

Crustacea, Decapoda, Portunidae, *Callinectes sapidus* Rathbun, 1896: First record for state of Paraíba, northeastern Brazil

Emmanoela Nascimento Ferreira*, Alberto Kioharu Nishida and Luiz Carlos Serramo Lopez

Universidade Federal da Paraíba, Departamento de Sistemática e Ecologia, Programa de Pós-Graduação em Ciências Biológicas – Área de concentração Zootaxia. Campus 1, Cidade Universitária. CEP 58059-900. João Pessoa, PB, Brazil.

* Corresponding author. E-mail: emmanoelaferreira@gmail.com

ABSTRACT: *Callinectes sapidus* is reported here for the first time to state of Paraíba, northeastern Brazil. In Brazil, this species was only known from state of Rio Grande do Sul to the state of Pernambuco, leaving a significant gap in its expected distribution along the coasts of other states in northern and northeastern Brazil, since it has been collected from Venezuela to North America. Two adult female specimens were collected using local fishing gear in the estuary of the Mamanguape River. This new record increases the known distribution of this species.

Fifteen species of swimming crabs of the genus *Callinectes* Stimpson, 1860 have been recorded along the coast of the Americas (Williams 1974; Fausto-Filho 1980), with eight of these cited for Brazilian coast: *C. affinis* Fausto-Filho, 1980, *C. bocourti* A. Milne Edwards, 1879, *C. danae* Smith, 1869, *C. exasperatus* Gerstaecker, 1856, *C. maracaiboensis* Taissoun, 1972, *C. marginatus* A. Milne Edwards, 1861, *C. ornatus* Ordway, 1863, and *C. sapidus* Rathbun, 1896 (Williams 1974; Fausto-Filho 1980; Melo 1996; Sankarankutty *et al.* 1999). Shubart *et al.* 2001 and Robles *et al.* 2007 consider *C. maracaiboensis* as synonymous of *C. bocourti* leading to seven valid species of *Callinectes* registered for Brazil.

The species *C. sapidus* is a commercially important Brachyura in North America and it is heavily harvested there (Williams 1974; Negreiros-Fransozo *et al.* 1999; McGaw and Reiber 2000; Branco and Fracasso 2004). *Callinectes* spp. are also harvested in Brazil by fishing communities for consumption as well as for small-scale commercial purposes (Severino-Rodrigues *et al.* 2001; 2009; Souto and Marques 2006; Barreto *et al.* 2006). Among the different swimming crab species known from along the Brazilian coast, *C. sapidus* is one of the most abundant and well-known in the southern and southeastern regions of that country (Weber and Levy 2000; Pereira *et al.* 2009).

C. sapidus has a wide geographic distribution, being found in the western Atlantic along the entire coast of the United States through Florida and through Central America, Venezuela, Brazil and Argentina; it is also found in the eastern Atlantic, North Sea, Mediterranean Sea, Adriatic Sea, Black Sea, and the Indo-Pacific region (Japan) (Williams 1974; Melo 1996). *C. sapidus* is the only species among the genus that apparently has a disjunct distribution pattern for the western Atlantic, with a northern population (from the United State to Venezuela) and a southern population (from Bahia, Brazil, to Argentina) (Santos and D’Incao, 2004).

In Brazil, the occurrence of this species was cited

by Melo (1996; 1998; 1999) from the state of Bahia to the state of Rio Grande do Sul. Additionally, Pereira-Barros (1981) and Coelho and Santos (2004) reported the presence of this species in the states of Alagoas and Pernambuco, respectively.

The presence of *C. sapidus* in state of Paraíba is reported here for the first time, specifically in the Mamanguape River Estuary (MRE). It is located on the northern coast of the state, in the Barra do Rio Mamanguape Environmental Protection Area, between the municipalities of Rio Tinto and Marcação (Figure 1). Therefore, the state of Paraíba is, presently, the northward limit of distribution of *Callinectes sapidus* in the Brazilian coast.

This species is popularly known in the region near the MRE as “siri cagão” (male) and “siri nema” (female). These common names are also used for *C. bocourti*, as the local inhabitants treat both taxa as the same species due to their morphological similarities (large size) and habitat preferences. Melo (1996) noted that *C. bocourti* could be found together with *C. sapidus*. Both species (*C. bocourti* and *C. sapidus*) are not an important fishery resource for local fisherman in this area compared to *C. exasperatus* and *C. danae*.

C. sapidus is easily identified when compared with other species of this genus due to its main morphological characteristic - the presence of two strong triangular teeth with rounded or acuminate apices between the inner orbits. Their inner margin is frequently wider than the outer margin, and sometimes there is a rudimentary submedial pair of projections on the inner margin. The specimens collected agree with the mainly characters that characterized *C. sapidus* (Williams 1974; Melo 1996).

The examined specimens were encountered at the mouth of the MRE (06°45’47.0” S, 34°56’44.1” W) in August and September 2009 in a drag net specifically designed to collect swimming crabs and as by catch during a fishing excursion with another type of net (*caqueira*). Samples were collected with permission of the

Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio) and Sistema de Autorização e Informação em Biodiversidade (SISBIO), license number 19856-1. The average salinities at the site during the collection were 20.25 in August and 23.75 in September. The locality has a sandy substrate, with a greater presence of coarse sand. After being collected, the specimens were identified, sexed, measured (carapace length, carapace width and weight) and their colour pattern was registered. They were fixed in 10% formaldehyde and then moved to the Laboratório de Invertebrados Paulo Young (LIPY) at the Universidade Federal da Paraíba (UFPB). In the LIPY they were preserved in 70% ethyl alcohol and incorporated into the Coleção de Invertebrados Paulo Young - UFPB.

Examined material: Specimen 1 (Figure 2): UFPB. CRUST - 7072; adult female with remains of brown egg mass between its pleopods; greenish brown carapace, pereopods with orange articulations, chelae with orange dactylus and purple extremities; showing both chelae

and all pereopods; width of the carapace at the base of the largest lateral spine measuring 109.55 mm, width of the carapace from the tip of the largest lateral spine measuring 140.21 mm, carapace length measuring 59.64 mm and wet weight of 155.6 g; collected in September 2009. Specimen 2: UFPB.CRUST - 7073; adult female with attached brown egg mass; greenish brown carapace, pereopods with orange articulations, chelae with orange dactylus and purple extremities; showing one chela and all pereopods; width of the carapace at the base of the largest lateral spine measuring 125.41 mm, width of the carapace from the tip of the largest lateral spine measuring 152.41 mm, carapace length measuring 68.43 mm, and wet weight 196.6 g; collected in August 2009.

These samples extend the known Brazilian distribution of *C. sapidus* and represent the first reports of this species in state of Paraíba. More studies are needed to determine if the occurrence of *C. sapidus* in Paraíba was due to a already established population or whether it was an occasional occurrence.

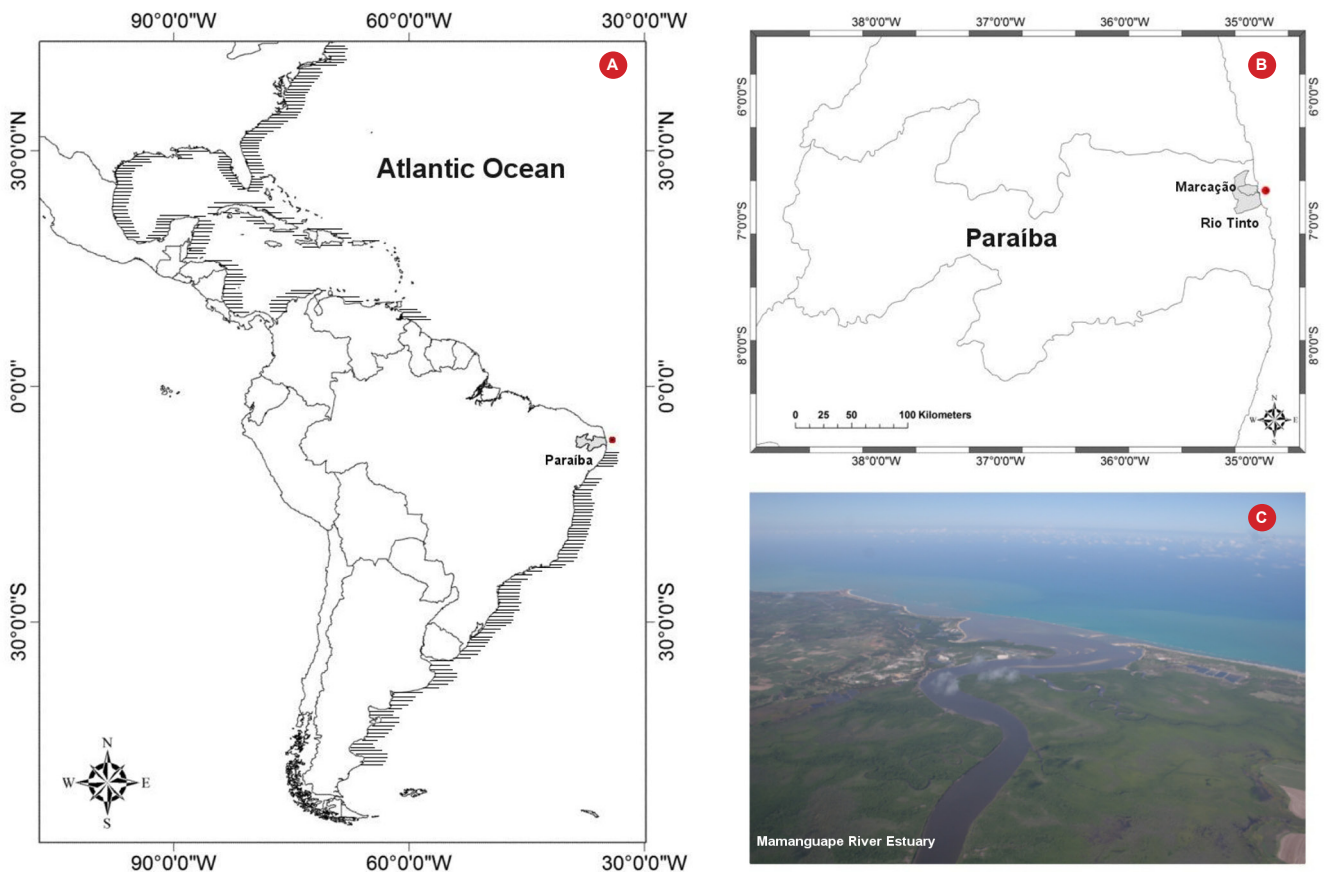


FIGURE 1. (A) - geographic distribution of *C. sapidus* in the western Atlantic Ocean (lines = records from the published literature; circle = new record from state of Paraíba). (B) - map of state of Paraíba, Brazil, indicating the location of the municipalities of Marcação and Rio Tinto where the Mamanguape River Estuary (MRE) is located. (C) - aerial photograph of the MRE. Photo: D. Tortorello.

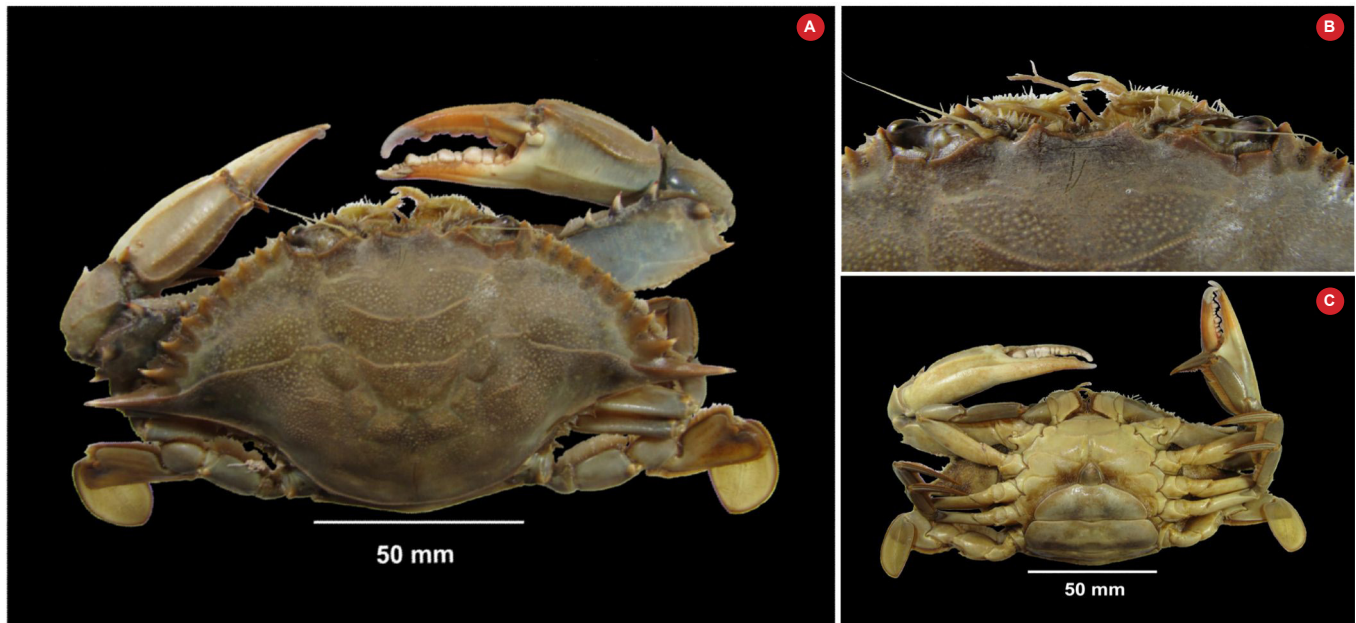


FIGURE 2. *Callinectes sapidus* (UFPB.CRUST - 7072) female collected in the MRE, state of Paraíba, Brazil. (A) Dorsal view -. (B) - Details of the teeth between the inner orbits. (C) - Ventral view. Photos: J. A. Feijó.

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LITERATURE CITED

- Barreto, A.V., L.M. Batista-Leite and M.C.A. Aguiar. 2006. Maturidade sexual das fêmeas de *Callinectes danae* (Crustacea, Decapoda, Portunidae) nos estuários dos rios Botafogo e Carrapicho, Itamaracá, PE, Brasil. *Iheringia, Série Zoologia* 96(2): 141-146.
- Branco, J.O. and H.A.A. Fracasso. 2004. Biologia populacional de *Callinectes ornatus* (Ordway) na Armação do Itapocoroy, Penha, Santa Catarina, Brasil. *Revista Brasileira de Zoologia* 21(1): 91-96.
- Fausto-Filho, J. 1980. *Callinectes affinis* a new species of crab from Brazil (Decapoda, Portunidae). *Crustaceana* 39(1): 33-38.
- McGaw, I.J. and C.L. Reiber. 2000. Integrated physiological responses to feeding in the blue crab *Callinectes sapidus*. *The Journal of Experimental Biology* 203: 359-368.
- Melo, G.A.S. 1996. *Manual de identificação dos Brachyura (caranguejos e siris) do litoral brasileiro*. São Paulo: Plêiade. 604 p.
- Melo, G.A.S. 1998. Malacostraca - Eucarida: Brachyura, Oxyrhyncha and Brachyrhyncha; p. 455-515 In P.S. Young (ed.). *Catalogue of Crustacea of Brazil*. Rio de Janeiro: Museu Nacional, Série Livros 6.
- Melo, G.A.S. 1999. Infraordem BRACHYURA (siris e caranguejos: espécies marinhas e estuarinas); p. 415-485 In L. Buckup and G. Bond-Buckup (ed.) *Os crustáceos do Rio Grande do Sul*. Porto Alegre: Ed. Universidade/UFRGS.
- Negreiros-Fransozo, M.L., F.L.M. Mantelatto and A. Fransozo. 1999. Population biology of *Callinectes ornatus* (Decapoda, Portunidae) from Ubatuba (SP), Brazil. *Scientia Marina* 63(2): 157-163.
- Pereira-Barros, J.B. 1981. Sobre a ocorrência de siris do gênero *Callinectes* em Alagoas. *Boletim do Núcleo de Estudos de Ciências do Mar* 5: 14-17.
- Pereira, M.J., J.O. Branco, M.L. Christoffersen, F. Freitas Junior, H.A.A. Fracasso and T.C. Pinheiro. 2009. Population biology of *Callinectes danae* and *Callinectes sapidus* (Crustacea: Brachyura: Portunidae) in the south-western Atlantic. *Journal of the Marine Biological Association of the United Kingdom* 89(7): 1341-1351.
- Robles, R., C.D. Schubart, J.E. Conde, C. Carmona-Suárez, F. Alvarez, J.L. Villalobos and D.L. Felder. 2007. Molecular phylogeny of the American *Callinectes* Stimpson, 1860 (Brachyura: Portunidae), based on two partial mitochondrial genes. *Marine Biology* 150: 1265-1274.
- Sankarankutty, C., A.C.F. Roman, C.S.C. Pinto, F.E.N.V. Barca and M.A. Alencar. 1999. *Callinectes maracaiboensis* Taisoun (Crustacea - Portunidae), a species common but so far unrecorded in the Northeast of Brazil. *Revista Brasileira de Zoologia* 16(1): 145-150.
- Santos, C.R.M. and F. D'Incao. 2004. Crustáceos no cerrito Ariano Souza, Rio Grande, Rio Grande do Sul e distribuição de *Callinectes sapidus* (Brachyura: Portunidae). *Iheringia, Série Zoologia* 94(1): 73-76.
- Schubart, C.D., J.E. Conde, C. Carmona-Suárez, R. Robles and D.L. Felder. 2001. Lack of divergence between 16S mtDNA sequences of the swimming crabs *Callinectes bocourti* and *C. maracaiboensis* (Brachyura: Portunidae) from Venezuela. *Fishery Bulletin* 99(3): 475-481.
- Severino-Rodrigues, E., J.B. Pita and R. Graça-Lopes. 2001. Pesca artesanal de siris (Crustacea, Decapoda, Portunidae) na região estuarina de Santos e São Vicente (SP), Brasil. *Boletim do Instituto de Pesca* 27(1): 7-19.
- Severino-Rodrigues, E., F. das C. Soares, R. Graça-Lopes, K.H. Souza and V.O.C. Canéo. 2009. Diversidade e biologia de espécies de Portunidae (Decapoda, Brachyura) no estuário de Iguape, Ilha Comprida e Cananéia, São Paulo, Brasil. *Boletim do Instituto de Pesca* 35(1): 47-60.
- Souto, F.J.B. and J.G.W. Marques. 2006. "O siri labuta muito!" Uma abordagem etnoecológica abrangente da pesca de um conjunto de crustáceos no manguezal de Acupe, Santo Amaro, Bahia, Brasil. *Sitientibus Série Ciências Biológicas* 6: 106-119.
- Weber, L.I. and J.A. Levy. 2000. Genetic population structure of the swimming crab *Callinectes danae* (Crustacea: Decapoda) in southern Brazil. *Hydrobiologia* 420: 203-210.
- Williams, A.B. 1974. The swimming crabs of the genus *Callinectes* (Decapoda: Portunidae). *Fishery Bulletin* 72(3): 685-798.

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