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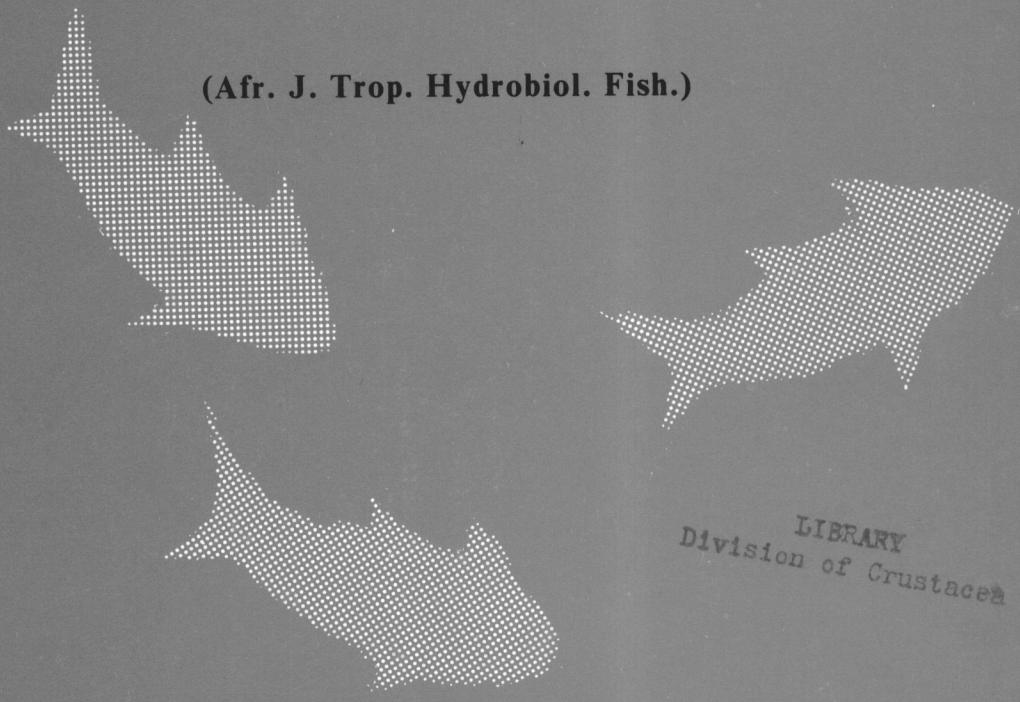
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NAIROBI DAR ES SALAAM KAMPALA

Notes and Comments

IMPROVED FACILITIES FOR MARINE BIOLOGY IN EAST AFRICA

In 1967 the then University College of Dar es Salaam built a small laboratory on the shore at Kunduchi, 16 km from the main campus and 24 km north of Dar es Salaam. This was used for undergraduate field courses, and as a base for staff from the University to carry out research. It soon became apparent that the urgent need for studies of the marine environment in the East African area, and the lack of existing facilities, necessitated the development of the Kunduchi Marine Biology Station into a research establishment with its own staff of full time scientists. This operation began in 1970; necessary structural modifications have been made to the building, staff have been recruited, and the Station has been equipped with an adequate range of field and laboratory apparatus. A varied programme of research is now actively under way.

The Marine Station has an area of 290 square metres, and shares some additional accommodation with the adjacent Fisheries Institute. It contains offices, a small library, laboratories, stores and a workshop, and is partly air conditioned. The usual services are available, as well as an open sea water circulation to supply a series of large aquarium tanks. Small boats, out-board motors and a four wheel drive vehicle are available for field work. A programme for future development has been drawn up, which includes the provision of living accommodation for a number of permanent and visiting workers, an upgraded sea water system, and additional laboratory space.

A wide variety of littoral and sublittoral habitats can be reached from the Station. Sandy beaches, rocky shores and creek mangrove are accessible on foot, while coastal mangrove, muddy shores and more extensive rocky areas can be reached by road. Visiting the nearby reefs and islands involves only a short boat trip, and here coral reefs, together with rocky and sandy shores, are found. As yet the sublittoral environment has been little explored. The continental shelf is 15 km wide off Kunduchi, so the immediate area is relatively shallow. The tides are of the semi-diurnal type, with a small diurnal inequality: the mean range is 3.14 m at spring tides and 1.13 m at neap tides. The mean surface temperature of the sea varies from 25°C in September to 29°C in March.

The present establishment of the Marine Biology Station consists of three scientists and a supporting staff of seven, as well as three current postgraduate research students. An increase in these numbers is anticipated, which will enable the Station to operate a broad based research programme embracing all the major fields of marine biology, and serve as a centre for the training of local personnel. Visiting workers will always be welcome at Kunduchi provided that space is available: enquiries should be addressed to the Head of the Zoology Department.

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THE REDISCOVERY OF *NOTOPOIDES LATUS* HENDERSON IN THE WESTERN INDIAN OCEAN (CRUSTACEA-DECAPODA, RANINIDAE)

The small brachyuran family Raninidae Dana is represented in the Indo-West Pacific region by eight genera, with only some twenty species. One of the least known genera is *Notopoides*, which contains only a single species. This genus was first described by Henderson (1888) on the basis of material collected by H.M.S. "Challenger" from the Kei Islands, in the Banda Sea off Indonesia. There have been no subsequent reports of this species in the ninety seven years since its original discovery.

During the course of the study of the benthic fauna off the coast of East Africa, the Fisheries Research Vessel "Manihine" obtained five specimens of this rare species (Table 1). These new records, collected during a short period of time, indicate that the species is probably not uncommon in this region, which also represents a great increase in its known geographical range.

Specimens have been deposited in the collections of the National Museum, Nairobi, the Rijksmuseum van Natuurlijke Historie, Leiden, and the National Museum, Singapore: Catalogue numbers are Crust. 1092; Crust. D. 28567; NMS. 1972.8.4.1, male of 35x26 respectively.

NOTOPOIDES LATUS HENDERSON

Synonymy

Notopoides latus Henderson, 1888 "Challenger" *Rep.*, *Zool.* 27: 1-221. plates 1-21. *Notopoides latus* Ihle, 1918. *Siboga Exped. Monogr.* 39 b². 317 p.

Notopoides latus Gordon, 1966. In H. Barnes ed. *Some contemporary studies in marine science.* p. 345-350. figs. 2-4.

Morphology

The material in hand agrees closely with the description and figures given by Henderson. The largest male specimen is considerably larger than the measurements given by that author and the few small morphological differences noted can probably be ascribed to growth changes. The measurements are summarized in Table 2.

The male East African specimens are distinctly larger than the male whose measurements are given by Henderson, although it is not clear that this was his largest specimen. Henderson's adult male specimen had a carapace length of 34 mm, in contrast to the present specimens with 48.9 mm. and 47.2 mm. (fig. 1).

There is little change in the relation of carapace length and breadth with increasing size. In the East African specimens the ratio of carapace length to breadth varies from 1.34 to 1.43, being greater in the smaller specimens, but is smallest of all in Henderson's male specimens, with a ratio of 1.30.

In Henderson's figure the tip of the rostrum is distinctly beyond the level of the line joining the tips of the antero-lateral carapace spines. In the East African male specimens, the rostrum only very slightly exceeds this line. Except at the tip, which is directed slightly upwards, the lateral margins of the rostrum are distinctly granulate. The same figure also shows a distinct (Fig. 2a) depression posterior to the fronto-orbital margin. In the East African specimens this depression is obsolete. The three orbital processes also have granulated margins. The medial process is distinctly acute; the

Table 1. Details of specimens of *Notopoides latus* Henderson obtained from dredge hauls of the F.R.V. "Manihine".

No.	Specimens	Cruise	Station	Position	Depth	Date	Collector
1	2 ♀	327	—	2°43.0' S 40°37.0' E	120 fm.	18 August 1971	P.S. Sandhu
2	1 ♂	329	D-15	2°21.5' S 40°09.0' E	88 fm.	11 September 1971	P.S. Sandhu
3	1 ♂	332	D-4	8°09.4' S 39°39.6' E	111 fm.	13 November 1971	N. Bruce
4	1 ♂	333	D-1	3°04.5' S 40°20.5' E	117 fm.	4 December 1971	N. Bruce

Table 2. Measurements of *Notopoides latus* Henderson obtained by F.R.V. "Manihine".

Specimen:	(2)	(3)	(4)	(1a)	(1b)
Sex,	♂	♂	♂	♀	♀
Carapace length, (mms.)	48.9	47.2	35.7	23.6	17.2
Carapace width (mms.)	36.5	34.8	25.3	17.2	12.0
CL/CW	1.34	1.35	1.41	1.37	1.43

intermediate lobe is subquadrate, with a convex anterior margin; the small lobe, medial to the antero-lateral spine is rounded. These three lobes are separated by perforate fissures, which are open posteriorly but almost close anteriorly. A similar fissure separates the antero-lateral spine which is blunt distally, from the inferior orbital

angle, which is acutely produced. The postero-lateral margin of the carapace is convex throughout its length and the carapace is less narrowed posteriorly than in Henderson's illustration.

The eyes are about 0.1 times the carapace length, and are swollen basally, tapering distally.

The medial borders of the merus and ischium of the third maxilliped are feebly raised, most noticeably on the merus, but more or less devoid of granulations. (Fig. 2b) The tip of the exopod distinctly exceeds the ischiomeral articulation.

The second pereiopods also agree closely with Henderson's descriptions but the granulations on the dorsal aspect of the dactylus are arranged in three longitudinal rows forming feeble carinae.

The male pleopods agree closely to the descriptions and figures provided by GORDON (1966).

Colouration

The specimens were white ventrally and strongly mottled with orange dorsally on the carapace. The dorsal border of the carpus and palm of the first pereiopod were also pinkish. The second and third pereiopods were white and the dorsal surfaces of the fourth and fifth pereiopods were pinkish. The posterior margin of the dactylus of the fifth pereiopod was dark blue-grey in colour.

Habitat

The specimen from Cr. 332 was found in sticky black mud with stones. The type

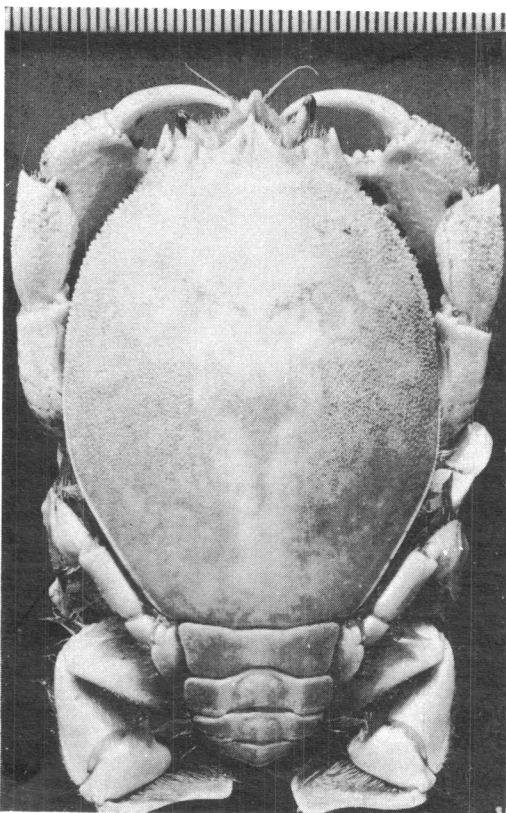


Fig 1. *Notopoides latus* Henderson. Male, Stn. D. 15 (no. 2), dorsal view. Scale in millimeters.

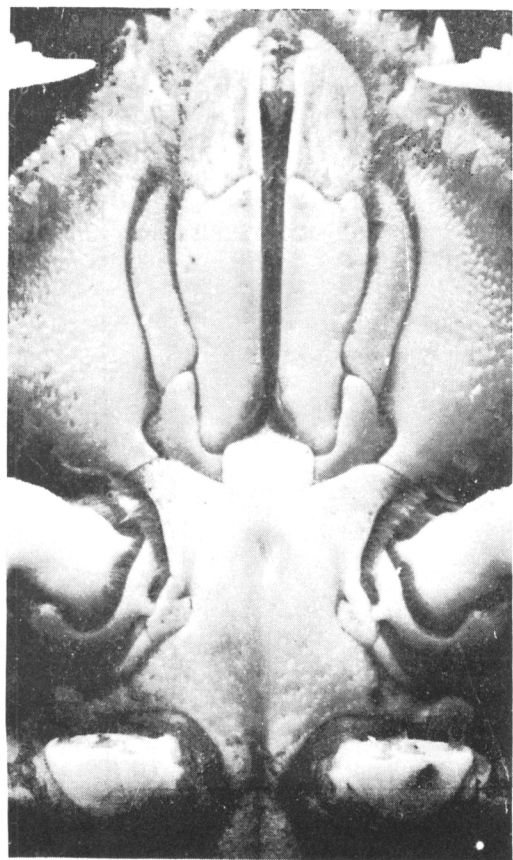
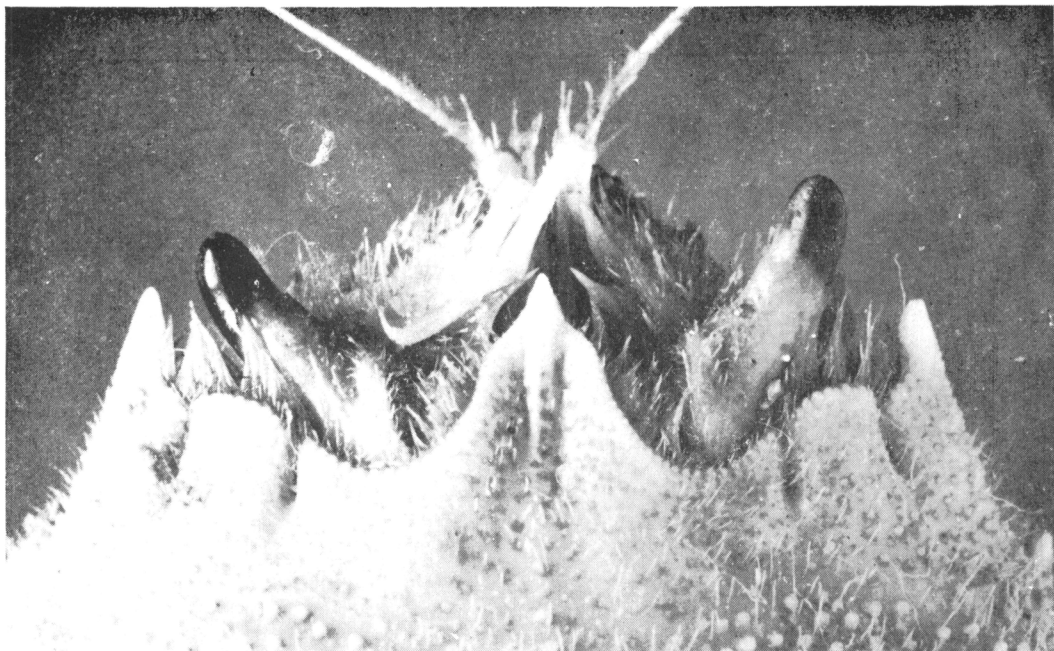


Fig 2. *Notopoides latus* Henderson. Male, Stn. D. 15 (no. 2). (a) Dorsal view of frontal region. (b) Ventral view of oral and sternal region.

of substrate present at the other stations was not recorded. Like the specimen obtained from Cr. 332, the Challenger specimens were also noted as obtained from sticky black mud. The species apparently inhabits moderately deep water although the East African specimens were found in shallower water (80–120 fms) than the Indonesian specimens (140 fms).

Distribution

Notopoides latus Henderson was previously recorded only from off Little Kei Islands, Indonesia. The East African distribution is shown in Fig. 3.

It is remarkable that no further specimens of *Notopoides latus* Henderson have come to light since its original discovery by the Challenger Expedition almost a century ago. Henderson remarked that he had many

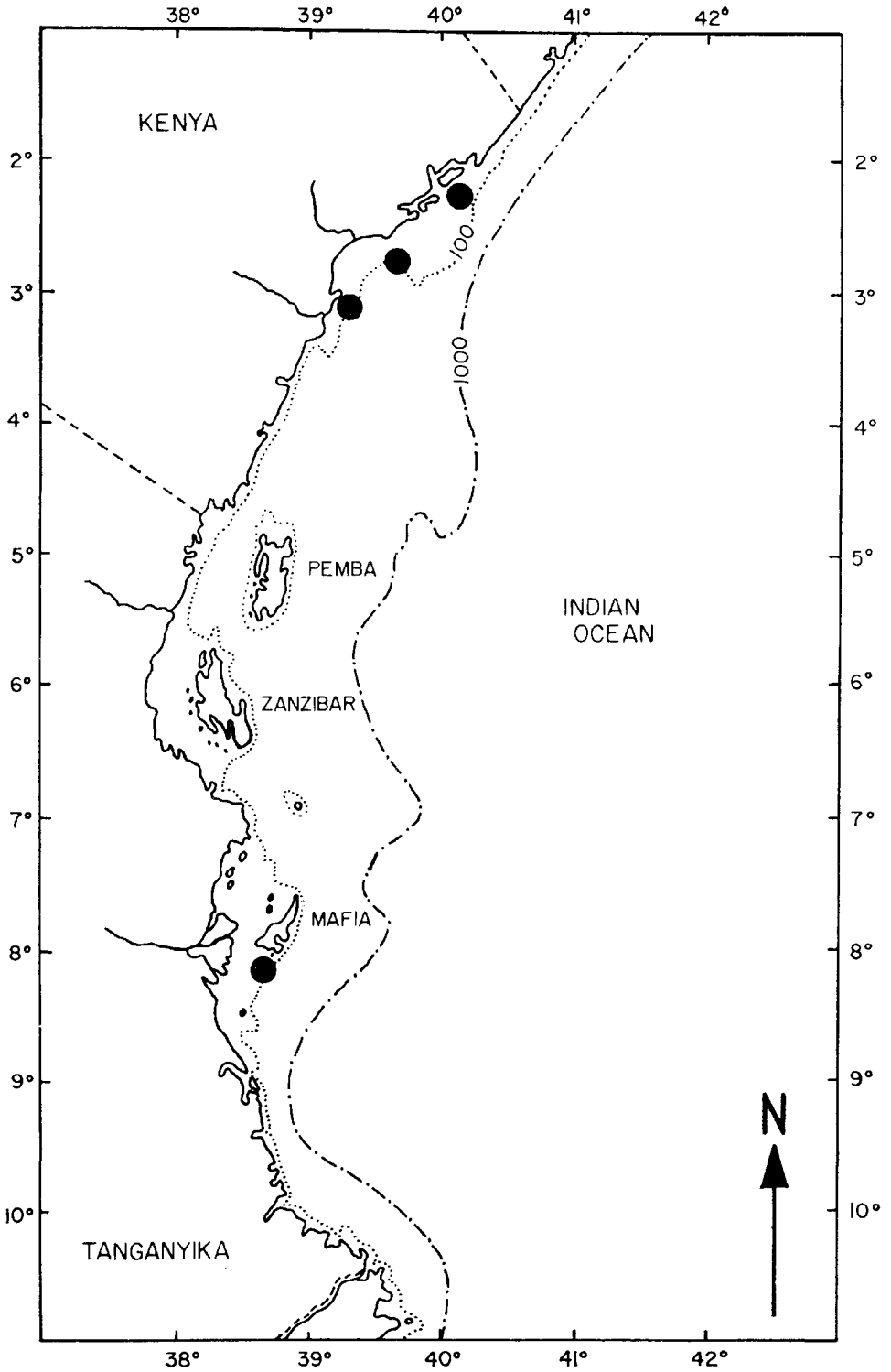


Fig 3. Distribution of *Notopoides latus* Henderson in the western Indian Ocean.

individuals of both sexes, all from the single station so that it was clearly not rare where it occurred. Its discovery in the Western Indian Ocean off Kenya and Tanganyika, represents a very great increase in the known distribution of this species and its distribution is now known not to be restricted to Indonesian waters.

THE SYSTEMATIC POSITION OF THE GENUS *NOTOPOIDES*

SERENE AND UMALI (1972), based on the structure of the first and second male pleopods, divided Raninidae Dana into two subfamilies, Notopinae Serene and Umali and Raninidae Serene and Umali. The first subfamily consists of the general *Cosmonotus* Adams and White, *Notopus* de Haan and the Indo-Pacific species of the genus *Ranilia* H. Milne Edwards. In this subfamily the distal part of the male second pleopod is foliaceous with a strongly chitinous apical process that extends beyond the tip of the first pleopod. The second subfamily, which includes *Notopoides* Henderson, consists of the genera *Ranina* Lamarck, *Raninoides* H. Milne Edwards, *Notosceles* Bourne, *Cyrtorhina* Monod and *Lyreidus* de Haan. In these genera the male second pleopod has an acuminate apex and the first pleopod is distinctly longer than the second pleopod.

The differences in the morphology of the male pleopods appear sufficient for the division of the Raninidae. However, more information on the larval stages of all genera will be of great interest to support the validity of subfamilies. Unfortunately present knowledge is limited on larval

stages of *Ranina* and *Lyreidus*, two genera which belong to the subfamily, Raninae.

RESUMÉ

La présence du crabe raninide très rare, *Notopoides latus* Henderson, 1888, dans les eaux du Kenya et de la Tanzanie, est notée. Cette espèce n'avait pas été reportée depuis sa découverte originale par l'Expédition du "Challenger", il-y-a presque un siècle. Cette redécouverte représente une grande extension de la distribution connue de cette espèce.

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A NOTE ON SOME PARASITES OF *MERLUCCIUS CAPENSIS* (PISCES) AND THEIR ZOOGEOGRAPHICAL SIGNIFICANCE

During the Southeastern Atlantic Expedition of the German fishery research vessel "Walther Herwig" in 1967 the main emphasis lay on selective fishing of the South African hake *Merluccius capensis* (von BRANDT 1967). Some of the fish were found to be infested by ecto—and endoparasites both of which were collected whenever possible. Large plerocercoids of *Dibothriorhynchus grossum* whose adult stage lives in the South Atlantic Ocean in *Lamna cornubica* (L. SZIDAT, personal communication) were quite common as were cysticercoids of a *Tetrarhynchus* sp., which had also been reported in *Cynoscion striatus* off the Argentinian coast (MACDONAGH 1927, cited in Szidat, personal communication). Brownish nematodes were infesting the ovaries of several fish, but could not be identified. The most common ectoparasite to be observed was the parasitic isopod *Livoneca raynaudii* (fam. Cymothoidae) whose early larval stages were also found.

Unfortunately the total number of parasites was not very large and therefore any conclusions drawn from the findings must be tentative. However, the value in studying the parasite fauna of Gadid-fishes has been demonstrated convincingly by SZIDAT (1961), who showed that the South Eastern American species *Merluccius hubbsi* and *M. gayi* had more parasites in common with fishes from the North West Pacific rather than with forms from the North Atlantic. He concluded that the *Merluccius* population of the large Argentinian shelf originated from a Pacific stock and not, as was thought before, from a North Atlantic one. The occurrence of *Dibothriorhynchus grossum* in *Merluccius hubbsi* (SZIDAT 1961) and of *Tetrarhynchus* cysticercoids in

Cynoscion striatus (both from the South West Atlantic), and their joint appearance in *Merluccius capensis* (from the South East Atlantic) may favour the view of a pleistocenian migration of *Merluccius* from South America to South Africa (SZIDAT 1961, p. 12) (Figure 1).

The finding of *Livoneca raynaudii* also agrees with this theory although this parasite was mainly reported from the South Pacific (SCHIOEDTE and MEINERT 1884) and Australia (HALE 1926). More recently it has also been reported from Chile (MENZIES 1962) and India (PILLAI 1954). Whether, however, the different populations show any subspecific characteristics or whether *Livoneca raynaudii* truly represents a worldwide species has to be decided by comparative studies of the parasites. Nevertheless it does not seem completely impossible that this species may originate in the Australo-Pacific area and has extended its habitat eastwards simply by following its fish hosts. Similar results have recently been given by ESCHMEYER and HUREAU (1971) for the two fishes *Sebastes mouchezi* and *S. capensis*. It is also known that before the last ice age (pliocene), migration of fishes from the Australian region to Southwest American waters has taken place (RANDALL 1970). Pleistocenian migrations of Gadid-fishes from the Pacific around South America into the Atlantic have also been confirmed (SZIDAT 1961).

RESUME

Quelques parasites de l'extérieur et de l'intérieur sont trouvés au Merluce sud-africain (*Merluccius capensis*) du l'Atlantique de Sud-Est, qui sont identique avec des

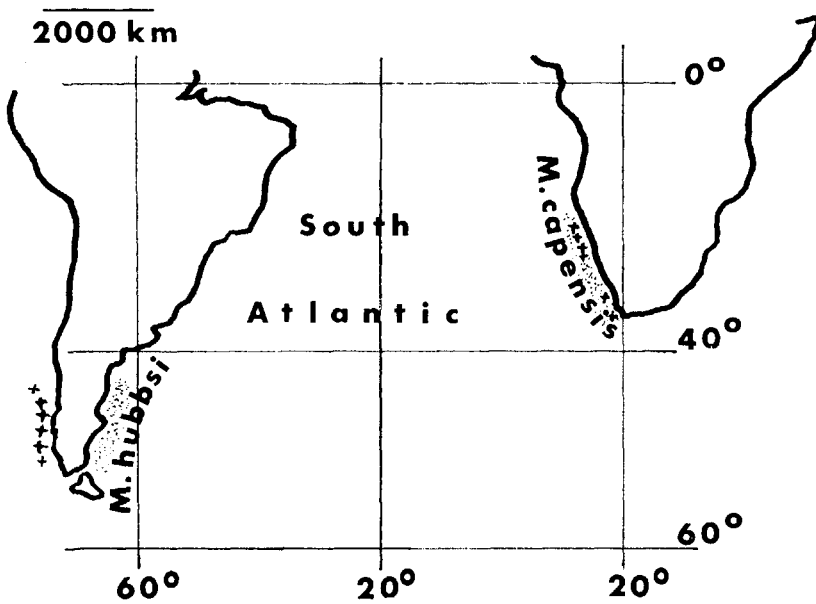


Figure 1. Distribution of species. Crosses: *Livoneca raynaudii*; Dots: *Dibothriorhynchus grossum* and *Tetrarhynchus cysticercois*.

parasites connus des poissons de l'Atlantique de Sud-Ouest. Les résultats confirment la thèse d'une migration pleistocénienne des poissons de l'Amérique du Sud à l'Afrique du Sud.

ZUSAMMENFASSUNG

Einige Endo- und Ektoparasiten des süd-afrikanischen Seehechts *Merluccius capensis* vom Süd-Ost-Atlantik sind identisch mit Formen, die von Fischen des Süd-West-Atlantiks bekannt sind. Die Ergebnisse bekräftigen die Theorie, nach der im Pleistozän Wanderungen von Fischen des südamerikanischen Raumes in den süd-afrikanischen stattgefunden haben sollen.

ACKNOWLEDGEMENTS: The author wishes to thank Prof. L. Szidat (Buenos Aires) for the identification of most of the material and Dr. Th. Bowman (Washington) for references to literature on *Livoneca raynaudii*.

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