

MARINE BIOLOGICAL AND OCEANOGRAPHIC INSTITUTIONS OF THE WORLD

IV. THE NAPLES ZOOLOGICAL STATION

By ANDREW PACKARD

Assistant to the Zoology Department, Stazione Zoologica, Napoli

FOUNDED in 1872 the Naples Zoological Station on the Mediterranean coast of Italy is one of the oldest marine biological stations in the world. Moreover it is one which has maintained its purpose unchanged from its inception : namely to provide the facilities for visiting research workers of different countries throughout the world to study the zoology and the physiology of the fauna and flora of the Bay of Naples. It does this with the aid of a professional staff of ten and technical personnel of 60, housed in a single building that lies in the center of the Naples' municipal park known as the Villa Comunale. The original 3-storey building fronted directly onto the beach with the whole of its ground floor taken up by a public aquarium—the famous Naples Aquarium of the tourist guides—and with research laboratories in the upper two floors. Around the end of the century two further blocks in the same style had been built on either side of the first and the Stazione Zoologica now presents a continuous front 110 yards long facing out across the Bay to Capri and the Sorrento coast: the Physiology department at the east end, Aquarium, Administration, Botany and general services in the center, and the Zoology Department at the west end. Between Physiology and Administration there is an entrance courtyard decorated by vines and Whistaria and a small fountain above which a bronze plaque portrays the founder of the Institute, Anton Dohrn. Between the center block and Zoology is the new library built in 1957. Internal reconstruction in the Institute building has allowed four floors instead of three, and the upper floors of the Administration block now contain new laboratories and a dining hall for the 'Mensa' and the rehoused reference museum. A mile to the west of the Station, in the small harbour of Mergellina, the station keeps its boats : the 'Cavolini', 'Raffaele' and the larger 'Rinaldo Dohrn' launched in 1960, as well as a number of smaller collecting boats.

The Zoological Station is administered by a Committee of Management responsible to the Ministry of Public Instruction in Rome with Peter Dohrn (grandson of the founder and son of the previous director, Reinhard Dohrn) as Director. It operates (1960-61) on a total income of about £100,000 derived from a variety of sources. Italy supports the Station to an extent of 30% of the budget and 10% comes from admission fees to the Aquarium and the sale of biological specimens : the rest is from international payments, the most important being in the form of 'Table' rent.

The 'Table' system explains the individual characteristics of the Naples Zoological Station better than any other single feature : it was the brilliant idea of the founder by which he hoped to encourage Scientists from all over the world to profit from the exceptionally rich fauna and flora and favourable climatic conditions of the Naples region and at the same time to assure a continuous income for research. By a 'Table' is meant the research space and facilities for one biological worker,

and a 'Table fee' is intended to cover the cost to the station of maintaining one scientist at work in the station. Just as some hospitals in India have 'beds' paid for by private individuals which insures them full medical attention there if necessary, so foreign governments, and independent institutions such as Universities, Academies and Research Councils, pay table fees to the Zoological Station which give graduate scientists from the different countries and institutions the right to come to Naples to do their research work. The concept of the Tables has been extended, so that now a number of the larger grant-paying organizations—Rockefeller Fund, U.S. Office of Naval Research, and U.S. National Science Foundation—also act as table holders. A biologist from a country which does not have its own table, but applying to work at the Naples Zoological Station, has therefore the opportunity of being accepted as a guest when vacancies exist. The full yearly fee for a Table is now \$3,000 (£1,000). The sum does not include salaries or travelling expenses of the table holders, but entitles them to all they may require to carry out their particular piece of research. One guest worker may come for the full year, or a number of guests may come for part of the year only: for instance, the University College of London table is regularly occupied by six people coming for two months. At present there are 60 tables which are listed below. It will be noticed that India has no table, although many Indians have visited the station and one or two have worked here.

<i>Belgium :</i>	Ministere de l'Instruction Publique, Brussels	
<i>Denmark :</i>	Ministry for Public Instruction, Copenhagen	
<i>France :</i>	College de France, Paris	
<i>Germany :</i>	Deutsche Forschungsgemeinschaft, Bad Godesberg	
	Deutsche Akademie d. Wissenschaften, Berlin	
	Staatssekretariat f. d. Hochschulwesen, Berlin	
	Kultusministerium Nordrhein-Westfalen, Dtisseldorf	
	Max-Planck-Gesellschaft, Gottingen	
	Kultusministerium Niedersachsen-Schleswig Hoist.	
	Hochschule, Hamburg	
	Ministerium f. Unterricht u. Kultur, Mainz, u.	
	Min. f. Erziehung u. Volksbildung, Wiesbaden	
	Bayerische Staatsmin. f. Unterricht u. Kultus Munschen .	
	Kultusmin. Baden-Wurttemberg, Stuttgart	
<i>Great Britain :</i>	University of Cambridge	
	University of Oxford	
	University of London	
	Universities of St. Andrews and Birmingham, Brit. Ass. for	
	t. Advancement of Science	
	Royal Society, London	
<i>Israel:</i>	Comunita Israelitiche Italiane, Roma	8
<i>Italy :</i>	Ministero Publica Istruzione, Roma	6
	Consiglio Nazionale delle Ricerche, Roma	3
	Provincia di Napoli, Napoli	2
	Azienda di Cura, Soggiorno e Turismo, Napoli	1
	Istituto di Biologia, Universita di Perugia	1
	Ente per il Turismo, Napoli	2
	Fondazione A. & R. Dohrn, Nopoli	1
<i>Japan :</i>	Ministry of Public Instruction, Tokyo	1
<i>Netherlands :</i>	Kon. Akademie van Wetenschappen, Amsterdam	1

<i>Sweden :</i>	Kungl. Svenska Vetenskaps-Akademien, Stockholm	1
	Statens Naturvetensk. Forskningsrad, Brama	2
<i>Switzerland:</i>	Department des Intern, Bonn	1
<i>U.S.A,</i>	National Science Foundation, Washington	4
	U. S. Air Force	1
<i>N.A.T.O.</i>		1

"60

On arrival at the Zoological Station a guest worker is provided with a laboratory : if he is a systematist, histologist, ecologist or other zoological worker this room will be in the Zoological department, where, in addition to glassware, microscopes and reagents he can ask for any other special items of equipment from fixing and embedding materials for electron microscopic work to small aquaria built to his own specifications. In addition there is a range of constant temperature rooms and a general laboratory equipped with standard microtomes as well as cryostat, pH meters, electric balances and other items.

If the guest is a physiologist, biochemist, radiobiologist or cytochemist, in addition to his own room he will have the use of the general laboratories. There are several of these, respectively for general chemistry, centrifugation, spectrophotometry, chromatography, radioisotope work, electrophysiology and microrespirometry. The institute possesses up-to-date apparatus for these and other routine biological activities. In both Zoology and Physiology Departments there is running sea water from a partially closed system separate from the main Aquarium supply*

Each guest is given 12 library cards, each with a number, that allow him to borrow from the library any 12 books at one time with a minimum of complication and time.. The library, which has been collecting biological reprints bound in volumes since the latter half of the last century has 45,000 volumes housed in some 3 miles of shelving and is -one of the most complete of its kind. The reading room displays current and unbound numbers of 500 periodicals*

During the morning of each working day guests are asked what living material they require from the sea, and on the basis of these requests orders are compiled for the next morning's fishing, the material being brought to the station and distributed by midday. The station employs a staff of 10 fishermen trained to locate and recognize all the common and less common species, both animal and plant, found in the plankton, in dredges, and along the shores of the Bay of Naples; a fulltime diver is included, Guests may themselves go to sea on the Station's boatsj either as observers or to do their own oceanographic or ecological work. The ' Rinaldo Dohrn' is being set up with additional recording apparatus for oceanographic work not previously possible with the smaller vessels.

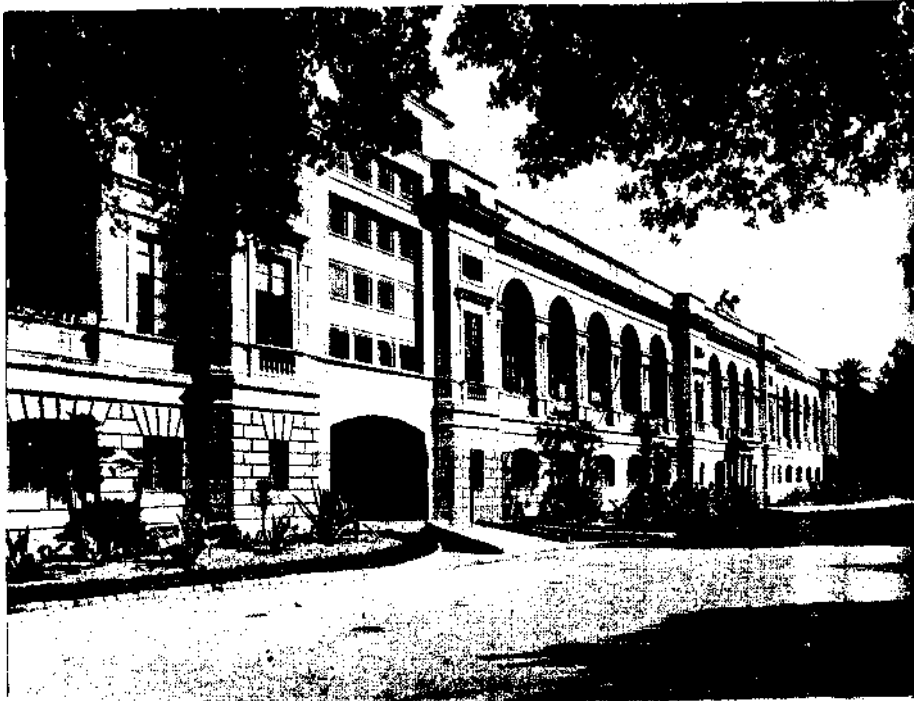
A midday meal is provided—traditionally held at one table, the Mensa—at which guests have a chance to get to know those doing research in fields other than their own. There is also a small kitchen where guest workers may cook in the evenings. Living accommodation is not provided by the Station but the secretary's office is able to help in finding this. The Zoological Station is open throughout the year. Collecting and other activities requiring a full staff being continued uninterrupted except for public holidays: the doors of the Station are attended at all

times so that people working in the institute may come and go at any time in the 24 hours.

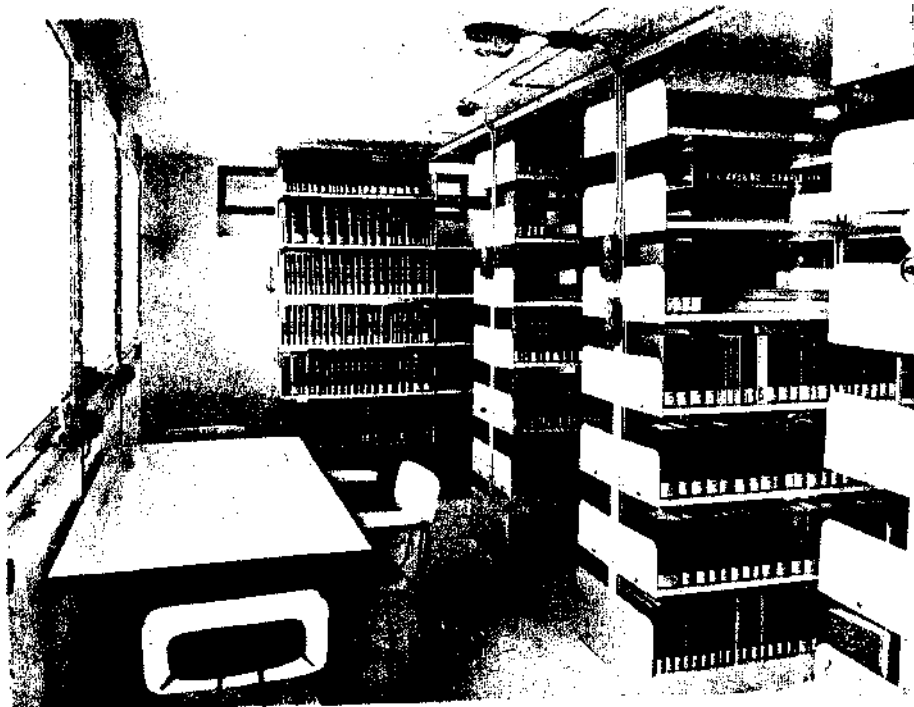
Theoretically the research at the Naples Zoological Station is as heterogeneous as the international complement of its visiting research workers and as varied as its facilities permit. In practice the influence of a number of biologists who have returned year after year and the presence of a small permanent staff of scientists having their own programme, together with certain exceptionally favourable features of the marine environment, have resulted in the development of a number of 'schools' of research. Work on the biochemistry of development and identification of new enzyme systems is carried on throughout the year on sea urchin eggs of the genus *Paracentrotus* and *Sphaerechinus*. A school of behaviour concerned with the relationship of brain and sense organ structure to learning is centered round the common octopus, *Octopus vulgaris*. The preparation of a monograph on the order *Hydroidea* brings together hydroid specialists from all over the world to study their systematics, life history, ecology and regeneration. Through its convenience as a scientific institute situated on the edge of the Bay of Naples the Zoological Station has been used for research in marine geology.

The Station undertakes no regular teaching, but from time to time conferences and symposia are held. In 1961 there will be a symposium on Mediterranean Shore Ecology. The Station publishes the *Pubblicazioni della Stazione Zoologica di Napoli* and the *Faunae Flora del Golfo di Napoli*: a definitive monograph series of which the two volumes on the *Hydroidea* will be number 39.

Visitors are welcome at the Station and further information can be obtained by writing to the Director, Dr. P. Dohrn, Stazione Zoologica, Napoli, Italy.



1. A general view of the Naples Zoological Station, Italy.



2. Part of the main library.

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3 & 4. Different views of the laboratories, Naples Zoological Station.

NOTES

¹ OBSERVATIONS ON SOME PELAGIC TUNICATES IN COASTAL WATERS OF THE BAY OF BENGAL'

The pelagic salp, *Salpa (Jasis) zonaria* (Pallas) was so abundant off the River Mahanadi (Orissa) in 40-42 metres over mud grounds during late February and whole of March 1960, that individuals choked the trawl meshes. The salps could be observed just under the surface, and as far down as the eye could penetrate the water-mass, in immense numbers. This 'swarm' was approximately 3 miles in length and one mile across, oriented parallel to the coast. Weather conditions were calm, and the water was extremely clear.

A size-range between 12 and 30 mm. was noted, with the majority over 20 mm. Individuals over 20 mm. showed 'budding'. Three specimens, 22, 28 and 30 mm. respectively, were found eviscerated and their empty 'tests' were occupied by the pelagic amphipod *Phronima sedentaria* (Forskal).

Also taken in late February 1960, was a specimen of *Pyrosoma atlanticum* (Peron) off False Point (Orissa). This pyrosome was taken during a haul made in 114-158 m., and there can be no doubt that it was retained accidentally (being jammed among fish also taken at the same time) by the trawl used, the cod end mesh being 77 mm. ; thus, it is possible that this pyrosome might have been more common in the area than present data would suggest.

The specimen measured 110 mm. in length ; it was 15 mm. wide at its narrow end and 25 mm. wide at its broader end

The present data are of some interest in that it extends distribution pyrosomes into the Bay of Bengal. Sewell (1913) had previously recorded 4 *Pyrosoma* (species not mentioned) in about 800 m. off Ceylon ($7^{\circ} 26' 6''$ N ; $85^{\circ} 7' 15''$ E)

Details of the taxonomy and distribution of *S. zonaria* and *P. atlanticum* are given by Berrill (1950) and Sewell (1953). The latter author indicates that *P. atlanticum* is most common at some depth below the surface, rather than at the surface ; and the former remarks that these forms do not normally occur in coastal waters except where the continental slope approaches the shore-line, or when unusual invasions of the continental shelf by outlying water takes place. The present data come from around $20^{\circ} 02' N$; $86^{\circ} 59' E$, where the continental shelf is fairly broad and there is therefore, an indication that an invasion by outlying water might have occurred over the continental shelf in that region. Such a type of invasion is known to occur about 300 miles south of this location, near Visakhapatnam (La Fond 1954).

I am thankful to Shri P. V. Bhavanarayana, Lecturer, Zoology Department* Andhra University, Waltair, for confirming the identity of both these tunicates.

Central Marine Fisheries Research Unit, A. K. NAGABHUSHANAM,
C/o Andhra University,
Waltair, A.P.

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COSSURA DELTA REISH (POLYCHAETA) FROM THE VELLAR ESTUARY

In the course of a series of dredgings that were made in the Vellar estuary to study the bottom fauna, a Cirratulid, *Cossura delta* Reish (1958) was obtained in two localities which may be referred to as Stations C and D (Jacob and Rangarajan, 1959). The genus *Cossura* comprising four species *Cossura longocirrata* Web. & Ben. (1887), *C. Candida* Hartman (1955), *C. pygodactyla* Jones (1956) and *C. delta* Reish (1958) occurs mostly in America. *C. longocirrata* alone has been reported from Denmark (Eliason, 1920 and Thulin, 1921) and North Atlantic (Wesenberg-tund, 1950). Now *C. delta* Reish is reported for the first time in Indian waters,

Family: CIRRATULIDAE

Genus: *Cossura* Webster & Benedict;

Cossura delta Reish;

The body is cylindrical and rolls up into coils posteriorly. The length varies from 15 mm. to 20 mm. and the diameter from 0.5 mm. to 0.6 mm. There are about 100 segments and the intersegmental lines are very faint in the anterior end; in life the animal is pale red in colour. The prostomium is conical in shape and devoid of tentacles and palps. It is slightly longer than width; Eyes are absent; In some of the specimens the prostomium is everted and showed 15-20 digitate subequal lobes. The peristomium lacks setae. The first setigerous segment follows the peristomium. A very long slender annulated median tentacle arises dorsally between the second and third setigerous segments in well narcotised specimens preserved in alcohol. In worms picked up from the seiving and preserved immediately in 4% formalin the dorsal tentacle is seen to arise from the posterior end of the second setigerous segment. The length of the tentacle varies from one-half to two-thirds of the length of the body.

Dorsal cirri, ventral cirri and gills are totally absent. Setae are simple curved capillaries and occur in two bundles which issue directly from the body wall without any parapodial lobes. The first setigerous segment is uniramous and the rest are biramous in the anterior end. The bundles of dorsal and ventral setae are close to each other forming as nearly a continuous series as in *C. Candida* (Hartman, 1955). They also show a biserial arrangement as in *C. Candida* with a row of long capillaries followed by another row of short capillaries. From the second to twenty-fifth segment there are usually 6 to 8 pairs of capillaries in the dorsal and ventral bundles. After the twenty-fifth segment the number of setae diminishes, and beyond the fortieth segment the dorsal bundle has 3 to 5 long straight smooth unbordered

capillaries, whereas ventrally 3 to 4 curved, unbordered capillaries are present. Further posteriorly in the body the segments show a slight increase in the setae. A few of the pre-anal segments are devoid of setae. The curved and straight capillaries are spinous along the outer edge. The body is flattened dorsoventrally upto thirtieth segment, and the segments thereafter are cylindrical and not clearly distinguishable excepting the last few. The anal segment is truncated with two small lateral cirri.

C. delta which has been described by Reish and the specimens from Vellar estuary agree (1) in the presence of a single achaetous segment anteriorly, (2) in having curved limbate setae in the anterior segments and (3) in having the median tentacle arising from the third setigerous segment. The specimens from the Vellar estuary differ from Reish's description in having the first setigerous segment uniramous and also in not having the notopodial and neuropodial regions distinctly separate. Reish (1958) has not described the posterior end of the body, all the specimens collected by him being incomplete specimens. The anal region in the Vellar specimens differs from that in the other three species in having two small lateral cirri.

C. delta occurs in a limited locality in the Vellar estuary at a depth of 6 to 12 feet. The specimens were dredged when the salinity was from 22.64 ‰ to 32.46 ‰ at the bottom. The animals live in slimy mud tubes in clayey silt bottoms.

My thanks are due to Dr. Eve C. Southward and Dr. F. Rullier for help in identifying the Polychaete. I thank Dr. Olga Hartman for helpful criticisms and suggestions in preparing this note. My thanks are due to Prof. R. V. Seshaiya for guidance and to Dr. Vijayaraghavan and Dr. Jacob for their interest and encouragement, and to the Ministry of Education for the award of a Research Scholarship.

Marine Biological Station,
Porto Novo.

K. BALASUBRAHMANYAN.

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**ON THE OCCURRENCE OF THE PLATACID FISH *TRIPTERODON*
ORBIS PLAYFAIR IN INDIAN WATERS**

ON 20-12-'60 at the fish landing centre at Kuntakkal point on Rameswaram Island facing the Gulf of Mannar two platacid fishes were noticed among specimens of *Drepane punctata* (Linnaeus), and *Ephippus orbis* (Bloch). One of these was brought to the Laboratory at the Central Marine Fisheries Research Station, Mandapam Camp and was identified as *Tripteron orbis* Playfair hitherto known from the South African Coast from Natal to Mombasa (Smith, 1949) and Madagascar (Fourmanoir, 1957). The specimen which measures 116 mm. in standard length is a juvenile, the adult of which is known to attain 762 mm. and weigh about 20 lbs.

Subsequently I have come across two specimens of this species, 101 mm. (locality unknown, probably Gulf of Mannar) and 125 mm. (from Dhanuskodi; Gulf of Mannar) of standard length, in the reserve collection of Central Marine Fisheries Research Station Museum and a brief description of these three specimens is given below.

Tripteron orbis Playfair

Tripteron orbis Playfair, 1866. in Playfair R.L. and Gunther A.C.L., *The Fishes of Zanzibar*, p. 42, pi. 7 fig. 1; Smith J. L. B. 1936. *Trans. roy. Soc. S.A.*, 23: 303; 1953. *The Sea Fishes of Southern Africa*, 233, and pi. 29, fig. 578. (see for other references); Fourmanoir. P., 1957. *Mem. Inst. Scient. Madagascar*, I, (Ser. F) p. 40.

D. IX; 20-21; P_x ii, 17; P₈.1, 5; A. III, i, 15-16; C. i, 15, i.

Head 34.5 to 35.6; eye 10.8 to 11.2; snout 19.2 to 19.8; interorbital distance 11.5 to 11.9; distance from snout to posterior nostril 13.2 to 13.9; first predorsal distance 60.3 to 64.8; second predorsal distance 84.5 to 88; prepectoral distance 31.9 to 34.7; prepelvic distance 36 to 38.6; preanal distance 68.4 to 69.4; base of spinous dorsal 30.7 to 37.6; base of soft dorsal 44.6 to 46.4; base of anal 38.8 to 39.6; length of longest (third) spine 51.5 to 62.9; height of second dorsal 25.7 to 28; length of pectoral 22.3 to 23.2; length of pelvic 34.2 to 36; length of anal 26.8 to 32.2; length of caudal 32.5 to 35.6; and depth of body 75.7 to 79.3 percent in standard length.

Mouth slightly protractile, preopercle and opercle scaled. Teeth tricuspid in regularly arranged rows in both jaws. Gill rakers 10, minute; pectoral short; outer ray of pelvic prolonged, tip surpassing anal origin; caudal slightly lunate.

Eight conspicuous vertical dark bands and other colour characteristics in general tally with the plate figure 578 given by Smith (1949).

Distribution: Natal to Mombasa along South African Coast, and Madagascar. The present record extends the distribution of the species to Rameswaram Island, Gulf of Mannar, Indian Ocean.

All the three specimens are deposited in the Central Marine Fisheries Research Station Museum, Mandapam Camp.

My thanks are due to Dr. E. G. Silas for suggestions and help.

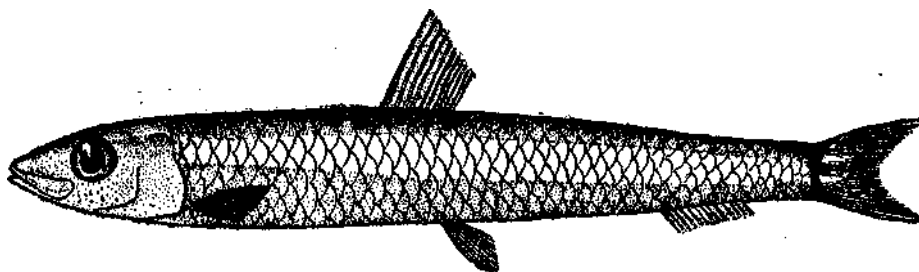
C/o Central Marine Fisheries Research Station,
Mandapam Camp.

A- INDRASENAN

**FURTHER NOTES ON *SPRATELLOIDES DELICATULUS* (BENNETT)
AS A TUNA LIVE-BAIT FISH WITH A RECORD OF *S. JAPONICUS*
(HOULTUYN) FROM THE LACCADIVE SEA**

IN a previous note (Jones, 1960) mention was made of the collection of *Spratelloides delicatulus* (Bennett) from the vicinity of Bitra and Agathi in the Laccadive Archipelago recording for the first time its occurrence in Indian waters. Also in view of its shoaling behaviour and the habit of getting attracted to light the possibility of its utilization as a live-bait for the oceanic skipjack, *Katsuwonus pelamis* (Linnaeus) was indicated.

Subsequently the fish was collected from the lagoons and reefs around Minicoy, Chetlet and Kiltan, in the Laecadives showing its wide distribution in the Laccadive Sea. The language in the nine of the ten inhabited islands is Malayalam and here the fish is known as *choorai-chala* meaning tuna sardine (*choorai*=tuna ; *chala*=sardine). The local name is significant being self-explanatory, clearly indicating that the inhabitants are aware of the predilection of tuna towards it as food. On enquiry it was reported that the tuna follow shoals of *S. delicatulus* and feed voraciously on them in certain seasons especially during the south-west monsoon. It is reported to enter the lagoons in large numbers when it is caught by the local people for their consumption. In the island of Minicoy where Mahl dialect is spoken this fish is known as *rahi* and is used as a bait fish whenever available. It is reported to enter the lagoon just before the monsoon period and remain there till the close of the monsoon and therefore its utilization as a bait fish is restricted to the fag end of the tuna season.



Spratelloides japonicus (Houttuyn) from the Laccadive Sea (By Mr. K. L. K. Kesavan).

Examination of the recent fish collections from the Laccadive Sea has revealed the presence of *Spratelloides japonicus* (Houttuyn) from Minicoy where it appears to be much less abundant than its congener. Both the species have the same local name. Mr. Mohamed Sayeed, Field Assistant who recently collected fish specimens from a number of islands in the Laecadives, has informed me on enquiry that he has come across this fish at Chetlet and Kiltan where it is called *bayi-chala* (*bayi*=outer zone of the reef ; *chala*=sardine). There are however no samples of this fish in the collection brought by him.

S. japonicus has a fairly wide distribution in the Indo-Pacific and has been known from Red Sea, Indonesia, Philippines, Japan, Korea, Lord Howe Island and Polynesia (Fowler, 1941) and from Ceylon (Munro, 1955). This appears to be the first record of the fish from Indian waters.

A brief description of *S. japonicus* based on the material examined from the Laccadive Sea is given below and a specimen 52.7 mm. in length is figured here.

D. ii, 10-11; A. iii, 10; about 38 to 40 scales in lateral line + 3 or 4 scales at base of caudal, predorsal scales 12-13; gill rakers 12-15 + 24-28 on upper and lower limbs of the outer gill arch respectively. A few of the important body proportions expressed in thousandths of the standard length are as follows. Head 226-255; snout 79-93; diameter of eye 59-70; predorsal distance 461-495, and preanal distance 785-807 in standard length.

As both *S. delicatulus* (Bennett) and *S. japonicus* (Houttuyn) are known to occur in Indian waters, the following key is given to facilitate their field identification.*

- (a) Sides of body with distinct silvery white lateral band; total scales in lateral line generally 40-44; anal with 13 rays. *S. japonicus* (Houttuyn)
- (b) Sides of body devoid of silvery white lateral band; total scales on lateral line generally 35-38; anal with 9 to 10 rays—*S. delicatulus* (Bennett)

Central Marine Fisheries
Research Station,
Mandapam Camp.

S. JONES

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* It may be mentioned in this connection that *Spratelloides malabaricus* (Day, 1873 *Proc. zool. Soc. Lond.*, 240; W8, *Fishes of India*, 648, pi. CIXI. fig. 5) rightly belongs to the genus *Stolephorus* Lacepede and is therefore not included here.

THE STRANDING OF TWO FALSE KILLER WHALES [*PSEUDORCA CRASSIDENS* (OWEN)] AT POZHİKARA, NORTH OF CAPE COMORIN

ON 27 November 1960 the fishermen at Pozhikara, a fishing village between Cape Comorin and Colachel on the west coast were surprised to find two small whales in shallow water within a few metres from the shore. Some of the enterprising young men entered the water and tried to hold on to the tail of one of them, which excitement caused both animals to run ashore and get stranded. They were hauled to a small pool at the mouth of a narrow backwater canal near the shore. The event of the capture of such strange creatures which no one could recollect seeing along that coastal stretch atleast during the past three decades, received wide publicity in the local newspapers resulting in several hundreds of people visiting Pozhikara to view the animals.

The larger of the two measuring 375 cms. died one day later, most probably due to asphyxiation as the water was apparently not of sufficient depth to allow for

its free movement, On the 30th the carcass was gifted to the S.T. Hindu College* Nagercoil, and the preparation of the skeleton of it for display has been undertaken by one of us (C.K.P.). The second animal measuring 279 cms. lived for three days and on its death it was buried Under some coconut palms as manure.

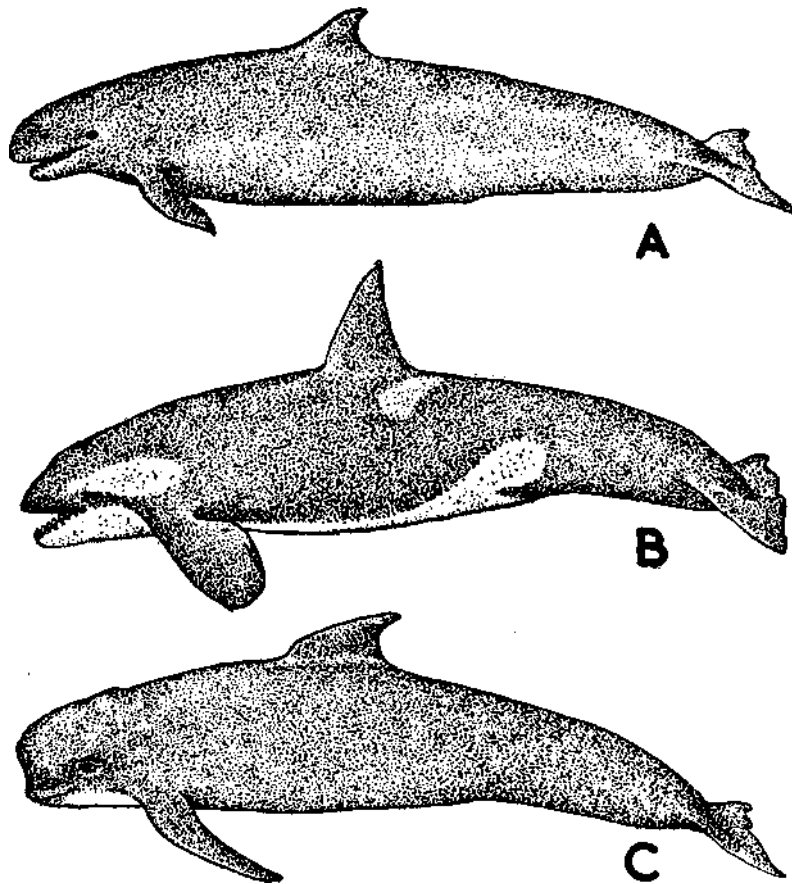
On 9 December, on hearing of these strandings one of us (E.G.S.) visited Pos&ikara and through the kind help of Mr. M. G. Jayachandra, the owner of the coconut tope, the second specimen was exhumed and although decomposition had set in it was possible to identify the remains as belonging to a male False Killer Whale, *Pseudorca crassidens* (Owen) and retrieve the almost complete skeleton of the animal.

On the 10th we were also able to exhume the larger specimen buried at the S.T. Hindu College premises (for preparing the skeleton) and identify the remains as that of a female *P. crassidens*. In this animal the mammae in the inguinal region were conspicuously bulging owing to the bloating of that part of the body due to internal decomposition which had taken place to such an extent that it was not possible to verify whether it had any embryo or foetus within. Two photographs of the animal taken when the carcass was first brought to the College on 30th November are reproduced on plate I. A few measurements of both specimens taken on the 10th are given below.

	Male	Female
Total length to fork of tail	2790	3750 mm
Tip of snout to origin of dorsal fin	1200	—
“ “ “ “ anal opening	—	2090
“ “ “ “ eye	312	—
“ “ “ “ angle of mouth	288	290
“ “ “ “ anterior insertion of flipper	530	680
“ “ “ “ blow-hole	356	—
Width of blow-hole	47	—
Length of flipper from anterior insertion to tip	340	380
Width of flipper	129	—
Eye to anterior insertion of flipper	215	370
Depth of body at anal opening	340	—
Depth of body mid-way between anal opening and base of caudal flukes	280	—
Anal opening to fork of caudal flukes	600	:-
Length of one half of caudal fluke from fork	295	—
Anal opening to genital orifice	160	—
Length of contracted penis	175	—
Diameter of mammae at base	—	75
Distance separating the two mammae	..	70

The False Killer is a truly oceanic species with a cosmopolitan distribution. Only twice has it been reported from the Indian coast and the first record refers to a 513 cm. (16' 10") specimen stranded on 14 February, 1902 on the beach in the neighbourhood of Trivandrum (Ferguson and Lydekker, 1903). The second record refers to two immature specimens, a male and a female caught in fishing nets 10 miles north of Trivandrum (Dawson, 1911). The only other records of *P. crassidens* from this region are that of three schools stranded on the Ceylon coast reported by Pearson (1931) and Deraniyagala (1945). While its occurrence in these waters may be considered to be a rarity, one feature peculiar to the False Killer is its movements in large schools often numbering several hundreds and also its tendency to get stranded in such large numbers, several such strandings being listed by Fraser (1948). In this connection it may be interesting to mention here that on or about 27 November local newspapers reported two other strandings involving small sized

whales, one at Ovari on the east coast between Cape Comorin and Thiruchendur and the second a few miles north of Alleppey on the west coast. Although it has not been possible to verify the identity of the species involved in these two strandings, the incidents bear recording, if for nothing else, at least to draw attention to the strandings at three places of small-sized whales along a coastal stretch of about 300 Km. within a few days apart.



Drawings of (A) *Pseudorca crassidens* (Owen); (B) *Orcinus orca* (Linnaeus); and (C) *Globicephala melaena* (Traill) (After Fraser, 1948).

Previous strandings of the False Killer have shown notable differences in the sizes of the individuals constituting a school, but both the sexes have been noticed to occur in almost equal numbers, and as such the stranding of a male and female at Pozhikara may be only mere coincidence. There is no evidence of this species showing any periodicity of migration to inshore waters for breeding and it has been suggested that some of the mass strandings of the False Killer may be on account of changes in the distribution of water masses and consequently the alteration of the distribution of the animals on which they feed. Once getting close to the breaker-zone in the calmer inshore waters, they are liable to be stranded. The



Female False Killer Whale, *Pseiidorca crassidens* (Owen) 375 cms long stranded at Pozhikara north of Cape Comorin.

size of the specimens indicate the male had not attained sexual maturity which the species is said to reach when it is 3.65 to 4.25 metres long (Fraser, 1948). The False Killer is not known to exceed six metres in length and the adult male is on the average about 60 cms. longer than the female.

Although distinct in several characteristics, *P. crassidens* is liable to be confused with two other smaller whales, namely, the Killer Whale *Orcinus orca* (Linnaeus), and the Indian Pilot Whale *Globicephala macrorhyncha* Gray, all belonging to the family Delphinidae, and have been reported from strandings from the Indian coast. The characters such as the robust body ; gently sloping snout which does not surpass the tip of the lower jaw ; paddle-like large flippers with rounded margins ; more or less high triangular dorsal fin ; and the marked colour of black and white belly, white patches one above eye on side of head and another behind base of dorsal on upper side of body of *O. orca*, and the conspicuously bulbous head and long tapering flipper which is about one-fifth to one-seventh the body length (*versus* one-eighth to one-tenth in *P. crassidens*) of *G. macrorhyncha* should help in easily distinguishing them from *P. crassidens*. Drawings of *P. crassidens*, *O. orca*, and *G. melaena*, the last closely allied to *G. macrorhyncha* are given in figure 1 to facilitate comparison.

This third definite record of the False Killer after a lapse of about 50 years not very distant from its first two recorded location on the Indian coast (Trivandrum is about 60 Km. north of Pozhikara) is of interest.

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Central Marine Fisheries Research Station,
Mandapam Camp, and S.T. Hindu College, Nagercoil.

E. G. SILAS
C. KUMARA PILLAY

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