ON THENUS ORIENTALIS AND METANEPHROPS ANDAMANICUS (MACRURA, SCYLLARIDAE AND NEPHROPIDAE) OFF KENYA COAST

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(Accepted for publication in May, 1983)

Crustacean species of Kenya's coastal waters are numerous. Some of these are of food value and support important fisheries. This includes the palinurid spiny lobsters, penaeid prawns and portunid crabs. Of lesser commercial importance are the deep water spiny lobsters and prawns. These nevertheless form a valuable additional ingredient to the fisherman's catch albeit as incidental catches. In this category the most frequently caught species is the deep-sea spiny lobster *Puerulus angulatus*. Other common species are *Thenus orientalis* family Scyllaridae, and *Metanephrops andamanicus*, family Nephropidae. These two species, the subject of the present essay, are widely distributed in the Indo-West Pacific. Distribution of *T. orientalis* in the Indian Ocean has been discussed by Prasad and Tampi (1960, 1968) and Holthuis (1968). It has also been reported from the Red Sea by Ben Tuvia (1968) and Branford (1980). *M. andamanicus* which is equally common has been recorded along the East African Coast by several workers including Longhurst (1971), Bruce (1973), Birkett (1979), Ivanor and Krylov (1980) and Mutagyera (1981).

T. orientalis which is most common on flat and muddy substrate, are caught in many localities along Kenya's coast especially near river mouths on silt and mud bottoms. Kenya's continental shelf is narrow and trawlable grounds consequently limited. This problem is worsened by the presence of coral growth both as a fringing reef and as occasional outcroppings. The Malindi and Ungwana Bay regions offer the most extensive, albeit small, trawlable grounds. This is the area into which the largest rivers of the Kenya coast, Tana and Sabaki, drain, bringing large quantities of mud especially during the long rains. This was the area where most *T. orientalis* occur. Birkett (1979) made landings of up to 5 kg/hr of this species but Ivanov and Krylov (1980) only occasionally managed to catch some 30 small specimens per hour of trawling, mainly in water 30-60 m deep.

Metanephrops andamanicus, a species closely related to the European "scampi" is found in much deeper water than *Thenus orientalis*. The R/V "Manihine" of East African Marine Fisheries Research Organization caught specimens of this species at depths of up to 640 m (Bruce, 1973). Ivanov and Krylov (1980) made catches of this species within a bathymetric range of 350-400 m. Although *M. andamanicus* is abundant and commercially fished on the East Coast of Southern Africa, this is not the case in Kenya. This is partly due to the great depths at which the species is found and relatively low abundance although occasional catches may be reasonable.

During a 30 — month period (January 1979 — June, 1981) a trawl survey was conducted in Kenya coastal waters. Catches of *T. orientalis* and *M. andamanicus* were made. This discussion presents some observations made on these catches.

METHODS AND MATERIALS

Fishing was done by trawling. The fishing vessel was a 23.74 m long stern trawler/purse seiner R/V "Ujuzi". This was a 380-horse power and 120 gross tonnage vessel that fished one trawl at a time. The following nets were tried:

- (a) High opening fish and shrimp trawl with 32 mm cod end mesh and 50 m overall length. The cod end of this net was 9.5 m.
- (b) Balloon trawl mounted on 30.5 cm × 12.5 cm wheel type bobbins. The cod end of this net was 16 m long and had a mesh size of 40 mm. The overall length was 58 m. Ground gear reinforcement was used as protection for the net when working on rough terrain. This reinforcement comprised 30.5 cm rubber discs for the wing pieces of the ground rope.
- (c) A modified north sea beam trawl. This had a 2.6 m long cod end with 40 mm

stretched mesh. Overall length was 10.4 m.

- (d) A Norwegian lobster trawl of 36 m overall length, 6 m cod end length and 80 mm stretched mesh was occasionally used mounted on the ground rope of the balloon trawl.

The north sea beam trawl proved rather dangerous to handle. Its use was therefore abandoned after a few trials. Of the other trawls, the best fishing was obtained from the high opening fish and shrimp trawl so it was adopted as the main fishing gear. The present discussion centres on catches from this trawl.

Trawling off the Kenya coast is difficult. The continental shelf is narrow and there are coral growths both as fringing reefs and as occasional outcrops. These factors mitigated against trawling in many areas therefore fishing was not random. The fishing stations were therefore concentrated in regions with trawlable grounds especially in the Malindi-Ungwana Bay area where grounds are most extensive. All fishing was done during the day mainly in water 200-300 m deep.

RESULTS AND DISCUSSION

Thenus orientalis were caught at 20 stations and *Metanephrops andamanicus* at 16 stations. Many of these stations yields both species together. Most of these stations were in the Ras Ngomeni — Ungwana Bay region as shown in Fig. 1. Water in this relatively small area undergoes turbulence due to its position relative to the zone of convergence—deflection area between the East African coastal current and Somali current. The presence of these species in this area may be related to this turbulence which affects nutrient availability (Mutua, pers. Comm.).

The species were caught at depths between 200-600 m, mainly in the 250-300 m depths range. Catch rates were low for *T. orientalis* only reaching 9.6 kg/hr at a depth of 260 m on one occasion. This species has been recorded at depths as shallow as 6-30 m (Branford, 1980). The greatest depth at which *T. orientalis* was caught was 660 m. Thus this species has an extensive depth range of occurrence. Catch rates for *M. andamanicus* peaked at 60 kg/hr on only one occasion when a balloon trawl was in use. Concentrations of these crustaceans were found to be greater

during the South East Monsoon than during the North East Monsoons. This was noticed while trawling with M. V. "Kusi" in 1978 and again during the present survey. The same situation was noticed by the workers of R/V "Professor Mesyatser" (VNIRO, 1978) who suggested that some migration was taking place. This could not be confirmed however as no area was discovered that had higher concentrations during the North East Monsoon. Migration might be to greater depths or to untrawlable terrain. Confirmation of this requires further exploratory fishing.

SUMMARY

Thenus orientalis Lund and *Metanephrops andamanicus* (Wood-Mason) occur widely in the Indo-Pacific. In Kenya coastal water the species occur in various localities. *T. orientalis* is most common near river mouths on muddy bottoms. These species occur over a wide bathymetric range. *T. orientalis* has been caught in water from only 6 — 30 m deep down to 640 m. Catches of both species were frequently made in the same hauls chiefly in the Malindi-Ungwana Bay area. Successful fishing was done best using high opening fish and shrimp trawls particularly in the 250-300 m depth range. Catch rates were low in all areas. The highest catch rate for *T. orientalis* was 9.6 kg/hr at 260 m. This was realized on one occasion. The maximum catch rate realized for *M. andamanicus* was 60 kg/hr on only one occasion. Availability of these species was found to be greatest in an area of frequent turbulence where the Somali current meets the East African coastal current. Availability was greater during the south-east monsoons than during the North East monsoons suggesting some migration. This could not be confirmed as no area that had a greater concentration of these crustaceans was discovered during the North-east monsoons.

ACKNOWLEDGEMENTS

My gratitude is due to the staff of R/V "Ujuzi" for their part in the fishing. I also wish to thank Steve Nyambu, Edward Kuyah and Jerry Achuku for their help with the compilation of the data on which this essay has been based. Finally and most importantly, my thanks are due to the Director, Kenya Marine and Fisheries Research Institute under whose guidance the program was carried out.

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Fig. 1 Fishing stations where *T. orientalis* and *M. andamanicus* were caught.

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