

ADDITIONAL DATA RELATED TO THE DISTRIBUTION OF VENTRALLY SCLEROTIZED SPECIES OF *Lepidophthalmus* HOLMES, 1904 (DECAPODA: AXIIDEA, CALLIANASSIDAE, CHALLICHIRINAE) FROM THE TROPICAL EASTERN PACIFIC

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ABSTRACT. - Specimens of the two species of "ventrally sclerotized" *Lepidophthalmus* currently known from the eastern tropical Pacific were collected at El Salvador and Mexico. These specimens represent additional records and support the idea that *L. bocourti* and *L. eiseni* should be considered as separated species.

Keywords: Callianassidae, *Lepidophthalmus*, eastern tropical Pacific.

Información adicional relacionada con la distribución de especies de *Lepidophthalmus* Holmes, 1904 (Decapoda: Axiidea, Callianassidae, Challichirinae) con esclerosis ventral en el Pacífico este tropical

RESUMEN. - Especímenes de las dos especies de *Lepidophthalmus* con esclerosis ventral, conocidas para el Pacífico este tropical fueron recolectadas en El Salvador y México. Representan registros adicionales y apoyan la idea de que *L. bocourti* y *L. eiseni* representan dos especies distintas.

Palabras clave: Callianassidae, *Lepidophthalmus*, Pacífico este tropical.

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INTRODUCTION

A recent review of the "Thalassinidean" families and genera from the American continent has provoked a complete reorganization of the group. New taxa have been defined or moved from one family/genus to another, some little known species have been rediscovered and sometimes redescribed, and the entire infraorder "Thalassinidea" has been restructured in order to follow arguments in favor of dividing this paraphyletic group into two separate infraorders: Gebiidea and Axiidea. All details related to this are available in previously published literature (see Sakai & de Saint Laurent, 1989; Lemaitre & Ramos, 1992; Felder & Manning 1997; Sakai, 1999, 2005; Felder 2003; Robles *et al.*, 2009; De Grave *et al.*, 2009).

A worldwide review of the Callianassidae was presented by Sakai (1999), followed by an updated review of the Callianassoidea (Sakai, 2005). Sakai (2005) divided the species of Callianassidae in eight subfamilies (three new) and 14 genera. Sakai concluded that the genus *Lepidophthalmus* (Holmes, 1904), includes in the subfamily Challichirinae (Manning & Felder, 1991) 13 species: six in the western Atlantic, four in the Indo-West Pacific, one in the eastern Atlantic and Mediterranean, and two in the eastern Pacific. Sakai (2005), however, did not follow Felder (2003) who presented a comprehensive review of material belonging to *Lepidophthalmus* from the eastern Pacific and

withdrew *L. eiseni* Holmes, 1904 from the synonymy of *L. bocourti* (A. Milne-Edwards, 1870) (originally described as *Callianassa bocourti*). After reviewing numerous specimens from southern Mexico to Panama, the type material of *Callianassa bocourti*, and the possible types of *Lepidophthalmus eiseni*, Felder (2003) concluded that *L. bocourti* and *L. eiseni* were both to be considered as valid species based on the shape of the ventral abdominal sclerites ("ventrally sclerotized" species), the presence-absence of distolateral spines on the basis of pleopods 3-5, and the shape of the terminal article of the male gonopod.

Material recently obtained from coastal lagoons in Mexico and El Salvador, along the Pacific coast of America, was examined. It contained several specimens of *Lepidophthalmus*. Based on the review by Felder (2003), we came to the conclusion that the examined material belongs to the two "ventrally sclerotized" species of *Lepidophthalmus* from the eastern Pacific. This material is reported herein.

MATERIAL AND METHODS

All specimens were collected by hand from coastal lagoons in El Salvador and along the Pacific coast of Mexico (coastal lagoon and shrimp ponds), fixed with a solution of formaldehyde (5-10%), washed after a few days and preserved with 70% ethanol. Illustrations were made with the help of a camera lucida mounted

on a Nikon SMZ-10A dissecting microscope. Specimens are deposited in Mazatlán, Mexico. Abbreviations used are: CL, carapace length; TL, total length; MCL, major cheliped length; NM, not measured; EMU, Reference Collection of Invertebrates, Mazatlán, Sinaloa, Mexico; Coll., collector.

RESULTS

Lepidophthalmus bocourti (A. Milne-Edwards, 1870). Figs. 1, 2 A-C-E, 3 A-C.

Callianassa bocourti A. Milne-Edwards, 1870: 95.

(?) *Lepidophthalmus bocourti*.- Sakai, 1999: 70, fig. 14c-d.

Lepidophthalmus bocourti.- Felder: 2003, 431, figs. 1-19 (complete synonymy); Sakai, 2005: 149 (part, excluding treatment of *L. eiseni* as junior subjective synonym).

Material examined.- One female (CL/TL/MCL: 19.8/95.0/45.0 mm), Caimanero lagoon, south of Mazatlán, Sinaloa, 1979 (EMU-172).

One male (CL/TL/MCL: 17.2/75.0/47.5 mm), Estero el Verde, north of Mazatlán, Sinaloa, sandy-mud, 11 July 1979 (coll. Michel E. Hendrickx) (EMU-9599).

Three males (CL/TL/MCL: 13.8/66.0/42.0 mm; 12.2/56.0/NM mm; 9.5/51.0/NM mm) and two females (CL/TL/MCL: 17.8/82.5/NM mm; 11.0/41.0/NM mm), Barra de Santiago (around 13°42'30"N, 90°02'W), El Salvador, intertidal in muddy-sand (about 20 cm deep), July 2003 (coll. J.L. Salazar Linares) (EMU-6484, 6487, 6486, 6488, 6489).

Three females (one ovigerous), carapace length 9.6-13.1 mm, total length 41.0-58.0 mm (without first pair of chelipeds), El Salvador, intertidal in muddy-sand (about 20 cm deep), July 2003 (coll. J.L. Salazar Linares) (EMU-6543).

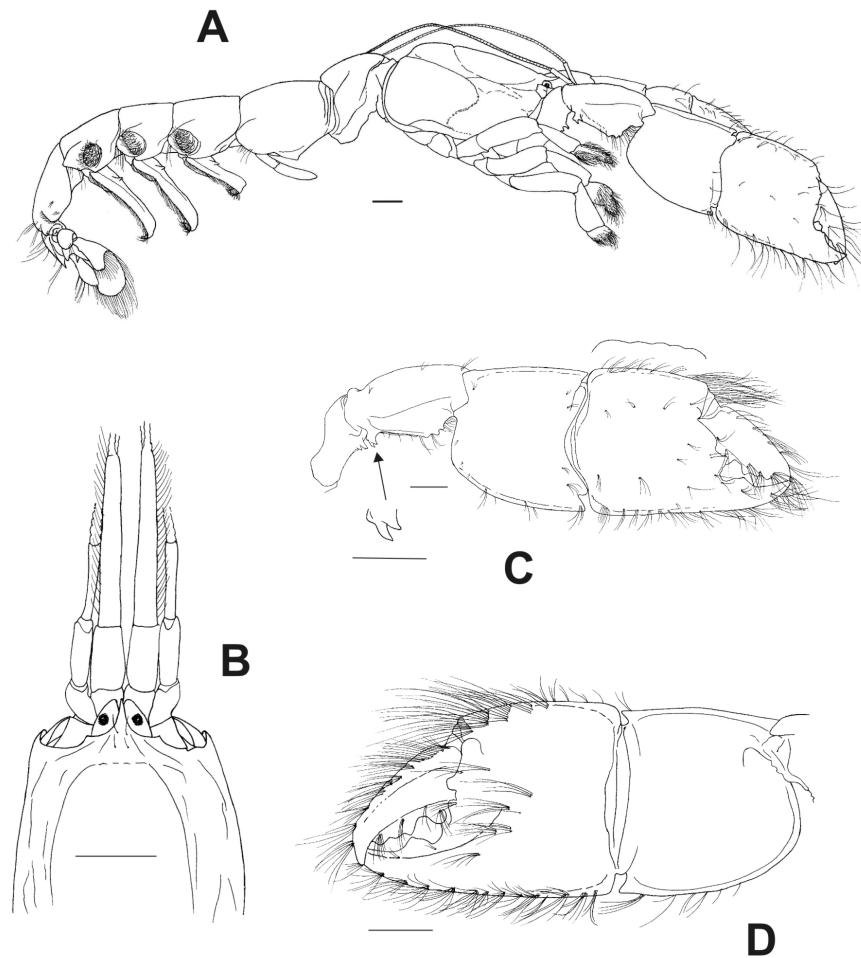


Figure 1. *Lepidophthalmus bocourti* (A. Milne-Edwards, 1870) (EMU-6484). A. Lateral view. B. Dorsal view of anterior part of cephalothorax. C. Major (right) cheliped, outer view. D. Same, inner view of carpus-manus. Scale bar, 3 mm.

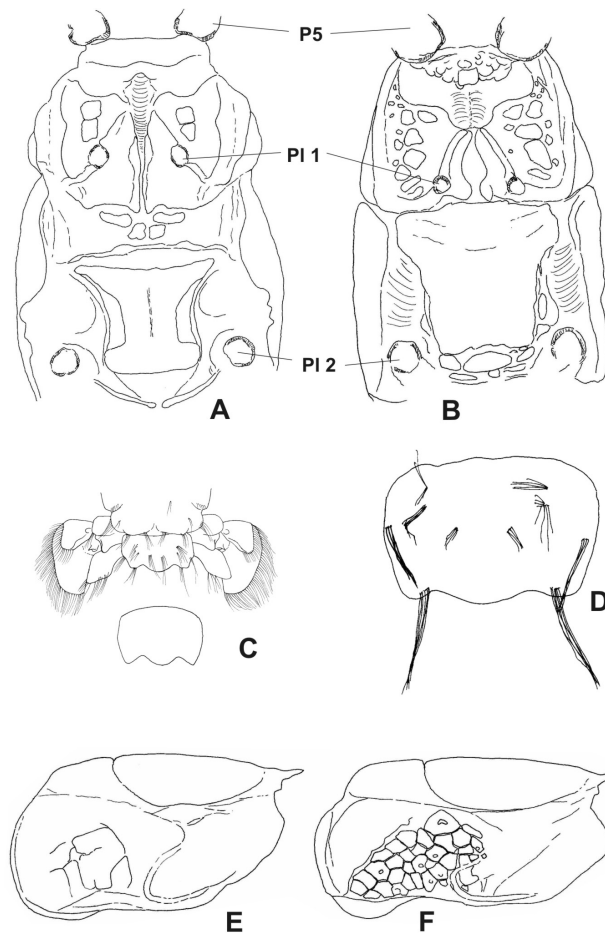


Figure 2. A, C, E. *Lepidophthalmus bocourti* (A. Milne-Edwards, 1870) (EMU-6484). B, D, F. *Lepidophthalmus eiseni* Holmes, 1904 (EMU-6544). A, B. Ventral view of first and second abdominal somites of male. C, D. Dorsal view of telson. E, F. Lateral view of carapace.

One male (CL/TL/MCL: 18.0/76.0/46.5 mm), SW part of Caimanero lagoon, south of Mazatlán, Sinaloa, Mexico, intertidal in muddy-sand, 14 November 2004 (coll. X.C. Ramos Sánchez) (EMU-6485).

One male, carapace length 21.0 mm, total length 81.5 mm, shrimp-farm La Astoria, Navolato, Sinaloa, in muddy bank, 14 January 2005 (coll. M. Ruiz Guerrero) (EMU-6490).

One female (CL/TL/MCL: 10.9/51.0/26.0 mm), shrimp-farm, Nayarit, January 2005 (EMU-9613).

Remarks.- The major characters on which Felder (2003) based its re-description of *L. bocourti* were all observed in our material (Figs. 1, 2). The ventral, median sclerite on the second abdominal somite is clearly hourglass-shaped (Fig. 2 A); the posterolateral lobes of telson are sharp, subtriangular, and the sulci separating

these from the rounded median lobe are moderately deep (Fig. 2 C); pleopods 3-5 feature a sharp distolateral spine on basal segment (Fig. 3 A); the male first pleopod features a small subterminal tooth, narrower than the terminal tooth (Fig. 3 C). In lateral view, the carapace features a series of short sulci forming an indefinite pattern (Fig. 2 E), while in *L. eiseni* this pattern is much more regular and elaborated (see infra).

According to Felder (2003: 434), the material reported as *L. bocourti* by Lemaitre and Ramos (1992) for Colombia and by Staton *et al.* (2000) for Panama does not belong to any of the two sclerotized species presently known from the East Pacific but rather to an undescribed species (maybe the same species) lacking these sclerotized structures altogether.

Distribution range.- According to Felder (2003), *L. bocourti* is known with certainty from

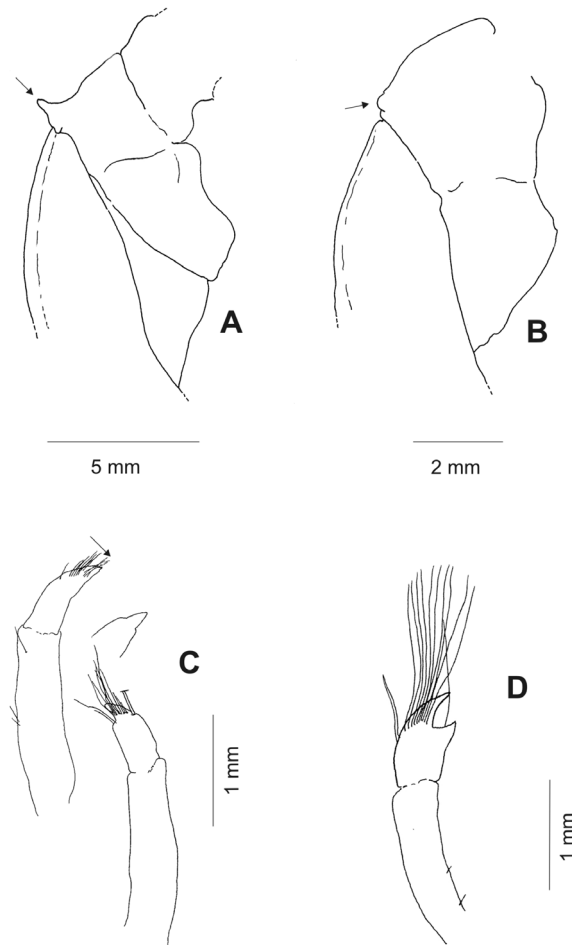


Figure 3. A, C. *Lepidophthalmus bocourti* (A. Milne-Edwards, 1870) (EMU-6484). B, D. *Lepidophthalmus eiseni* Holmes, 1904 (EMU-6544). A, B. Fifth right pleopod (without setae). C, D. Male first, right gonopod.

Chiapas (Puerto Madero), Mexico to Panama, including positive records from El Salvador and Costa Rica. The material examined extends the northernmost limit to Sinaloa.

Lepidophthalmus eiseni Holmes, 1904. Figs. 2 B-D-F, 3 B-D

Lepidophthalmus Eiseni Holmes, 1904: 311, Plate 35, Figs. 6-13.

Lepidophthalmus eiseni.- Sakai, 1999: 70 (as junior subjective synonym of *Callinassa bocourti* A. Milne-Edwards, 1870); 2005: 149 (as junior subjective synonym of *Callinassa bocourti* A. Milne-Edwards, 1870).- Felder, 2003: 436, Figs. 20-29 (complete synonymy).

Material examined.- One male (CL/TL: 11.8/48.0 mm) (major chelipeds missing), Barra de Santiago (about 13°42'30"N, 90°02'W), El Salvador, intertidal in muddy-sand (about 20 cm deep), July 2003 (coll. J.L. Salazar Linares) (EMU-6544).

Remark.- The male specimen of *L. eiseni* was collected together with three females of *L. bocourti* (EMU-6542), thus indicating that both species are sympatric, as noted by Felder (2003: 434) in Nicaragua. Although this male had lost major chelipeds, it was easily separated from these three females on the basis of the main diagnostic characters provided by Felder (2003), including: the quadrate shape of the ventral median sclerite on the second abdominal somite (Fig. 2 B); the posteriorly trilobate telson, with posterolateral lobes rounded and separated from the median lobe by a shallow sulcus (Fig. 2 D); the pleopods 3-5 with anterior lobe of basis rounded, without ventral spine (Fig. 3 B); the male first pleopod clearly bifid, the subterminal tooth similar in shape and size to the terminal tooth (Fig. 3 D). The posterolateral part of the carapace features a complex, indefinite honeycomb pattern of low carina (Fig. 2 F) which was noted and illustrated by Holthuis (1954: Fig. 3). The other illustrations available

for this species were published by Holmes (1904: Plate 35) for the original description, and by Bott (1955).

Distribution range.- According to Felder (2003), *L. eiseni* is known with certainty from Nayarit, Mexico to Costa Rica, including positive records in Guatemala, Nicaragua, and El Salvador. The type locality in "San José del Cabo", Mexico, is uncertain.

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