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**FIRST RECORDS OF THE GIANT TIGER PRAWN
PENAEUS (PENAEUS) MONODON (FABRICIUS, 1798)
(CRUSTACEA: PENAEIDAE) IN THE MARINE WATERS OF SENEGAL
(EASTERN TROPICAL ATLANTIC)**

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With 1 table and 3 figures

ABSTRACT. Specimens of the giant tiger prawn, *Penaeus (Penaeus) monodon* (FABRICIUS, 1798) are recorded for the first time in the marine waters of Senegal (Eastern Tropical Atlantic). These records are unusual and atypical because the species is exclusively cited by authors in the Indian Ocean and in the Pacific. They could be explained by the fact that specimens escaped from farmings located in the neighbouring, Southwestern Senegal and Gambia. These specimens reached marine areas where they probably found sufficient condition to develop and to reproduce, despite a possible competition pressure with a native species *P. (Farfantepenaeus) notialis*.

RESUMO. Os autores registam pela primeira vez a presença de *Penaeus (P.) monodon* (FABRICIUS, 1798) nas águas sebegalesas. Este registo inesperado, uma vez que se trata de uma espécie com distribuição exclusiva nos oceanos Pacífico e Índico, terá a sua origem explicada pelo escape de alguns espécimes de explorações de maricultura localizadas no Sudoeste do Senegal e Gambia. Estes exemplares teriam alcançado áreas marinhas nas quais encontraram condições suficientes para o seu desenvolvimento e reprodução, apesar da potencial competição provocada pela espécie indígena *P. (Farfantepenaeus) notialis*.

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INTRODUCTION

Current investigations on Crustacean Decapods from marine and estuarine waters in Senegal enable us to identify 13 species. Among them, 5 belong to the Penaeidae Family. Four of these penaeids were previously cited and/or described in faunistic treatises and papers concerning this marine area (CAPART, 1951; HOLTHUIS, 1952; FISHER *et al.*, 1981; BELLEMAN *et al.*, 1988). These species are *Penaeus (Farfantepenaeus) notialis* PÉREZ-FARFANTE, 1967; *P. (Melicertus) kerathurus* (FORSSKÄL, 1775); *Parapenaeus longirostris* (LUCAS, 1846) et *Parapenaeus atlantica* BALSS, 1914. The fifth species, *P. (Penaeus) monodon* is atypic and unknown in the area. Its geographic distribution, although wide, only expands in the Indian Ocean and in the Pacific. Captures of giant tiger prawns from off Senegalese coasts are rather unusual but not a cidental. They are related to causes we try to explain and to discuss above.

MATERIAL AND METHODS

Firstly, two giant tiger prawns were collected at the stalls of two fishmarkets of Dakar in November 1994. Then, thirty-one other specimens were collected at the Dakar fishharbour: six in September 1995, 25 in May 1996. According to the shipowners, all these 31 specimens were caught off Cape Roxo in Southern Senegal (Fig. 1). Everytime, the *P. (P.) monodon* were included among samples of *P. (F.) notialis*. However, the tiger giant prawn were distinct from *P. (F.) notialis* by their greater size and their darker coloration.

The identification of *P. (P.) monodon* was based on MOTOH (1985). We give above the major characters of diagnosis that enable us to determine the species (Fig. 2).

The rostrum extends beyond the tip of the antennular peduncle. It exhibits 8 teeth on its dorsal margin and 3 on its ventral margin. The rostral carina reaches almost to the epigastric spine. The antennular flagellum is sub-equal to or slightly longer than the peduncle. The fifth pereopod has no exopod. The telson is unarmed. Color on life is brownish, sometimes purple or greyish. Carapace and abdomen are transversaly banded with red and white.

Among the 31 exemplars we have observed, 28 of them were sexed, then measured to the nearest millimetre by using a calliper rule, and finally weighed to the nearest gramme. The total length (TL) was measured from the anterior margin of the carapace to the dorsal tip of the telson; the cephalo-thoracic length (CLT) was measured as the distance between the anterior margin of the carapace and its posterior distance. Our observations are resumed in the Table 1.

RESULTS AND DISCUSSION

The morphology, the size and the weight of the Senegalese *P. (P.) monodon* are closed to those described by MOTOH (1985) for specimens from Southeastern Asian waters.

The occurrence of *P. (P.) monodon* from off the coast of Senegal is not related to a large migration of the adult ones. These unusual captures of giant tiger prawns are rather linked to the presence of aquacultures sites in Southwestern Senegal and in Gambia (Fig. 1).

TABLE 1 - Range of the three features measured in *P. (P.) monodon* caught from off coast of Senegal.

Sexe	n	TL, mm (range)	CTL, mm (range)	Weight, g (range)
Males	9	235-285	50-69	91,4-180,0
Females	19	290-330	70-86	162,5-283,0

In Southwestern Senegal, a scale experimentation was initiated in year 1982, located in Katalalousse, on the left edge of River Casamance estuary, 500 km from Dakar approximatively (NDIAYE *et al.*, 1992). This experimentation ended during 1993 (BOUSSO *et al.*, 1993; NIAMADIO, in press). Firstly, two autochthonous species and five allochthonous ones were used. Then, the interest of aquacultors focused on *P. (F.) notialis*, native species, and on *P. (P.) monodon*, autochthonous species, according to the good results obtained with these two penaeids during farmings assays. However, the farming of *P. (F.) notialis* was left consecutively to the fragility of the species during handlings and to its infestation by microsporidians. The effects of the latter phenomenon were described by CLOTILDE-BA & TOGUEBAYE (1994 and 1995).

P. (P.) monodon was the most interesting species in this shrimp culture experimentation, despite growth problems mainly due to a relative increase of salinity during dry season, from January to July. Unfortunately, the farming of the giant tiger prawn was also left consecutively to an unfavourable economic conjunction. Moreover, some years ago, in 1990, catches of *P. (P.) monodon* were reported in craft fisheries from River Casamance (LE RESTE, pers. comm.). Probably, these specimens escaped from these farms. Other specimens reached the neighbouring marine areas where they found sufficient conditions to develop and to reproduce. This scenario could explain why giant tiger prawns were captured in Senegalese marine areas.

Shrimp culture started in Gambia at the beginning of 1986. An eclosery was built on the left side of River Gambia, 20 km from Banjul. The target species was *P. (P.) monodon*. Then, in relation with unfavourable results, the eclosery was transferred in Sanyang, directly located in front of the Atlantic Ocean. The experimentation ended in 1993. A similar scenario to this presented above could be imagined. Furthermore, the specimens escaped from this latter site could invade more easily the marine area.

How to envisage in a next future the accidental introduction of the tiger giant prawn into the Senegalese waters?

Every time, the *P. (P.) monodon* were found among samples of *P. (F.) notialis*. Both species were captured together. They probably colonize the same biotopes. So, a competition pressure between them remains possible.

The closure of farming sites in Senegal and in Gambia could stop new *P. (P.) monodon* invasions in Senegalese marine areas. Then, it is necessary to study structures of populations, growth and fecundity of these giant prawns to delineate their adaptation in their new natural environment.

Only, the knowledge of these parameters should indicate the probabilities of expansion of *P. (P.) monodon* in the Senegalese marine waters and in the adjacent marine areas.

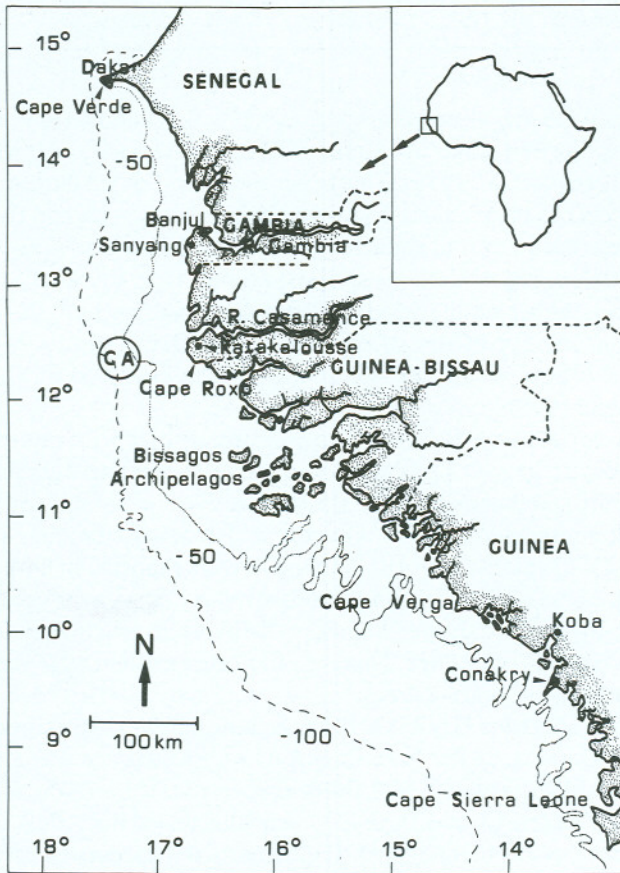


Fig. 1 - Map of the western coast of Africa pointing out the farming sites (asterisks) of *P. (P.) monodon* and the catches area (CA) from off the coast of Senegal.

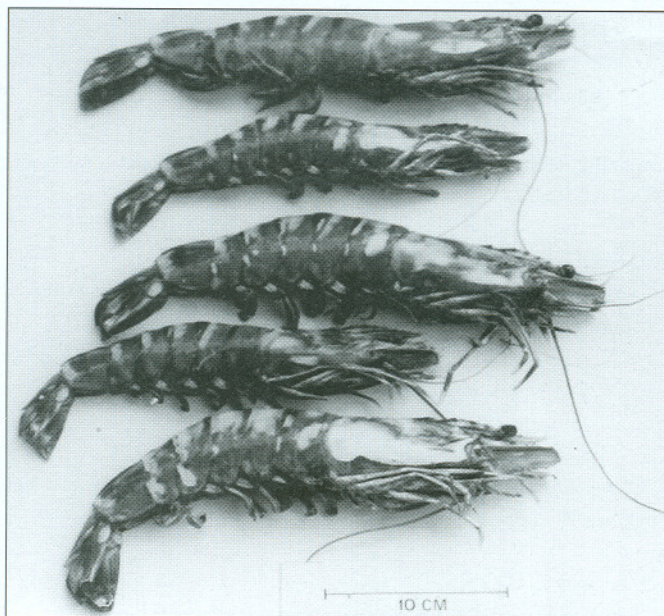


Fig. 2 - Lot of giant tiger prawns *Penaeus (Penaeus) monodon*, caught from off the coast of Senegal.

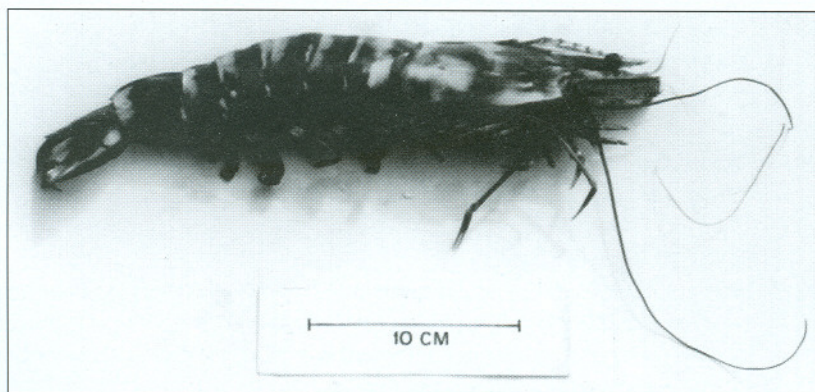


Fig. 3 - Exemplar of the giant tiger prawn, *Penaeus (Penaeus) monodon*, caught from off the coast of Senegal.

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