

# Range extension of the geographic distribution of lobsters (Palinuroidea) and crabs (Xanthoidea) in the Brazilian coast.

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## Abstract

The records for Crustacean Decapods on the Brazilian coast have undergone gradual enlargements concerning distribution. This kind of study is important to supply a better understanding of distribution patterns and dispersion. This paper provides information regarding the range extent of crabs and lobsters on the coast of Brazil. The crustaceans were collected with the aid of a commercial fishing boat in Ubatuba Bay region and by means of scuba and snorkel diving at Couves Island and Itaguá rocky shore (São Paulo State coast), Fernando de Noronha Archipelago (Pernambuco State coast) and littoral of Natal (Rio Grande do Norte State coast). The following species are registered here: *Panulirus laevicauda*, *Justitia longimanus*, *Paractea rufopunctata nodosa* and *Glyptoxanthus vermiculatus*.

**Key words:** geographic distribution; Decapoda; Palinuroidea; Xanthoidea

## Introduction

Interest on crustaceans from Brazilian coast has been reported since 1560, through faunal descriptions done by the Jesuit José de Anchieta (Tavares, 1993). The most recent reports point out the presence of more than 300 brachyuran crab species and at least 14 species of lobsters living along the Brazilian coast (Melo, 1996 and 1999; Pohle *et al.*, 1999). However, an assessment of the exact distribution and precise number of species that compose the Decapod fauna throughout the area is an arduous task, especially considering constant information about new records and enlargements on the distribution of those organisms.

On the Brazilian littoral, the spiny lobsters are grouped into three genera, with five species (Melo, 1999). Three of these species are commercially exploited, especially in the northeastern coast. Thus, it is reasonable to consider that this activity may be associated with the diminishing of natural resources (Oliveira *et al.*, 1993; Pinheiro *et al.*, 1999; Sankarankutty *et al.*, 2001).

Despite its cosmopolitan distribution, Palinuroidea morphology is very similar among the five species. In terms of behavior, this family is characterized by gregarious habit, expressed by lodging model, food taken and migration behavior (Kanciruk, 1980; Coelho and Santos, 1994).

Among the true crabs, the Xanthoidea have more genera than any other Brachyura, and they have been treated as a very complex taxonomic group (Williams, 1984), which poses a substantial challenge to specialists in species determination. In the Brazilian coast, there are 25 genera which include, at least 48 species belonging to this superfamily (Melo, 1996). Thus the present paper reports the enlargement distribution of two species of spiny lobster, *Panulirus laevicauda* and *Justitia longimanus* and two brachyuran crabs, *Paractea rufopunctata nodosa* and *Glyptoxanthus vermiculatus*, for the Brazilian coast.

## Material and Methods

The examined material was obtained during collections in Ubatuba, São Paulo State, Natal, Rio Grande do Norte State and Fernando de Noronha Archipelago, Pernambuco State, using SCUBA and snorkeling divers and, also, trawling expeditions. The obtained specimens were maintained in 70% alcohol and deposited in the Museu de Zoologia da Universidade de São Paulo (MZUSP).

## Results

### *Panulirus laevicauda* (Latreille, 1817) (Fig. 1A)

Two specimens of *P. laevicauda* were obtained. An adult female measuring 76.1mm in carapace length was collected from Ubatuba at 23°31'18" S and 44°48'12" W, by trawl at a depth of approximately 38m, in November 2000. An adult male, with a carapace length of 60.8 mm, was obtained from the Natal coast at 05°47'42" S and 35°12'34" W, by SCUBA diving at approximately 10m deep, in December 2002.

Geographic range: West Atlantic, from Bermuda to Florida, Gulf of Mexico, Antilles, northeastern of South America, from Guyana to Brazil (Fernando de Noronha Archipelago, Paraíba to Rio de Janeiro) (Melo, 1999).

### *Justitia longimanus* (H. Milne Edwards, 1837) (Fig. 1B)

An adult male with a 37.0mm carapace length was captured in January 2000 in the channel formed between the Rata and Meio Islands, Fernando de Noronha Archipelago, Pernambuco coast at 03°52'30" S and 32°26'08" W, under pebbles, by hand during a SCUBA diving until approximately 8m.

Geographic range: West Atlantic, from Bermuda to Florida, Antilles, northeastern of South America and Brazil (Espírito Santo State) (Melo, 1999).

### *Paractea rufopunctata nodosa* (Stimpson, 1869) (Fig. 1C)

Three specimens of *P. rufopunctata nodosa* were obtained. An adult male measuring 20.5mm in carapace width was collected at Couves Island, Ubatuba region, São Paulo coast at 23°25'25" S and 44°52'03" W in November 2000. This specimen was found in association with coral heads at approximately 10m deep, captured by SCUBA diving. Two females were obtained from Itaguá, in Ubatuba at 23°27'30" S and 45°02'54" W among sponge beds. These animals included one juvenile having a 5.4mm carapace width, in March 2002, and an adult with 14.9mm carapace width found in July 2002. Both crabs were captured by hand during a snorkeling dive, within an interval approximately 2-5m deep.

Geographic range: West Atlantic from North Carolina, Florida, through Gulf of Mexico, Antilles, northeastern of South America, Brazil (from Amapá to Rio de Janeiro) and Uruguay. Central Atlantic, Ascension Island (Melo, 1996).

### *Glyptoxanthus vermiculatus* (Lamarck, 1818) (Fig. 1D)

An adult male 30.9mm in carapace width was obtained in April 2000. It was found in association with coral heads at approximately 10m deep, captured by hand during a SCUBA diving in the Couves Island, Ubatuba region at 23°25'25" S and 44°52'03" W.

Geographic range: West Atlantic from Venezuela, Guyana and Brazil (Espírito Santo), and East Atlantic - Angola (Melo, 1996).

## Discussion

Distribution enlargement and new records of marine invertebrates represent an important argument for understanding environment and community dynamics in order to establish the base for knowledge on larval migration mechanisms (Wolff, 1954; Góes *et al.*, 1998; Bertini, 2002). However, taking into account the cryptic behavior that characterizes these species, it could be said that the obtained information has been a delayed record for these specific regions, especially regarding *P. laevicauda* and *P. rufopunctata nodosa*. This paper represents a range extent of a very small magnitude, mainly in light of the southern distribution previously described. As it is, geopolitical limits do not provide biogeographical barriers, so it is strongly suggested that these records of *P. laevicauda* and *P. rufopunctata nodosa* must be viewed as obvious, taking into account the limits of range distribution already proposed.



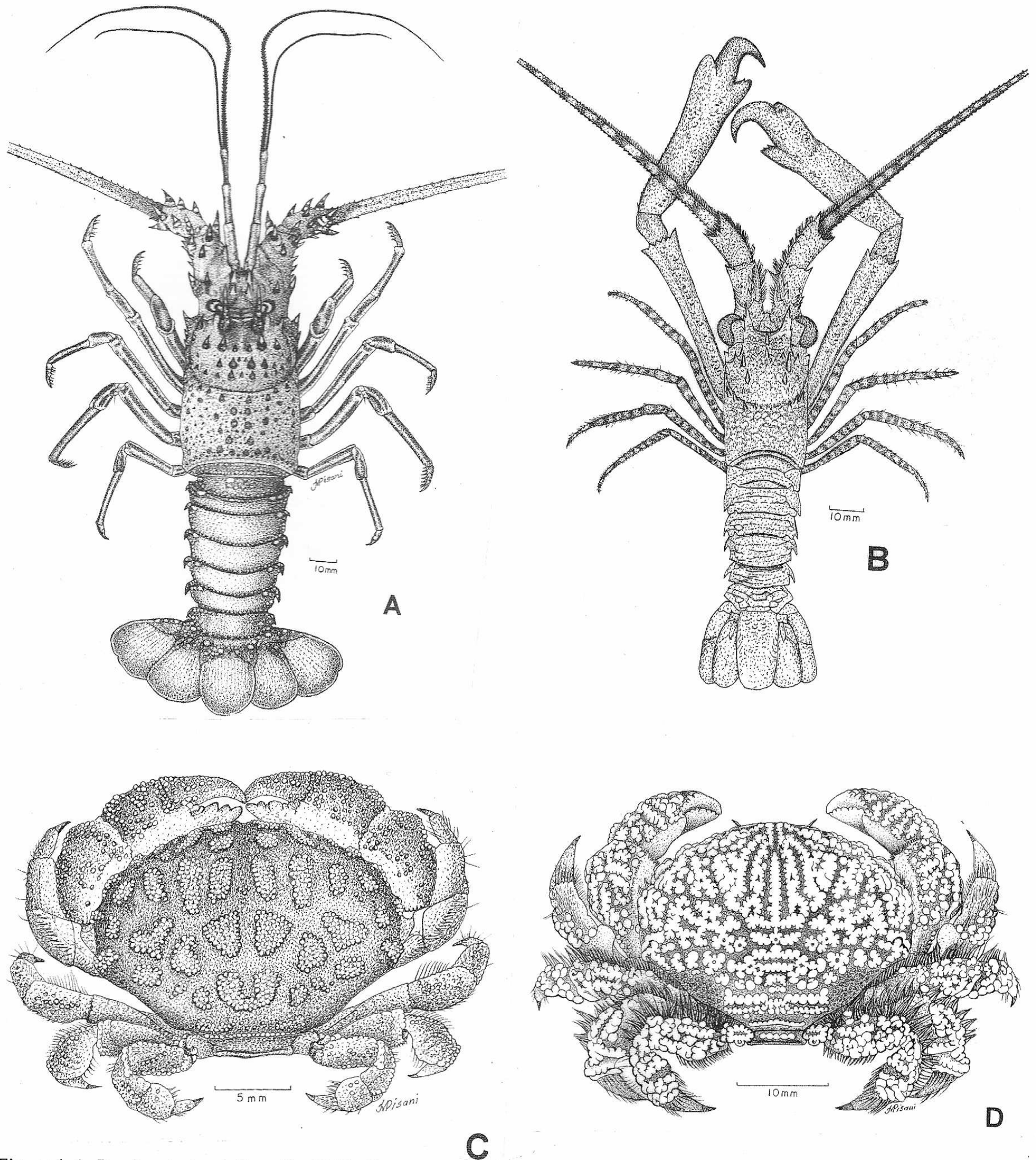


Figure 1: A, *Panulirus laevicauda* (Latreille, 1817); B, *Justitia longimanus* (H. Milne Edwards, 1837); C, *Paractea rufopunctata nodosa* (Stimpson, 1869); D, *Glyptoxanthus vermiculatus* (Lamarck, 1818). Dorsal view of adult crustaceans.

Based on extensive collection programs, we can suppose that *P. laevicauda* and *P. rufopunctata nodosa* are represented in the areas reported here by small populations that present cryptic behavior. This fact can explain the low density of these species. On the other hand, the delayed record of *J. longimanus* involves not only the aspects of small populations size or cryptic behavior, but mainly the current technique employed. In the lobster catch, known for its selective characteristic, the kind of collect technique should be considered.

Alternatively, the occurrence of *G. vermiculatus* seems to be very enigmatic, considering that this report represents only the third record of this species in Brazilian waters. A large hiatus has been created because the previous distribution range had indicated the Espírito Santo coast as its southern limit (Tavares and Albuquerque, 1990). Furthermore, we need to consider the presence of an important biogeographic barrier, a resurgence area on the Rio de Janeiro coast that could be limiting the larval movements, indicating that this species in some way transpose this barrier.

The explanations about *G. vermiculatus* distribution pattern must account for unnatural larval transport, larval tolerance and other ecological aspects. However, in addition to those aspects discussed above, this record allows us to suppose that the *G. vermiculatus* distribution range must be larger than was expected.

The continuous investigations on Decapod community and the employment of alternative capture technique beyond the traditional ones will certainly provide new modifications on species distribution range as well as insight into the richness of Decapod fauna in Brazilian waters, improving our knowledge about these crustaceans.

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