



# First record of *Macrophthalmus laevis* A. Milne Edwards, 1867 (Decapoda: Brachyura: Macrophthalmidae) from India

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Short Communication

## Abstract

Brachyuran crab species belonging to family Macrophthalmidae Dana 1851 are mostly found in mangrove and mudflat intertidal area. Six species belonging to sub family Macrophthalminae Dana 1851, genus *Macrophthalmus* Desmarest, 1823 were reported from different mangrove and mudflat areas of Gujarat state. The present study reports the presence of *Macrophthalmus laevis* A. Milne Edwards, 1867 for the first time from India. The detailed description of the species is given.

**Keywords:** *Brachyuran crab, Macrophthalmus laevis, mangroves, India.*

## Introduction

Family Macrophthalmidae Dana 1851 consists of three subfamilies - Macrophthalminae Dana, 1851, Ilyograpsinae Stevcic, 2005 and Tritodynamainae Stevcic, 2005. Species of genus *Macrophthalmus* Desmarest, 1823 are mostly observed in shallow bottom mudflats and mangroves (Tirmizi and Ghani, 1988). 8 subgenera and 59 species were reported so far under the family Macrophthalmidae worldwide (Ng *et al.*, 2008, Naderloo *et al.*, 2011). Of these, 18 species belonging to the genus *Macrophthalmus* are known from India that includes

*Macrophthalmus erato* (de Man, 1887), *Macrophthalmus depressus*, Ruppell, 1830; *Macrophthalmus pacificus* Dana, 1851, *Macrophthalmus sulcatus* H. Milne-Edwards, 1852; *Macrophthalmus (Euplax) leptophthalmus* (H. Milne Edwards, 1852); *Macrophthalmus (Mareotis) tomentosus* Eydoux & Souleyet, 1842; *Macrophthalmus (Mareotis) teschi* Kemp, 1919; *Macrophthalmus (Mareotis) japonicus* (De Haan, 1835), *Macrophthalmus (Mareotis) crinitus* Rathbun, 1913; *Macrophthalmus (Macrophthalmus) transversus* (Latreille, 1817); *Macrophthalmus (Macrophthalmus) crassipes* H. Milne Edwards, 1852; *Macrophthalmus (Macrophthalmus) telescopicus* Owen, 1839; *Macrophthalmus (Macrophthalmus) convexus* Stimpson, 1858; *Macrophthalmus (Macrophthalmus) parvimanus* Guérin, 1834; *Macrophthalmus (Macrophthalmus) latipes* Borradaile, 1902; *Macrophthalmus (Macrophthalmus) brevis* (Herbst, 1804); *Macrophthalmus (Venitus) Dentipes* Lucas, in Guérin-Méneville, 1836 and *Macrophthalmus (Venitus) latreillei* (Desmarest, 1822) (Alcock, 1900; Chopra and Das, 1937; Chhapgar, 1957; Sethuramalingam and Ajmal Khan, 1991; Jayabaskaran *et al.*, 2000; Dev Roy, 2008, 2010; Trivedi *et al.*, 2012; Pandya and Vachhrajani, 2013; Shukla *et al.*, 2013). Out of these 18 species, 8 species were reported from west coast of India (Dev Roy, 2013) of which 6 species are reported from Gujarat (Chhapgar, 1957; Pandya and Vachhrajani, 2013). The present study reports the occurrence

of *Macrophthalmus laevis* A. Milne Edwards, 1867 from India vis-à-vis from Gujarat.

## Material and methods

The specimens under report were collected from mangroves area of Gopanath (21° 12' N and 72° 06' E) which is located on the coastal area of Bhavnagar district of Gujarat state, India. Hand picking method was adopted for the collection of crabs. Sometimes diluted formalin (2%) was poured into the crab burrows to catch the crab specimens. All the specimens were preserved in 10% formalin and brought to the laboratory. Specimens were identified using different identification keys (Chhappgar, 1957; Tirmizi and Ghani, 1988; Komai *et al.*, 1995; Naderloo *et al.*, 2013; Yasser *et al.*, 2013). Specimens were photographed and sketches were prepared for further identification purpose. Different morphological characters were measured using calibrated instruments. All the specimens were deposited in the Zoology Museum, Department of Zoology, The M. S. University of Baroda, Vadodara, Gujarat, India. ZL-AR-CR-40 museum code was assigned to *Macrophthalmus laevis* specimens.

## Results

### Systematic account

Order: Decapoda

Family: Macrophthalmidae Dana, 1851

Sub family: Macrophthalminae Dana, 1851

Genus: *Macrophthalmus* Desmarest, 1823.

*Macrophthalmus laevis* A. Milne Edwards, 1867

### Synonyms

*Macrophthalmus laevis* A. Milne Edwards, 1867, Barnes, 1976, Titgen, 1982

*Macrophthalmus resseli* Pretzmann, 1974

*Macrophthalmus (Macrophthalmus) laevis* Barnes, 1977, Tirmizi and Ghani, 1988

### Material examined

Three male specimens were collected from shallow muddy bottom of mangroves of Gopnath. The details of measurements of largest specimens are given below:

Carapace length: 10.37 mm, Carapace width: 19.49 mm, Cheliped length: 31.66 mm, Abdomen length: 8.15 mm, Abdomen width: 6.46 mm, Male first gonopod length: 5 mm, Male first gonopod apical lobe length: 0.5 mm.

### Diagnosis

Carapace wider than long (Fig. 1a), posterior surface slightly convex with small granules evenly distributed on it, branchial regions with slightly larger irregularly distributed granules, no longitudinal ridges of granules on branchial region, short

spare setae present on the posterior surface of the carapace, thick patch of setae present near posterolateral margin, long setae present near lateral margins, regions well defined with deep furrows, frontal region smooth, deflexed downward, two frontal ridges present, front narrow, the anterior edge of the front, smooth, concave and faintly bilobed, lateral margins with three teeth including exorbital tooth, exorbital angle separated from single tooth with v shaped notch, second one triangular and third one small, posterolateral margin straight with long setae. Eyestalk long, narrow, not reaching exorbital angle, upper orbital margin granular with small granules directed forward, lower margin granular with large granules in the mid region, directed inward, third maxillipeds, ischium almost 2.5 time as long as merus, inner margin of ischium with long setae, no setae present on outer margin.

Chelipeds nearly equal in shape, merus with upper surface smooth, 12 to 13 long tooth shaped tubercles present on the inner upper margins, carpus smooth with large spine shape tooth present medially on upper inner margin, two spine shaped teeth on proximal portion, palm relatively long with outer surface smooth, small granules present on the upper margin, inner surface smooth, no setae, one large spine shaped tooth present on proximal portion (Fig. 1d), movable finger long curved inward distally, cutting edge with large, sub quadrate tooth, small denticles present from proximal to distal part of movable fingers, immovable finger short with large median tooth, small denticles present on cutting edge and large tooth (Fig. 1c).

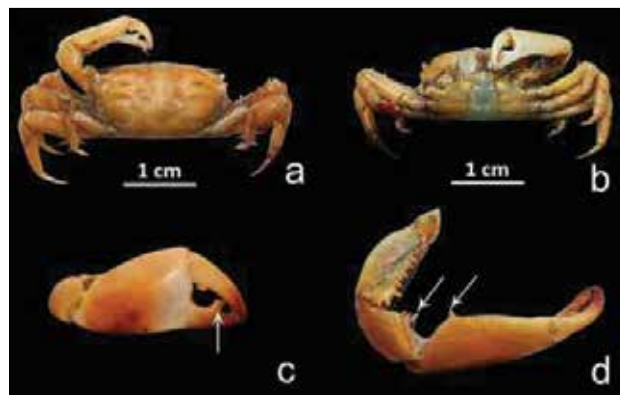


Fig. 1. *Macrophthalmus laevis* A. Milne-Edwards 1867 male: (a) dorsal view of male; (b) ventral view of male. (c) Palm of male cheliped; (d) carpus and merus of male cheliped outer view.

Walking legs narrow and long, anterior margin of segments of walking legs bear setae, merus of all the leg except last leg bears sub distal tooth, third walking leg largest (Fig. 1b), merus of third leg three times as long as wide, two third of anterior margin of second leg covered with dense setae, last leg smaller with setae on posterior anterior margin.

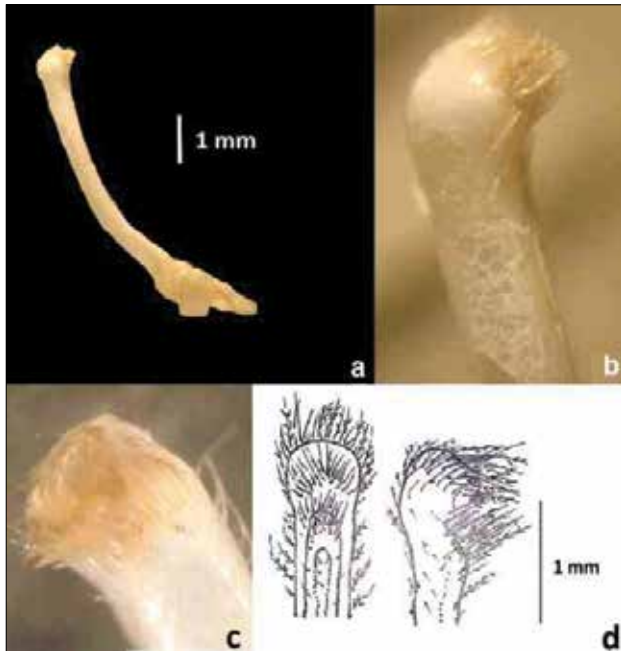


Fig. 2. *Macrophthalmus laevis* A. Milne-Edwards 1867 male first gonopod: (a) entire gonopod, (b) apical lobe, (c) anterior view, (d) setae arrangement on apical lobe.

Male abdomen oblongly triangular, telson rounded apically and slightly shorter than segment six (Fig. 2b). Male first gonopod curved outward medially (Fig. 2b), apical lobe small with chitinous process and directed laterally at 45 angle (Fig. 2a), long setae around apical lobe (Fig. 2c, d), plumose setae present on lateral and ventral surfaces (Fig. 2d).

## Discussion

The taxonomy of *Macrophthalmus laevis* is recently revised by Barnes (2010) at sub genus level and now the species is placed with other two species like *M. sulcatus* H. Milne-Edwards, 1852 *M. grandidieri* A. Milne-Edwards, 1867 which together called the *M. brevis* group. Barnes (2010) has stated that *M. laevis* shows similarity in various morphological characters with other species of the group but certain morphological characters makes it different from the group like the width of the carapace which is not that much great as observed in other species of the group. The length of palm of chelipeds is also less as compared to other species. The exorbital angle observed was larger and prominently sub rectangular in shape in *M. laevis* while in other species, it was small and pointed (Naderloo *et al.*, 2011).

*Macrophthalmus laevis* is not a burrowing species; it always buries itself in shallow mud (Tirmizi and Ghani, 1988). The species is so far reported from Persian Gulf (Naderloo *et al.*, 2011), Iran (Pretzmann, 1971; Barnes, 1976), Iraq (Yaseer *et al.*, 2013), Dubai Pakistan (Tirmizi and Ghani, 1988). The present

study reports the presence of *M. laevis* in mangrove and mudflat habitat of Indian subcontinent and further studies are required to draw the new distribution range of the species in India.

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