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Scientific Note

A new record for a *Tremoctopus violaceus* Chiaie, 1830 (Mollusca, Tremoctopodidae) from Rio de Janeiro coast, southeastern Brazil

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Abstract. Species of the family Tremoctopodidae are widely distributed in tropical oceans, but rare in coastal waters. In the present study, we record the occurrence of one adult individual of *Tremoctopus violaceus* in coastal waters of Rio de Janeiro State, southeastern Brazil. This is the third record of *T. violaceus* in that coast.

Key words: Octopoda, blanket octopus, geographical distribution

Resumo. Um novo registro de *Tremoctopus violaceus* Chiaie, 1830 (Mollusca, Tremoctopodidae) na costa do Estado do Rio de Janeiro, sudeste do Brasil. Espécies da Família Tremoctopodidae são amplamente distribuídas nos oceanos tropicais, contudo raras em ambientes costeiros. No presente estudo registramos a ocorrência de um indivíduo adulto de *Tremoctopus violaceus* na costa do estado do Rio de Janeiro. Este é o terceiro registro de *T. violaceus* na costa do estado.

Palavras chave: Octopoda, polvo-com-véu, distribuição geográfica

The family Tremoctopodidae Tryon, 1879 is represented by one single genus *Tremoctopus* Chiaie, 1830, and three pelagic species commonly known as blanket octopuses: *T. robsoni* Kirk, 1884 – restricted to the Pacific Ocean (O'Shea 1999), *T. gelatus* Thomas, 1977 and *T. violaceus* Chiaie, 1830 – both showing a circumtropical distribution (Thomas 1977). Two recognized subspecies of *T. violaceus* show distinct geographical distribution: *T. violaceus gracilis* Eydoux & Souleyet, 1852, occurring in Pacific and Indian Ocean (Thomas 1977, Zeidler 1989, Vaga *et al.* 2001) and *T. v. violaceus* occurring in the Atlantic ocean between the latitudes 43º N and 35º S (Thomas 1977, Haimovici & Perez 1991), Gulf of Mexico (Voss 1956, Thomas 1977), Caribbean (Salisbury 1953, Arocha & Urosa 1983, Díaz *et al.* 2000) and Mediterranean (Salman *et al.* 2002).

Among the Tremoctopodidae, *T. v. violaceus* is the only species recorded in the Brazilian coast inhabiting epipelagic habitats (Palacio 1982, Haimovici 1985), and exhibiting strong sexual dimorphism, with females much larger than males (Norman *et al.* 2002). Records were derived from sporadic catches of whole individuals or remains found in stomach contents of large pelagic predators.

Adam (1937) provided the first record of the species in Brazil, in the coast of Ceará (northwestern Brazil). Haimovici *et al.* (1989) reported an adult

female, collected in Guanabara Bay, Rio de Janeiro, in December 1985 – FURG/0042. An adult female, captured on the Palmas Island, Cagarras Archipelago (23º01' S, 43º12' W) in March 2007, was deposited in the Malacology Laboratory collection of the Rio de Janeiro National Museum (Museu Nacional do Rio de Janeiro - MNRJ, voucher number: MNRJ 11.139). Vaske-Junior & Rincón-Filho (1998) reported the presence of *T. violaceus* in the stomach contents of blue sharks (*Prionace glauca*) caught by longline fishing off the coast of Rio Grande do Sul and Santa Catarina states (southern Brazil). Vaske-Junior (2005) recorded beaks and semi-digested individuals of *T. violaceus* in stomach contents of yellowfin tuna (*Thunnus albacares*), Atlantic albacore (*T. alalunga*), Bigeye tuna (*T. obesus*), Wahoo (*Acanthocybium solandri*), common dolphinfish (*Coryphaena hippurus*), swordfish (*Xiphias gladius*), Atlantic white marlin (*Tetrapturus albidus*), Longbill spearfish (*T. pfluegeri*), black marlin, (*Makaira nigricans*), Atlantic sailfish (*Istiophorus albicans*), Longnose lancetfish (*Alepisaurus ferox*), blue shark (*Prionace glauca*), Night shark (*Carcharhinus signatus*) and Scalloped hammerhead (*Sphyrna lewini*), catched in Northeastern Brazil. Other records constitute larval stages found in zooplankton samples from the coast of Rio Grande do Sul state (Haimovici & Perez 1991) and off Fernando de Noronha Archipelago (Haimovici *et al.* 2002, Santos & Haimovici 2002).

The present specimen was collected in the morning of the 20th of may 2002, at the surf zone of Itaipu beach, Niterói, Rio de Janeiro state (22º58' S, 43º02' W - Figure 1) by artisanal fishermen during a beach-seining operation. The specimen was preserved on ice and sent for identification at the Necton Biology and Fisheries Ecology Laboratory (ECOPESCA) of Fluminense Federal University.

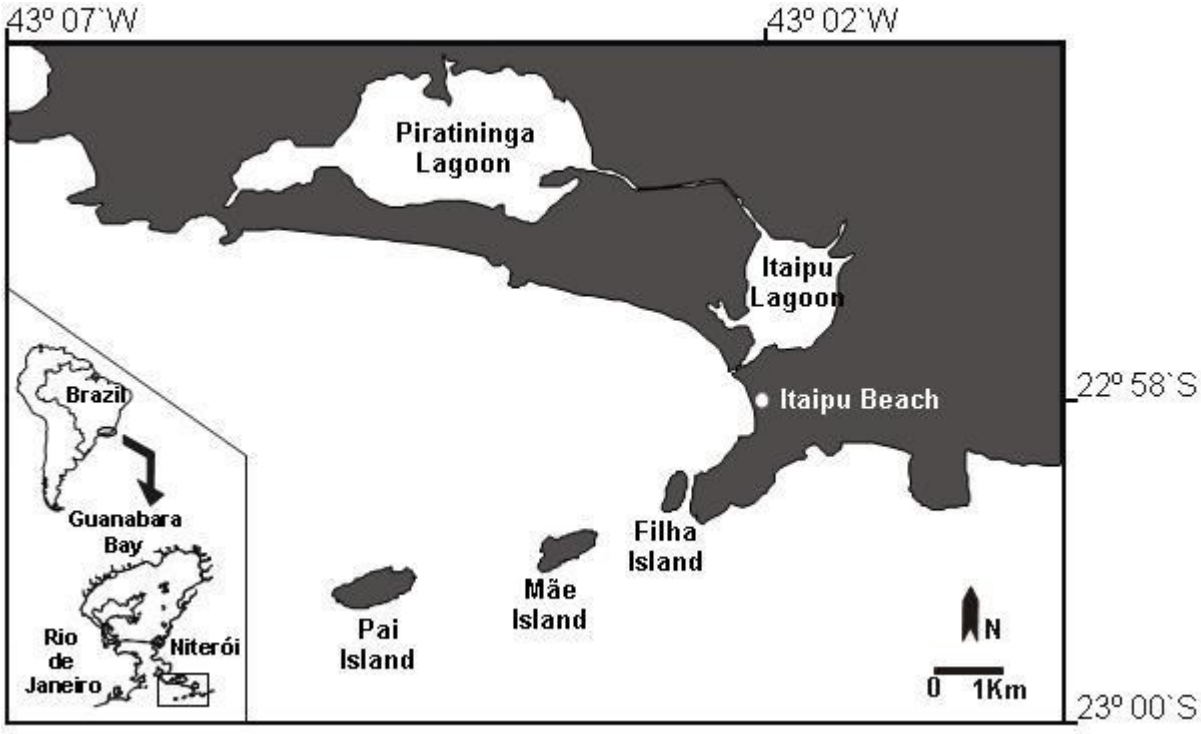

Figure 1. Map showing the Itaipu beach where the specimen of *Tremoctopus violaceus* was collected. Inset shows the relative location of the area in Guanabara Bay and Southeastern Brazil.

The identification followed Thomas (1977), Roper *et al.* (1984) and Haimovici *et al.* (1989), and the diagnostic characters were the visible size difference between the dorsal (pairs I and II) and ventral (pairs III and IV) tentacles, presence of a veil connecting pairs I and II and presence of water pores on the epidermis, near the base of the pairs I and IV (Figure 2). The specimen collected consisted of an adult female of 75.0 cm total length, 16.0 cm mantle length (fixed) and 0.97 kg wet weight. The arms' formula was: II:IV:III. According to Thomas (1977) and Norman *et al.* (2002), *T. violaceus* presents strong sexual dimorphism, with males reaching at most between 5 and 10 % of the female size.

The voucher specimen was deposited in the Malacology Laboratory collection of MNRJ (voucher number: MNRJ 12.724). The specimen was found with tentacles, presenting just small scratches over the mantle (Figure 2), probably caused by wave action and manipulation during the

capture in the surf zone at Itaipu beach. Sea state was moderately roughwith small breakers, water temperature was about 23 ^{o}C and the sky partially cloudy with light winds from the SW.

The good state of preservation of the specimen allowed detailed examination of both morphological characters and color patterns. According with the collectors' report, the animal was alive when captured, showing signs of space disorientation. Local fishermen reported that this was the first occurrence of such a specimen at the beach and within their fishing grounds. Despite the fact that the area is daily subjected to moderate fishing activity with beach seining, gill netting and hand lining (Tubino *et al.* 2007, Monteiro-Neto *et al.* 2008), there is is no recent record of *T. violaceus* capture in the region with any of those gears.

Figure 2. Ventral view of the specimen of *Tremoctopus violaceus* recorded at Itaipu Beach, Niterói, Rio de Janeiro. Small inset shows the detail of the dorsal water pores.

The area of occurrence of the present specimen is located near the northern limit of the Southeast Brazilian Continental Bight (SEBCB), situated between Cabo Frio (23º00' S; 42º00' W) and Cabo de Santa Marta (28º36' S; 48º48' W). The SEBCB sows a seasonal fluctuation in oceanographic features, associated to coastline morphology and topography. Cold water from the South Atlantic Central Water (SACW) penetrates into the Bight in the summer through a coastal upwelling powered by strong NE winds. In the winter, warm tropical waters of the Brazilian Current move inshore, forced by SW winds that follow the passage of atmospheric frontal systems, ceasing the upwelling effects of the SACW over the inner Continental Shelf (Castro-Filho *et al.* 1987, Paes & Moraes 2007). This typical bad weather condition during winter-time, and the inshore movement of the tropical waters, probably favored the transport of this pelagic specimen of *T. violaceus* into coastal waters. In fact, the weather condition during the collection time follows the characteristics of a cold front passage in the area. Despite of its regular occurrence in Brazilian waters (Haimovici *et al.* 1989), we suggest that the few

available records of whole specimens of *T. violaceus* are linked to the fact that individuals only approach coastal waters during specific oceanographic conditions.

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References

Adam, W. 1937. Cephalopoda. Res. Sci. Croisieres Navire-Ecole Marcator. **Men. Mus. Roy. Hist. Nat.,** Vol. I, ser 2(9): 43-82.

Arocha, F. & Urosa, L. J. 1983. Notes on two Octopoda from Venezuelan Waters. **Bulletin of Marine Science**, 33(4): 941-942.

Castro-Filho, B., Miranda, L. & Miyao, S. 1987. Condições hidrográficas na plataforma continental ao largo de Ubatuba: variações sazonais e em média escala. **Boletim do Instituto Oceanográfico**, 35: 135-151.

Díaz, J. M., Ardila, N. & Garcia, A. 2000. Calamares y pulpos (Mollusca: Cephalopoda) Del mar Caribe colombiano. **Biota Colombiana**, 1(2): 195-201.

Haimovici, M. 1985. Class Cephalopoda; Pp. 283-288. *In*: Rios, E. C. (Ed.). **Seashells of Brazil**. Fundação Universidade de Rio Grande - Museu Oceanógrafico. Rio Grande, Brasil, 328 p.

Haimovici, M., Perez, J. A. A. & Costa, P. A. S. 1989. A review of cephalopods occurring in the waters of Rio de Janeiro State, Brazil with first record of four species. **Revista Brasileira de Biologia**, 49(2): 503-510.

Haimovici, M. & Perez, J. A. A. 1991. Abundância e distribuição de cefalópodes em cruzeiros de prospecção pesqueira demersal na plataforma externa e talude continental do sul do Brasil. **Atlântica.** Rio Grande, 13(1): 189-200.

Haimovici, M., Piatkowski, U. & Santos, R. A. 2002. Cephalopod paralarvae around tropical seamounts and oceanic islands off the north-eastern coast of Brazil. **Bulletin of Marine Science**, 71(1): 313-330.

Monteiro Neto, C., Tubino, R. A., Moraes, L. E. S., Neto, J. P. M., Esteves, G. V. & Fortes, W. S. 2008. Associações de peixes na região costeira de Itaipu, Niterói, RJ. **Iheringia. Série Zoologia**, 98: 50-59.

Norman, M. D., Paul, D., Finn, J. & Tregenza, T. 2002. First encounter with a live male blanket octopus: the world's most sexually size-dimorphic large animal. **New Zealand Journal of Marine and Freshwater Research**, 36: 733–736.

O'Shea, S. 1999. The marine fauna of New Zealand octopoda (Mollusca: Cephalopoda). **NIWA Biodiversity Menoir**, 112: 1-280.

Paes, E. T. & Moraes, L. E. S. 2007. A new hypothesis on the influence of the El Niño/La Niña upon the biological productivity, ecology and fisheries of the Southern Brazilian Bight. **Pan-American Journal of Aquatic Sciences**, 2(2): 94-102.

Palacio, J. F. 1982. Revisión zoogeográfica marina del sur del Brasil. **Boletim do Instituto Oceanográfico de São Paulo**, 311: 69-92.

Roper, C. F. E., Sweeney, M. J. & Nauen, C. E. 1984. Cephalopods of the world - FAO species catalogue. **FAO Fisheries Synopsis**, 125(3): 1-277.

Salisbury, A. E. 1953. Mollusca of the University of Oxford Expedition to the Cayman Islands in 1938. **Proceedings of the Malacology Society**, London 30: 39-54.

Salman, A., Katagan, T. & Bemlí,.H. A. 2002. Cephalopod Fauna of the Eastern Mediterranean. **Turkish Journal of Zoology**, 26: 47-52.

Santos, R. A. & Haimovici, M. 2002. Cephalopods in the trophic relations off southern Brazil. **Bulletin of Marine Science**, 71(2): 753-770.

Thomas, R. F. 1977. Systematics, distribution and biology of cephalopods of the genus *Tremoctopus* (Octopoda: Tremoctopodidae). **Bulletin of Marine Science,** 27(3): 353–392.

Tubino, R. A., Monteiro Neto, C., Moraes, L. E. S. & Paes, E. T. 2007. Artisanal fisheries production in the coast zone of Itaipu, Niterói, RJ, Brazil. **Brazilian Journal of Oceanography**, 55: 187-197.

Vaga, M. A., Letelier, S. & Carreño, P. 2001. Colección de cefalópodos de Museo Nacional de Historia Natural: Catálogo de especies de aguas chilenas. **Publicación Ocasional del Museo Nacional de Historia Natural Chile**, 57: 5-86.

Vaske-Júnior, T. & Rincón-Filho, G. 1998. Conteúdo estomacal dos tubarões azul (*Prince glauca*) e anequim (*Isurus oxyrinchus*) em águas oceânicas no sul do Brasil. **Revista Brasileira de Biologia**, 58(3): 445-452.

Vaske-Júnior, T. 2005. Cefalópodes oceânicos da zona econômica exclusiva do nordeste do Brasil. **Boletim do Instituto de Pesca de São Paulo**, 31(2): 137-146.

Voss, G. 1956. Review of the cephalopods of the Gulf of Mexico. **Bulletin of Marine Science of the Gulf and Caribbean**, 6: 85-178.

Zeidler, W. 1989. The pelagic octopus *Tremoctopus violaceus* Delle Chiaje, 1830, from southern Australian waters. **The Veliger**, 32(2): 166-170.

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