

# Symmetric chelipeds in males of the fiddler crab *Uca burgersi* Holthuis, 1967 (Decapoda, Brachyura, Ocypodidae).

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Among the best represented and known invertebrates from estuarine areas in South America Atlantic Coast there are the fiddler crabs of the genus *Uca*. They are characterized by a conspicuous sexual dimorphism, well evidenced in their chelipeds. Males show a most extreme level of body asymmetry among the bilateria: they have one very developed cheliped (fig. 1a) modified to behavioral displays (courtship, agonistic and defense behaviors) and the other one small (fig. 1b) and adapted to catch and take food particles to the mouth parts. Females present both chelipeds small and symmetric, which are morphologically adapted for feeding (Rosenberg, 2001).

The fiddler crab *Uca burgersi* Holthuis, 1967 is distributed along the Western Atlantic (Florida, Gulf of Mexico, Antilles, Venezuela and Brazil – from Maranhão to São Paulo) (Melo, 1996). This species inhabits estuaries and beaches being found in burrows usually built among grasses.

Some specimens bearing chelipeds with abnormalities were found in a study of the population biology of *U. burgersi* by Benetti (2003). Such study was performed in three Brazilian localities. Fiddler crabs were captured by two collectors during 30 min, at low tide periods in each mangrove. All obtained crabs were analyzed for sex determination, size and morphological differences of the chelipeds. The results reveal the presence of two males with both chelipeds well developed (fig. 2a and b) showing morphology adapted for displays, and 4 males with both small chelipeds (fig. 3) presenting morphology adapted for feeding (Table I). All these crabs presented narrow abdomen and gonopods, assuring that they are actually males.

Such crabs were compared with other males bearing chelipeds in regeneration process, discarding the hypothesis of lost followed by regeneration of the studied specimens in the present moment.

In 1870, Smith (*apud* Zou and Fingerman, 2000) has already mentioned asymmetry in a population of *U. pugnax*. Other following records are presented in table II.

Most of these authors did not reveal what was the cause of such alteration in fiddler crabs. However, Zou and Fingerman (2000) have suggested that those alterations could be a genetic factor.

The occurrence of abnormal chelipeds in fiddler crabs species was also noted by Costa (pers. comm.) and Negreiros-Fransozo (pers. comm.) in mangrove population from the northern littoral of São Paulo state. Concerning to the Brazilian coast, this is the first account of unusual chelipeds in a fiddler crab species, *U. burgersi*.

We must point out that further investigations are needed in order to determine what is the role performed by an individual bearing such kind of alterations in the chelipeds within the population. Is a male bearing both small chelipeds able to attract and copulate females?

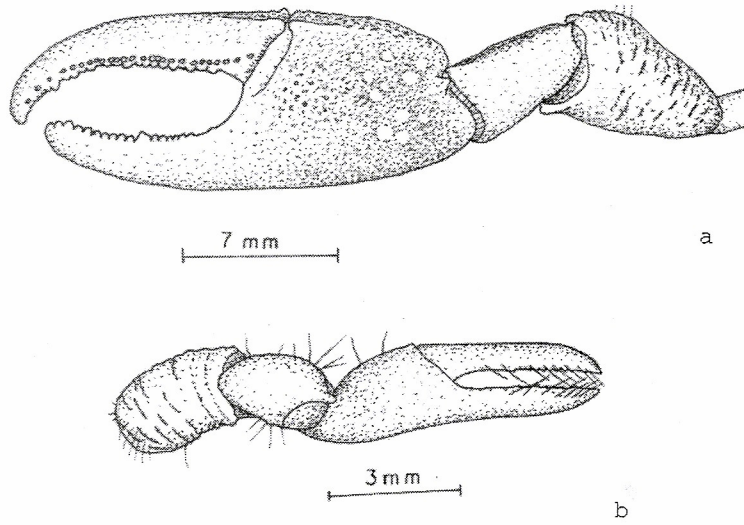


Figure 1: *Uca burgersi* Holthuis, 1967. a) the very developed cheliped; b) the small cheliped.

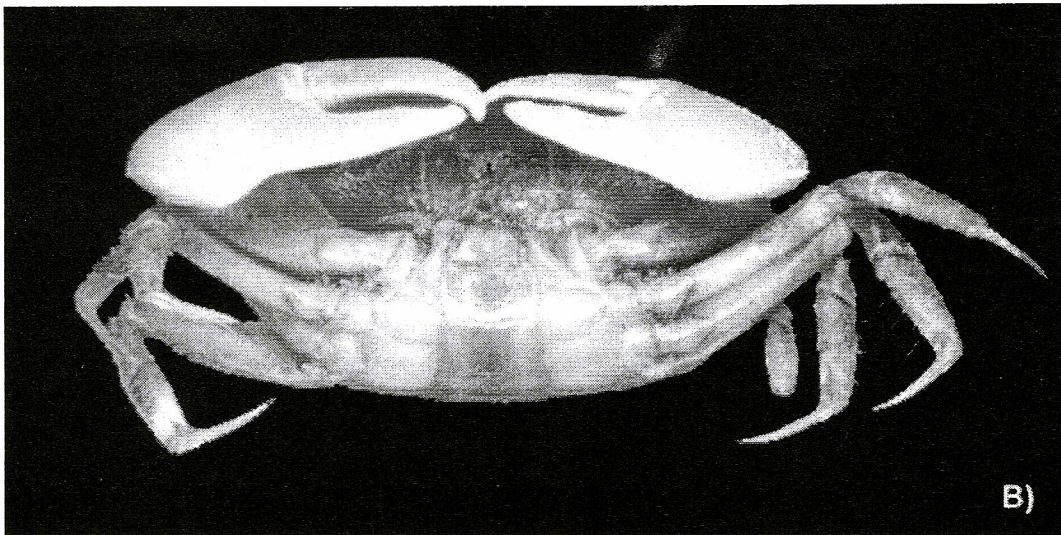
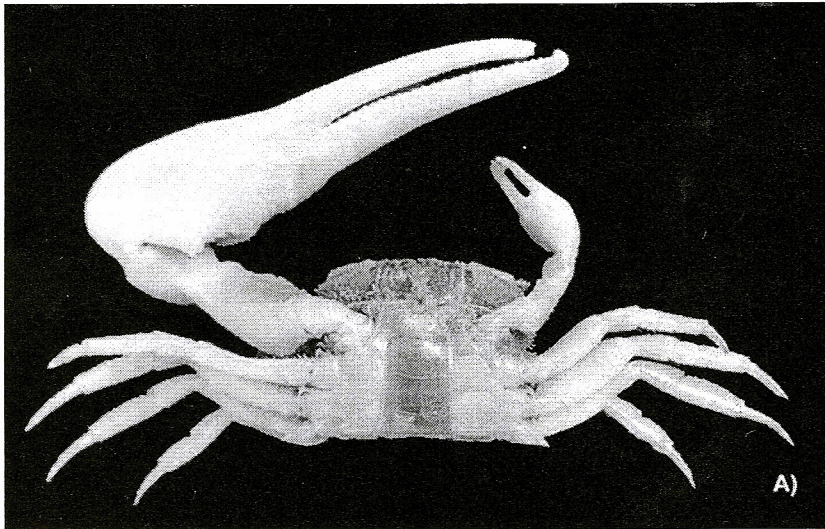


Figure 2: *Uca burgersi* Holthuis, 1967. Male with both chelipeds well developed. a) CW = 16.4 mm and b), CW = 7.9 mm.

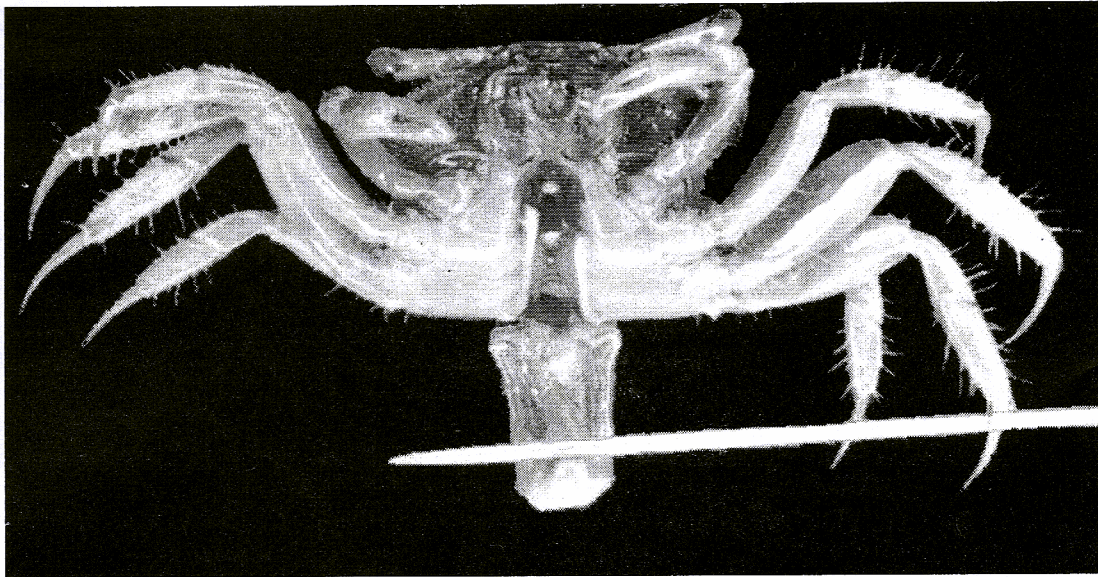


Figure 3: *Uca burgersi* Holthuis, 1967. Male with both small chelipeds (CW = 8.0 mm).

Table I: Data on collected specimens bearing unusual chelipeds.

River (collection site)	Latitude	month/year	Total number of collected males	Number of specimens with unusual chelipeds	Males size (CW)	Chelipeds size (PL/PH mm)
Patitiba, Paraty/RJ	23°13'S 44°42'W	March/02	33	1 (fig. 2a)	16.4 mm	R = 31.0/10.1 L = 9.0/3.9
Indaiá, Ubatuba/SP	23°24'58"S 45°43'13"W	May/01	89	1 (fig 2b)	7.9 mm	R = 5.5/2.5 L = 6.0/2.9
Ubatumirim, Ubatuba/SP	23°20'18"S 44°53'02"W	May/01	99	2	A: 7.9 mm B: 7.0 mm	A: R = 3.4/1.3 L = 3.4/1.3 B: R = 2.8/0.9 L = 2.7/0.9
Indaiá, Ubatuba/SP	23°24'58"S 45°43'13"W	November/01	64	1	8.0 mm	R = 3.8/1.3 L = 3.7/1.3
Patitiba, Paraty/RJ	23°13'S 44°42'W	March/02	33	1	10.2 mm	R = 4.4/1.5 L = 4.2/1.4

N = number of collected specimens; CW = carapace width; PL = cheliped propodus length; PH = cheliped propodus height; R = right cheliped; L = left cheliped; A = first specimen; B = 2<sup>nd</sup> specimen.

Table II: Records on specimens bearing unusual chelipeds.

References	Species	Number of specimens	Both well developed chelipeds	Both small chelipeds
Morgan (1923)	Unnamed	56	X	
Holthuis (1959) <i>apud</i> Thurman II (1987)	<i>U. rapax</i>	Not mentioned	X	
Vernberg and Costlow (1966)	<i>U. rapax</i>	4	X	
Zou and Fingerma (2000)	<i>U. pugillator</i>	1	X	
Present paper	<i>U. burgersi</i>	2 4	X	X

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