the Knysna Lagoon, and we have a specimen from the Kariega River, eastern Cape.

Numerous specimens, 40-95mm total length, from Knysna, collected in March and in October, have only spent or undeveloped gonads. Those with high occipital crests are assumed to be males.

All have constantly twelve spiniform rays in the dorsal, which has D X11,19-21. In 20 specimens 6x19; 13x20: 1x21. A 21-23 i.e. 13x21: 6x22: 1x23.

By kindness of Mr. M. J. Penrith I have been able to examine the 95mm type of **O. woodi** from East London. The Knysna and Kariega specimens show no differences of any significance. This curious tropical relic in temperate southerly waters is best known from the area between Knysna and East London. From the Transkei northwards **O. banditus** predominates.

No illustration of **O. woodi** has previously been published. Gilchrist and Thompson (1908, **loc. cit.** 105) state "no spots", but in life most we have seen have small bluish dots over much of the body.

Aspidontus tractus Fowler, 1903

Smith, 1959, R.U. Ich. Bull. **14** : 235, Pl 17, fig 14.

Previously known to reach as far south as Inhaca, this tropical Blenny has been found by skin divers to be not uncommon as far south as Durban. They have observed that this fish has a marked fondness for empty bottles, and report that every bottle they saw on the bottom of Durban harbour had one of these fishes inside. A specimen in a home aquarium immediately dived into an empty bottle that was put in it.

Family Scorpaenidae

Paronescodes asperrimus, Smith, 1958.

(Plate 11, D)

Smith, 1958, R.U. Ich. Bull. **12**: 177.

Reported from over most of the tropical western Indian Ocean north of Bazaruto (21°S) a specimen of this species has been found by Dr. A. Wright at Durban.

Family Balistidae

Canthidermis maculatus (Bloch, 1786)

(Plate 10)

Balistes maculatus Bloch, 1786, Naturg. Aus. Fish. **2** : 25, Pl 157 (Cuba). Day, 1878, Fish Ind. : 687, Pl 175, fig 3 (India). **Canthidermis maculatus**, Fowler, 1928, Mem. B.P. Bish, Mus. **10** : 448, Pl 44, fig A (Hawaii). Smith, 1949, Sea Fishes S.A. : 409 (S. Africa). Tomiyama & Abe, 1958, Enc. Zool. 111. Col. **2** : 25, fig 67 (Japan). **Canthidermis rotundatus**, Tanaka, 1911, Fig. Descr. Fish Japan, **2** : 20, Pl 6, fig 20 (Japan). Meek and Hildebrand, 1928, Field Mus. nat. Hist. 249, Zool. **15** : 794 (Panama. W. Indies). Fowler, 1944, Ac. nat. Sci Phil. Mon. 6 : 298, fig 260 (Panama).
Balistes rotundatus, de Beaufort, 1962, Fish. Ind. Aus. Archip. **11** : 309 (Indo-Pacific).

Other probable synonyms are: **oculatus** Gray, 1832 (India): **senticosus** Bleeker, 1853 (E. Indies); **angulosus** Jordan & Everman, 1905 (Sandwich Is.).

There has been considerable controversy about the Balistid fish described here, first in debate about its valid name. Also as to whether the species found in the Atlantic ocean is conspecific with or different from that of the Indo-Pacific.

After close study of numerous descriptions and illustrations of specimens from all the oceans, with the aid of a graduated series of specimens from southerly shores of South Africa it seems likely that there is only one cosmopolitan species. Whether there be one or two it is clear that in both the Atlantic and in the Indo-Pacific the species is a wide traveller. It is one of the few to cross the eastern Pacific oceanic barrier.

Balistid fishes are mostly tropical in habitat. Adults of three species however, occur in the cooler seas along the Cape south coast, these are **Balistes vetula** Linn, **Xanthichthys ringens** Linn, and the species now under review. The two former are accepted as present in both the Atlantic and the Indian oceans. The continued presence of **C. maculatus** in the same temperate intermediate South African zone is highly significant in relation to the problem of the identity or otherwise of the fishes of the two major oceans. It at least suggests that as the other two species are known to inhabit both the Atlantic and the Indian Oceans, it is likely that **C. maculatus** may do the same.

Some of the uncertainty centred round the identity of widely used names such as **C. maculatus** and **C. rotundatus** hinges largely on characters such as shape of body and fins and of markings. While some Balistid fishes are reasonably constant in such characters throughout their life, others show developmental, sometimes considerable changes. A fortunate series of graduated specimens of the species now under review, all from Cape seas, provides useful information. As will be seen in Plate 10, there is considerable change in the shape of the body and of the vertical fins with growth. Further, while white to light blue spots are apparently present in all stadia, and prominent in life, there is a variable degree of fading after death, and even more on preservation, so that some preserved specimens are almost uniform dark.

Five South African Cape south coast (32-34°S) specimens available have the following data:

TABLE 2.

Locality, °E.	Pt. Alfred 27	Pt. St Johns 29	E. London 28	Cape G.H. 18	Knysna 23
Total length mm.	63	80	85	232	350
Body depth in standard length	1.7	1.8	1.8	2.3	2.8
Head in std. length	2.6	2.8	2.9	3.2	3.7
Dorsal rays	24	24	24	24	24
Anal rays	22	21	21	21	21
Longest dorsal ray in head	2.2	2.0	1.9	1.7	1.2

The spinules on the first dorsal spine diminish with age. It would appear that in early mid stages the dorsal and anal lobes are subequal in height, the anal possibly slightly the longer, but in the adult, the dorsal lobe is longer.

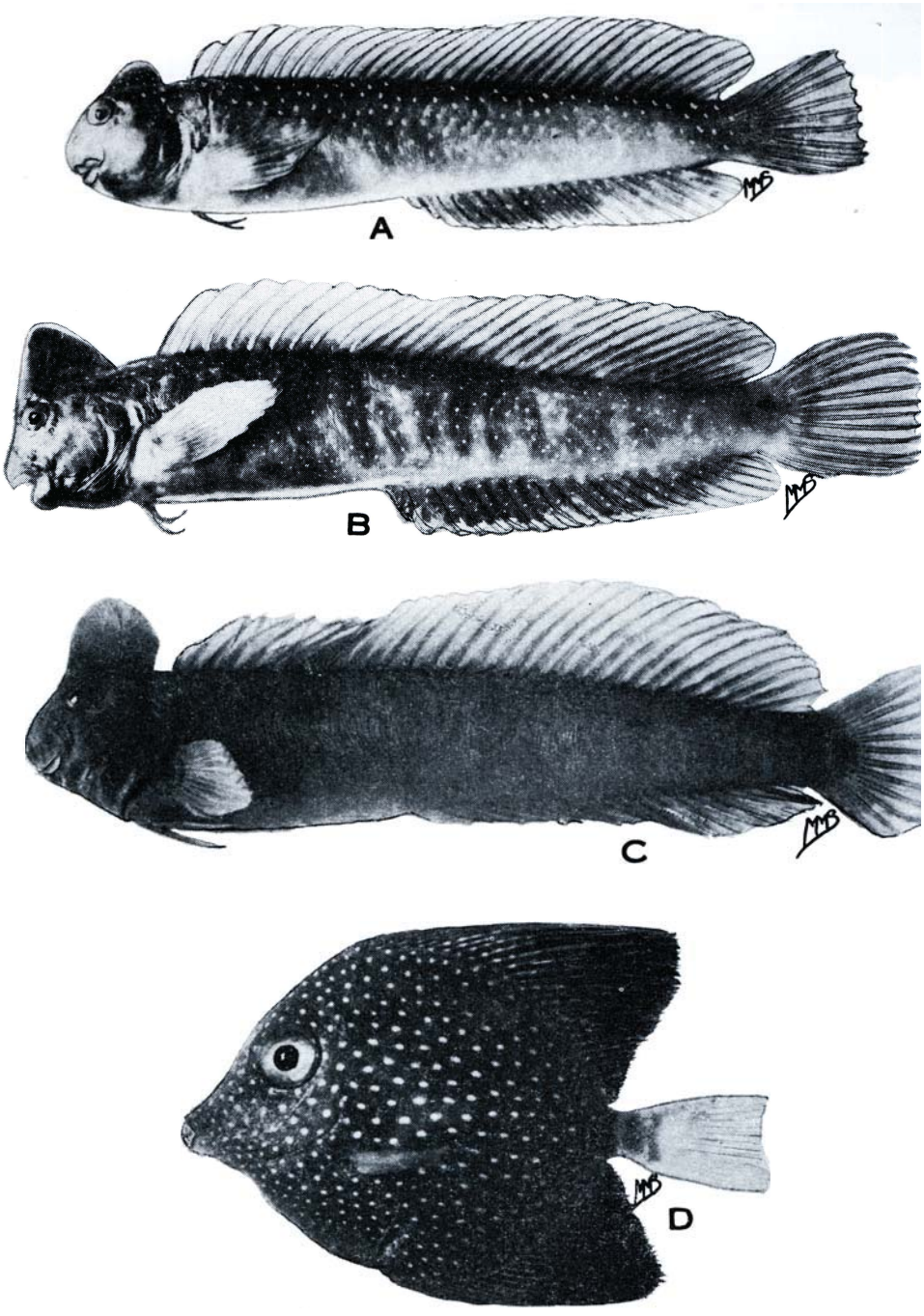

PLATE 9

A. B. C. **Omobranchus woodi**. A. Female, 80mm. B. 88mm. C. Male, 90mm. (All Knysna). C. **Zebrasoma gemmatum**, 45mm, Durban.

Family Canthigasteridae

Canthigaster Swainson, 1839

Some 45 species in this genus have been defined, almost solely on colour and markings. Despite this multiplicity of liveries it is not unusual for systematists to find difficulty in positive identification of especially preserved specimens, and one cannot but conclude that it is partly this which has led to such an apparent diversity of names, certainly not justifiable on other than markings. While some forms common in the western Indian Ocean have apparently standard patterns, others diverge.

It has been left to le Danois (1961, Mem. Mus. nat. Hist. Paris, 19: 317) to take the bold step of accepting only four species, each with a multiplicity of liveries and synonyms. These four are: **C. rostratus** (Bloch, 1787): **C. electricus** (Paterson, 1786): **C. striolatus** (Q & G, 1824) and **C. gronovii** (C & V, 1829). This differentiation is still based on basic patterns of markings. In reviving these names le Danois by ignoring the contentious Statute of Limitation, has avoided the complexities that would create.

From descriptions of species correlated with our considerable collection of these fishes from the western Indian Ocean, the four species of le Danois are clearly divisible as follows:

A.	Body rather stout, snout moderately blunt. D 11-12, A 10-11	**electricus**
B.	Body less robust, snout rather pointed. D 9-10, A 8-9	**rostratus** **striolatus** **gronovii**

A 70mm specimen from Durban, recently received from Dr. A. Wright, is of special interest. The fish as preserved (Pl 6, D) does not clearly fall in any one of even le Danois' broad categories. Nearest in markings to **C. rivulatus** T & S, 1850, it is not unlike **C. margaritatus** Ruppell, 1828 (**C. striolatus** Q & G), there is indeed a vague dark blotch below the dorsal base in the position of the ocellus which normally occurs in **C. striolatus**. The markings on the live fish however (Pl 6, C) certainly place it with **C. rostratus** (Bloch), (=**caudofasciatus** Gunther).

C. rostratus is virtually circumtropical. **C. striolatus** and **C. gronovii** have much the same widespread distribution in the tropical and subtemperate Indo-Pacific. These three forms differ only in pattern of markings, and had their distribution all been similar it might have been suspected that they are but variants of one polychromatic species. However while **C. rostratus** occurs in the Atlantic, **C. striolatus** and **C. gronovii** do not, so that their specific identity is unlikely.

It may indeed be argued that **C. gronovii** (C & V, 1829) (of which common synonyms are: **cinctus** Richardson, 1848, and **valentini** Bleeker, 1853) with its well defined dark cross bars, could never be

other than distinct from the others. But a comparable case occurs in the Indo-Pacific genus **Plectropomus** Oken, 1817, in which an equally boldly barred form is generally accepted as a colour variant of a single variably marked species that can be equally strikingly spotted or mottled, with no vestige of cross bars.

While favouring the view of le Danois as to restriction of species it is apparent that the problem of specific limits in **Canthigaster** needs further investigation other than from preserved specimens only. It will probably be settled only by extensive studies of numbers in relatively large diversely furnished aquaria where they can live and breed. The East Indies would be an ideal centre for this study. It might even be found that a form typical of one area, e.g. the Red Sea or East Africa, might, if transported to another, e.g. the East Indies, and kept there, eventually assume a different livery. It may however be noted that Breder (1949, Bull. Amer. Mus. nat. Hist. **94** : 94) has recorded that **C. rostratus** (Bloch), in an aquarium at Bimini, (where it was caught) "showed very little tendency to change colour or pattern", but does not record the period covered by the observations.

Family Ogcocephalidae

Halieutea C & V, 1837

This genus appears to be confined to the Indian Ocean and Pacific Ocean, usually in deepish water. Not many species are known, two have been described from South Africa, but **H. liogaster** Regan, 1921 was erected without adequate justification and cannot be maintained as distinct from **H. fitzsimonsi** (G & T, 1916).

Two other species from off Natal clearly differ from **H. fitsimonsi** and from all others yet described, and are described below as new. The three species differ as follows:

A. Disc above with relatively large stout spines with stellate bases, lower surface smooth or with only few spinules.

   I. Rostrum not projecting over front of disc, tentacle visible from above. Two large areas each side of head above bare of spines, lower surface entirely smooth — **fitzsimonsi**

   II. Rostrum projecting over front of disc, tentacle not visible from above. Whole disc above densely beset with spines, a few spinules about pelvic bases. Gill-rakers 3+5 ..... — **spicata** nov

B. Disc densely and completely covered, above and below, with minute hairlike cilia each on a three rooted base ..... — **hirsuta** nov

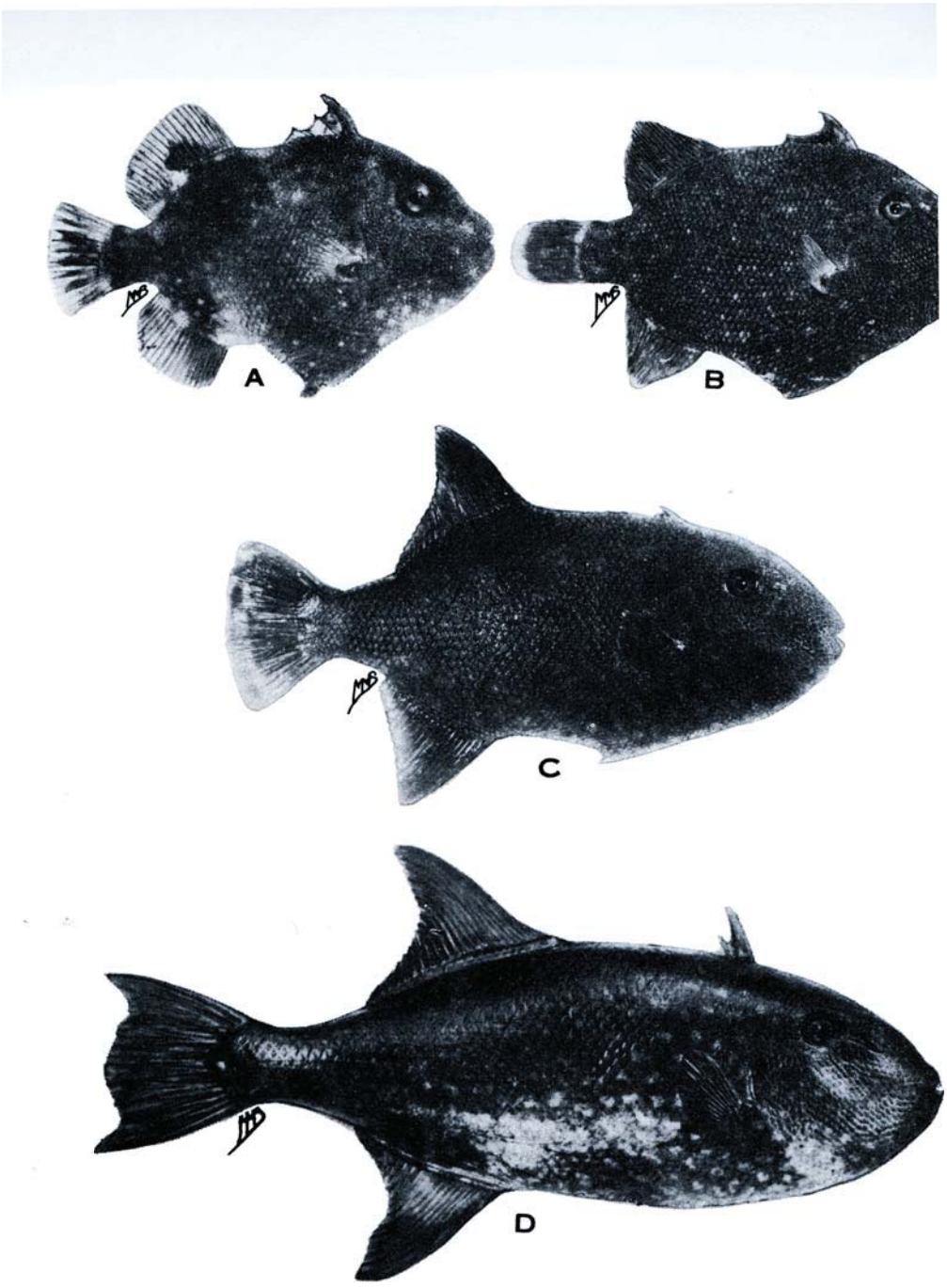

PLATE 10

Canthidermis maculatus. A. 63mm (Port Alfred). B. 80mm (Port St. Johns). C. 232mm (C.G.Hope). D. 350mm (Knysna).

Halieutea fitzsimonsi (Gilchrist & Thompson, 1916)

(Plate 11, C)

H. fitzsimonsi, Smith, 1949, Sea Fishes S.Afr: 427, Pl 97, fig 1226 (S. Cape Coasts).

H. liogaster Regan 1921, Ann.Mag.nat.Hist. (9), **7** : 419.

Once regarded as very rare, fair numbers of this species have been taken in the trawl and by dredgers, mostly between Plettenberg Bay and East London and in harbours. A number ranging from 50mm to over 300mm standard length from this area are in our collection. These show that the relative width of the disc varies considerably.

During an onset of cold water along the southeast Cape coast in 1955 several specimens 50-80mm standard length were thrown ashore. During the same period two interesting small virtually spherical globular specimens were found thrown ashore, one, 22mm standard length (Pl 11, C) from near Port Alfred, and one 12mm standard length on the Transkei coast. These have a disc-like body enclosed in liquid within a transparent bladder of skin, and exactly resemble **Halieutella** Goode and Bean, 1822 the type the globular **H. lappa** G & B, 1882 from deep water of the Atlantic. Examination however has revealed that these two globular South African specimens are clearly the hitherto unknown early juveniles of **Halieutea fitzsimonsi**, showing all the characters of that species, including the rostral cavity and the tentacle, though barely developed in the smaller fish.

This indicates **Halieutella lappa** G & B as probably the juvenile stage of some known form, its characters indicate almost certainly the Atlantic **Halieutichthys aculeatus** Mitchill, 1818 and **Halieutella** thus falls into the synonymy of **Halieutichthys** Poey, 1863.

Halieutea spicata sp. nov.

(Plate 11, A)

D 4. A 4. P 12. Gillrakers 3+5. Width of disc 1.4 in the standard length, 1.8 in the total length. Length of head to gillopening 1.2 in its width, 1.7 in the standard length. Eye diameter equals the interorbital, 6 in length of head to gillopening. The whole upper surface of the disc is beset with short stout spines with trifid roots. Most of the lower surface is smooth, but there is a patch of minute spinules about each pelvic base. The margin of the disc bears spiny processes each with a pedestal and mostly three apical divergent spines, a few with four. The rostrum projects over the front of the disc. The tentacle, which is hidden from above, has a continuous anterior cutaneous fringe, and is not distinctly lobed. There is a sharp ridge over each eye continuous round the front of the interorbital. The mouth cleft extends to below the hind edge of the pupil. There is a narrow band of fine teeth in each jaw and a broad patch of close set strong sharp teeth on each side of the front of the broad tongue, closely adjacent. There are no teeth on the vomer or palatines, but there is an oval patch each side on the upper pharyngeals. Gills $2\frac{1}{2}$, the rakers short and stout.

The longest pectoral rays are about 2 in head. The pelvic origin is midway between the tip of the snout and the hind margin of the disc. Colour as preserved light brown, with odd indistinct darker mottlings. Hind third of caudal dusky.

Described from the holotype, 54mm standard, 71mm total length, thrown up during stormy weather at Isipingo, Natal. The type, in this department, is very close to **H. indica** Annandale and Jenkins, 1910 known from 40-100 fathoms off India and the East Indies. **H. spicata** however differs markedly in the narrower subcircular disc, its width 1.45 in the standard length, against 1.15 — 1.25 in **H. indica**: length of head 1.2 in its width, against 1.3 — 1.4 in **H. indica**. Also the pectorals are slightly longer in **H. spicata**.

Halieutea hirsuta sp. nov.

(Plate 11, B)

D 5. A 4. P 11. Gillrakers 3+6. Width of disc 1.7 in the standard length, 2.1 in the total length. Length of head to gillopening about equals its width, 1.8 in the standard length. The eye diameter about equals the interorbital, about 7 in length of head (to gillopening). Gills $2\frac{1}{2}$, the rakers short and stout.

The whole upper surface of the head is covered with fine flexible spinules, each set in a small three rooted base, the lower surface is similar, the cilia somewhat smaller. There are somewhat larger spines on the tail above. Along the margins of the disc are more robust apically spiny processes, with 3-4 (rarely 5) apical diverging spines. The rostrum does not project beyond the disc, the tentacle is clearly visible from above, and is trilobed. The mouth cleft extends to below the hind margin of the eye. There are fine curved sharp teeth in a narrow band in each jaw, and two adjacent patches of small stout teeth on the front of the tongue. There are no teeth on the vomer or palatine, but there is an oval cluster each side on the upper pharyngeals. The pelvic origin is 1.5 times further from the tip of the snout than from the hind margin of the disc. The longest pectoral ray is about 2.2 in the width of the disc.

As preserved, no markings are visible on body or fins.

Described from the holotype, 78mm standard, 102mm total length, in this Department, reported as taken off Natal in "fairly deep water". This species differs from all others in its shape and in the feeble nature of the spination, as well as in having this over the whole of the lower surface. This species possibly merits subgeneric distinction on that character.

PLATE 11

A. **Halieutea spicata** sp. nov. Type, 71mm. B. **Halieutea hirsuta** sp. nov. Type, 102mm. C. **Halieutea fitzsimonsi**, juvenile, length 22mm. D. **Paronescodes asperrimus**, 100mm.

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