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First record of the stomatopod crustacean *Clorida albolitura* Ahyong & Naiyanetr, 2000 from the eastern Mediterranean coast of Egypt.

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ABSTRACT
The present work aims to give taxonomical details about the stomatopod crustaceans in the Mediterranean Sea. Using trawling net, materials were collected from the eastern Mediterranean coast of Egypt during 2014. Three species namely; *Squilla mantis* (Linnaeus, 1758), *Erugosquilla massavensis* (Kossmann, 1880) and *Clorida albolitura* Ahyong & Naiyanetr, 2000, that affiliate to family Squillidae were recorded. The present record of the latter species is the first from the Egyptian Mediterranean coast. A detailed re-description with structural photos of the recorded species was given. As well as, a comparison to differentiate among the three species was provided.

1. INTRODUCTION
Stomatopods, commonly known as mantis shrimps, have been recognized as a distinct group of crustaceans since Latreille defined the order in 1817. They are common members of benthic ecosystems. Recent representatives of this group can be found in most of the world's tropical and subtropical coral reef, sand, mud, and rubble strewn coasts (Hof & Schram, 1998). However, few species are known from temperate seas (Müller, 1994).

The mantis shrimps are an exclusively predatory lineage of malacostracan crustaceans. They are characterized by their triflagellate antennules, the second maxilliped is modified as large powerful raptorial appendages, and the highly specialized eyes, which may be the most complex of any invertebrate (Ahyong, 2012). They are living in burrows dug in sediment grounds or in crevices in hard ground. However, several species leave their burrow only occasionally and are therefore rarely caught using traditional sampling gear (Froglia, 2010).

There are 485 species of mantis shrimps under 115 genera and 17 families, have currently been described worldwide (WoRMs, 2013). The Indo-West Pacific region, however, contains the largest proportion (67%) of world stomatopods (Ahyong, 2012). Only, 12 species of Stomatopoda are known from the Mediterranean Sea (Colmenero *et al*., 2009).

In Egypt, studying of the stomatopods goes back to Steuer (1936, 1938) who recorded two species of stomatopods; *Squilla mantis* and *Squilla massavensis*. The latter species was noted under the name *Squilla africana* Calman, 1917.

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Later on, these two species weree registered by many authors (e.g. Gruvel, 1936; Monod, 1937; Dollfus, 1938; Parisi, 1940; Tortonese, 1951; Lewinsohn & Manning, 1980) in the Egyptian seawaters.

However, there is no recent taxonomical study about these distinct fauna. Therefore, the present study aims to give taxonomical information about this group which collected recently from the eastern Mediterranean coast of Egypt. Re-description details with structural photos of the recorded species will be given. Moreover, a comparison to differentiate among the recorded species will be provided.

2. MATERIAL AND METHODS

Samples of mantis shrimps were sorted from the trash crop of trawling net working on the RV Salsabil during September 2014 in the eastern Mediterranean coast of Egypt (Fig. 1). Two sectors were surveyed Baltim and El-Arish. The bottom sediment of the studied areas is almost muddy mixed with sandy mud. The bottom water temperature and salinity amount to 25.7 °C and 38.9 ‰ in Baltim at 50 m deep, meanwhile in El-Arish they are respectively 27.4 °C and 39.0 ‰, at the same depth. However, specimens of the species (*Squilla mantis*) were collected from a trash crop of a trawling net in front of Abu Qir area during November 2014. In this area the bottom sediment is also mud mixed with sandy mud. Bottom water temperature and salinity are 17°C and 38.8 ‰, at 180 m deep. Specimens were fixed on board in 10% formalin before being transferred to 70% ethanol in the laboratory.

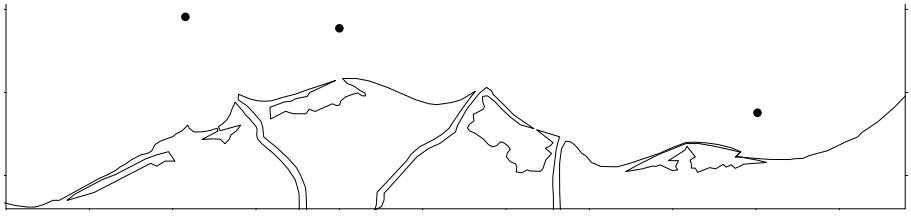


Fig. 1: A map showing the sampling locations in the Mediterranean coast of Egypt.

Specimens were examined using zoom stereoscopic light microscope (Novex P-20, with total magnification up to 80 X), and photographed using Canon digital camera (model G15), and Nikon digital camera (model D5000) equipped with a special adaptor to attached to the microscope.

Specimens were measured in millimetres (mm). Terminology and size descriptors generally follow Ahyong (2001 and 2012) and Ahyong *et al*. (2008). Total length (TL) is measured along the midline from the apex of the rostral plate to the apices of the submedian teeth of the telson. Carapace length (CL) was measured along the midline excluding the rostral plate. Rostral plate length was measured along the midline, and rostral plate width is the greatest width. Other abbreviations include antennule (A1), antenna (A2), maxilliped (MXP), thoracic somite (TS), and abdominal somite (AS).

Spination of abdominal carinae, used for squilloids, follows Ahyong (2000 and 2012); median (MD), submedian (SM), intermediate (IM), lateral (LT), and marginal (MG). However, the shape and the relative eye size is a useful taxonomic feature in some species of stomatopods.

Collected material of the present study was deposited in the Museum of Marine Biota Taxonomy (MMBT), National Institute of Oceanography and Fisheries, Alexandria, Egypt.

3. RESULTS AND DISCUSSION

The present study revealed that there are three species of stomatopod crustaceans that belong to 3 genera in one family (Squillidae) in the area of study.

Systematic accounts:

Order: Stomatopoda Latreille, 1817

Suborder: Unipeltata Latreille, 1825

Superfamily: Squilloidea Latreille, 1802

Family: Squillidae Latreille, 1802

Genus: *Squilla* Fabricius, 1787

***Squilla mantis* (Linnaeus, 1758)**

Fig. 2 (A-E)

Synonyms:

Cancer mantis Linnaeus, 1758:633.

Squilla mantis Guérin, 1832:43 [Greece]; Panagiatopoulos, 1916:581 [Greece]; Monod, 1931:430 [Egypt, Palestine, Syria]; Bodenheimer, 1935:468, pl. 68, Fig. 2 [Palestine]; Gruvel, 1936:177 [Egypt]; Steuer, 1936:13, 17, Figs. 9, 16 [Egypt]; Monod, 1937:5, 18 [listed; Egypt]; Steuer, 1938:8, 9, 13, Figs. 9, 16 [Egypt]; Dollfus, 1938:186, Fig. 1 [Egypt]; Parisi, 1940:3 [Egypt]; Tortonese, 1951:220, 240 [Egypt, Palestine]; Demir, 1954:444, pl. 9, Fig. 6 [Turkey]; Holthuis, 1961:63 [Greece]; Ingle, 1963:15, Figs. 4, 13 [Israel]; Gilat, 1964: 34, 37 [Israel]; Holthuis, 1969:222 [Turkey]; Manning, 1977: 146, Figs. 48, 57 [West Africa]; Lewinsohn & Manning, 1980: 16-19, Fig. 7a [Egypt, Israel, Turkey].

Material: MMBT (CR-2014-1-1), on 5 November 2014, two specimens (male) were collected at 180 m deep, off Abu Qir near Alexandria, Egyptian Mediterranean coast.

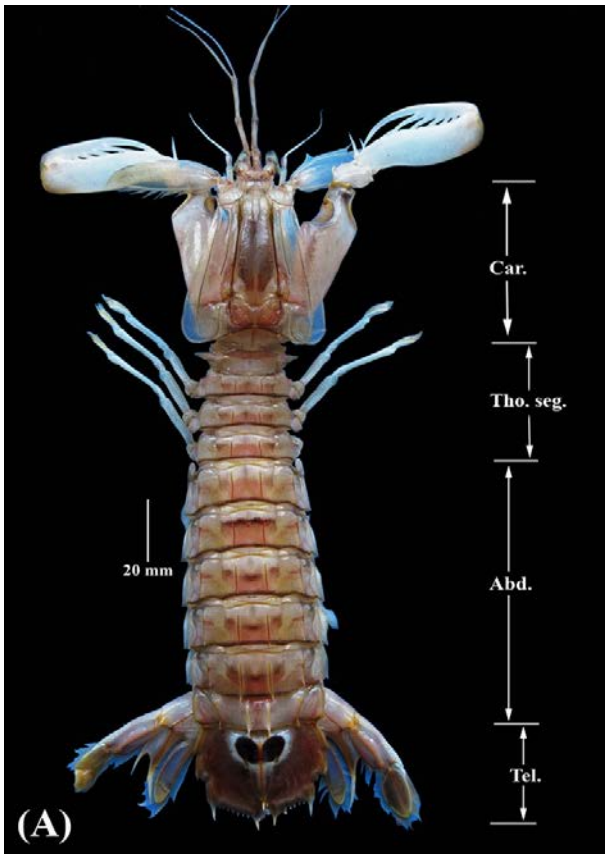


Fig. 2-A: *Squilla mantis* (Linnaeus, 1758), dorsal view, showing Carapace (Car.), Thoracic segments 5-8 (Tho. seg.), Abdomen (Abd.), and Telson (Tel.).

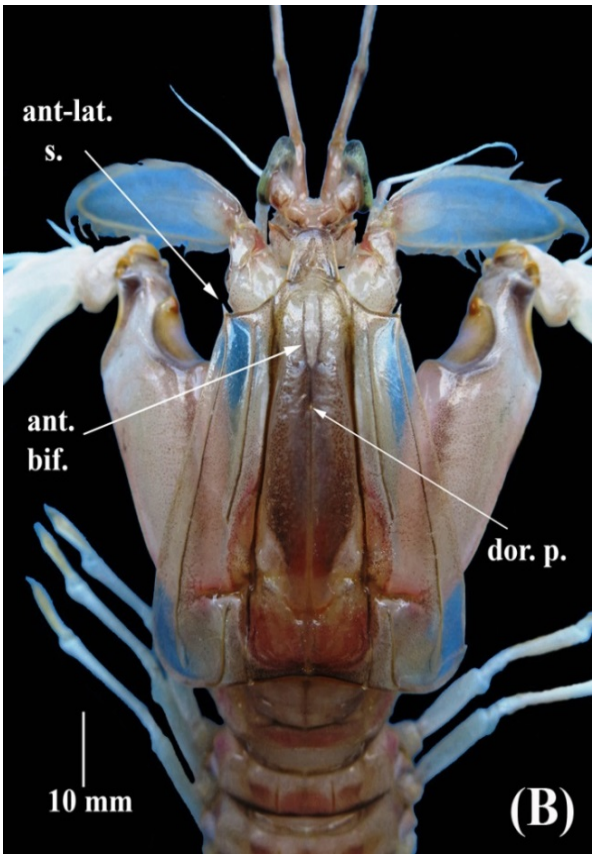


Fig. 2-B. Carapace showing dorsal pit (dor.p.), anterior bifurcation (ant. bif.), and anterolateral spine (ant-lat. s.).

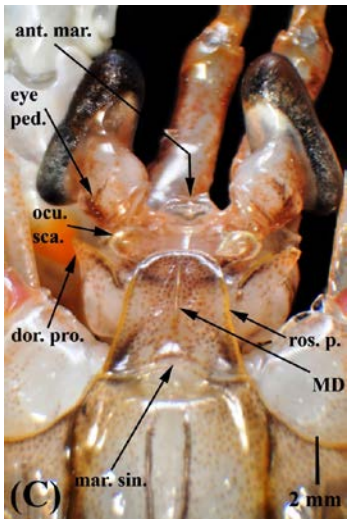


Fig. 2-C: Enlarged anterior part of carapace showing rostal plate (ros. p.), margins sinuous (mar. sin.), median (MD) carina, dorsal process of A1 somite (dor. pro.), ocular scale (ocu. sca.), eye peduncle (eye ped.), and anterior margin of ophthalmic somite (ant. Mar.)

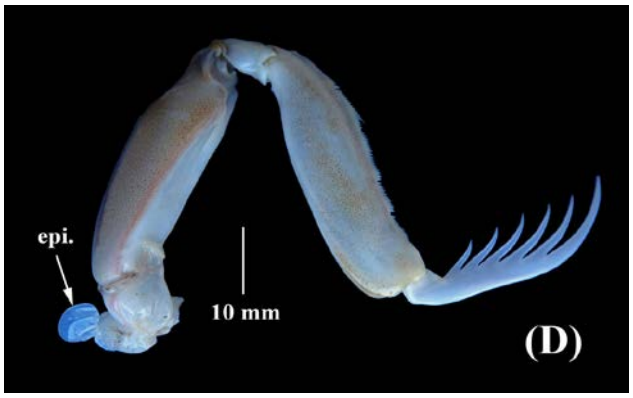


Fig. 2-D: The second maxilliped, raptorial claw, right lateral showing epipod (epi.).

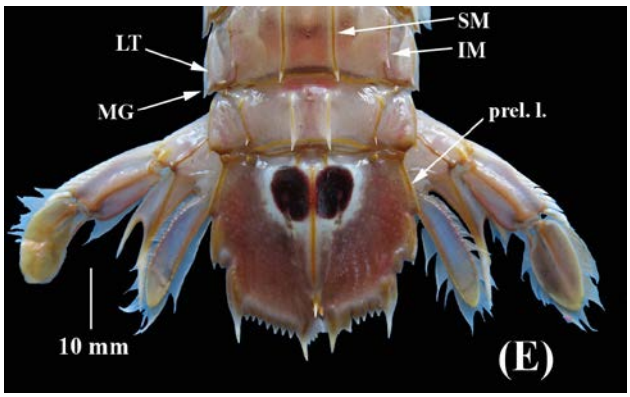


Fig. 2-E: Telson and uropods, dorsal; showing prelateral lobe (prel. l.), submedian (SM), intermediate (IM), lateral (LT), and marginal (MG) carinae.

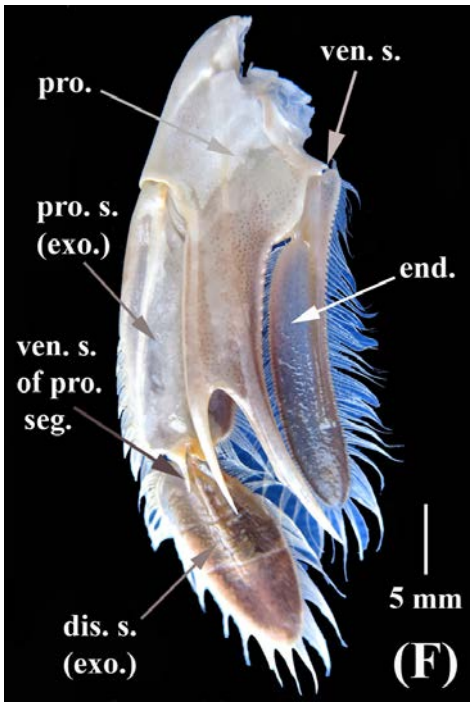


Fig. 2-F: Uropod, right ventral showing protopod (pro.), proximal segment of exopod [pro. s. (exo.)], distal segment of exopod [dis. s. (exo.)], endopod (end.), ventral spine (ven. s.), and ventral spine of proximal segment (ven. s. of pro. seg.).

Measurements: Male (1) TL 197 mm, CL 42 mm, rostral plate length = 5.7 mm, rostral plate width = 6.1 mm. A1 peduncle 11 mm, A2 scale length 31 mm. Male (2) TL 186 mm, CL 40 mm, rostral plate length = 5.6 mm, rostral plate width = 6 mm. A1 peduncle 11.5 mm, A2 scale length 33 mm.

Description:

Carapace:

Carapace carries anterolateral spines, with dorsal pit and well-marked anterior bifurcation on the median carina. Its anterior width 0.45- 0.46 CL. Posterolateral angles of carapace rounded and convex (Fig. 2B). Eyes well developed, T-shaped, with bilobed cornea, not reaching the end of A1 peduncle segment 1; anterior margin of ophthalmic somite with median emargination.; cornea width more than twice the eye peduncle. Ocular scales fused, rounded laterally, with median depression. Rostral plate subrectangular, unarmed anteriorly, with median carina; with margins sinuous (Fig. 2C). Al peduncle equals 0.27 CL. A1 somite dorsal processes with long, triangular apices directed anterolaterally. A2 scale length equals 0.7-0.8 CL. However, individual with longer total length has shorter A2 scale length.

Raptorial claw dactylus has 6 teeth; opposable margin of propodus of claw lined with low, blunt pectinations; with regular broadly convex external edge (Fig. 2D).
Mandibular palp 3-segmented. MXP 1- 5 with epipod.

Thorax:

TS 6-8 each with a distinct SM and IM carinae. TS 5 lateral process a sharp tooth, laterally; with small ventral spine bent forwards. TS 6-7 lateral processes with posterior, large, triangular, apex spiniform. TS 8 lateral margin rounded with acute anterior end.

Abdomen:

AS (1-6) each with a distinct SM, IM and LT carinae. However, AS (1-5) each with MG carina. Abdominal carinae spined as follows: SM on 4-6, IM on 1-6, LT on 1-6, MG on 1-5. AS 6 with ventrolateral spine in front of uropodal articulation. A dark line extends along the posterior edge from the thoracic segments, 6 to 8 and the abdominal segments, 1 to 5; however, a median rectangular spot sinks on the second abdominal segment.

Telson:

Longer than broad, with prelateral lobe as long as or longer than margin of LT tooth. Primary teeth (2 SM, 2 IM and 2 LT) are distinct; tentacles triangular, SM 5-6, IM 7-9, LT 1; ventral surface with short postanal carina. Dorsal surface of telson smooth marked by curved rows of pits around the MD carina. The MD carina ends with posterior spine, one small tubercle or more exists under the posterior spine. Telson with 2 spots dark chestnut surrounded by a white ring (Fig 2E).

Uropod: Ventrally, outer margin of protopod smooth; inner margin irregularly crenulated; with short spine anterior to endopod articulation; protopod has two terminal spines, with inner spine longer than the outer. Proximal segment of uropodal exopod with 8 movable spines on outer margin, distalmost short, not extending to midlength of distal segment; distal margin with long distinct, ventral spine. Uropodal exopod with distal half of proximal segment and distal segment slightly dark; however, most of uropodal endopod dark (Fig. 2F).

Distribution and Habitat:

Mediterranean Sea and adjacent Atlantic coast of southern Europe, Canary Islands, and West Africa from Morocco to southern Angola; shore to a depth of more than 200 m (186-247 m), generally in 120 m or less (Manning, 1977). Eastern Mediterranean records include Egypt, Israel, Syria, Turkey, and Greece (Lewinsohn & Manning, 1980). *S. mantis* is one of the most dominant species in the demersal crustacean's fauna of the Tunisian gulfs (Mili *et al*., 2013).

This Mantis Shrimp is particularly abundant where there is significant run-off

from rivers, and where the substrate is suitable for burrowing. It digs burrows in muddy and sandy bottoms near the coasts. In the Mediterranean, the outflows from the Nile, Po, Ebro and Rhône provide these conditions. It remains in its burrow during the day and comes out at night to hunt, and in the winter to mate (Maynou *et al*., 2004). In the present study, the two specimens were collected from 180 m deep by trawling net. The associated fauna include demersal fishes and invertebrates (prawns, crabs and echinoderms).

Remarks:

The paired dark circles on the telson allow *S. mantis* to be easily recognized in the freshly collected specimens. However, in preserved material it can be differentiated from the other large squillid *Erugosquilla massavensis* as follows: Rostral plate with a median carina, well developed anterior bifurcation of the carapace, five epipods, and absence of erect tubercles on the telson.

Genus: *Erugosquilla* Manning, 1995

***Erugosquilla massavensis* (Kossmann, 1880)**

Fig. 3 (A-F)

Synonyms:

Squilla massavensis Kossmann, 1880: 99 [Red Sea].

Squilla africana Steuer, 1936: 13, Figs. 10-15 [Egypt, Palestine]; 1938: 9-10, Figs. 9-15 [Egypt]. [not *Squilla africana* Calman, 1917, preoccupied, = *Squilla aculeata calmani* Holthuis, 1959].

Squilla massavensis Gruvel, 1936:177 [Egypt]; Monod, 1937: 5 [Egypt]; Dollfus, 1938: 186 [Egypt]; Tortonese, 1951: 220, 240 [Egypt, Palestine]; Gohar & Al-Kholy, 1957: 89-106, Figs 1-87 [Red Sea, Egypt]; Holthuis, 1961: 63[Turkey]; Ingle, 1963: 15, Figs. 3, 15, 32, 34 [Israel, Mediterranean & Red Seas]; Gilat, 1964: 16, 32, 37 [Israel, Mediterranean]; Geldiay & Kocatas, 1969: 6, Fig. la, c [Turkey].

Squilla massauensis Tortonese, 1952:5 [Lake Timsah, Egypt].

Squilla massawensis Por, 1971:156, pl. 2, Fig. 5.

Oratosquilla massavensis Manning, 1977:130-131, Fig. 44, 51[West Africa]; Lewinsohn & Manning, 1980: 10-16, Figs. 5-6, 7b [Egypt, Israel, Lebanon, Turkey, Cyprus]; Kocatas, 1981: 214; Manning & Lewinsohn, 1986: 15 [Sinai Peninsula, Red Sea]; Froglia & Manning, 1989: 269, 271-272, Fig. 4a-e; Dounas & Steudel, 1994: 253-254 [Crete, Greece].

Erugosquilla massavensis (Kossmann, 1880) Galil & Kevrekidis, 2002: 928 [Rhodes Island]; Kevrekidis & Galil, 2003 [Rodos island, Greece; list]; Katağan *et al*., 2004: 381-383 [Marmara Sea, Turkey]; Shakman & Kinzelbach, 2007: 109-111 [Libya]; Hassan & Noel, 2007 [Syria; list]; Özcan *et al*., 2008: 115-118, Fig.2 [Aegean Sea, Turkey].

Material:

MMBT (CR-2014-1-2), on 16 September 2014, two specimens (one male and one female) were collected at depth of 50 m, from Baltim sector, Eastern Mediterranean coast of Egypt.

Fig. 3-A: *Erugosquilla massavensis* (Kossmann, 1880), dorsal view.

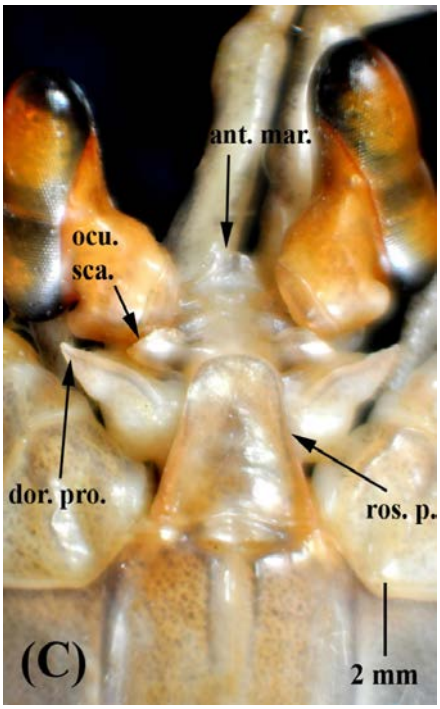


Fig. 3-C. Enlarged anterior part of carapace showing rostral plate (ros. p.), dorsal process of A1 somite (dor. pro.), ocular scale (ocu. sca.) and anterior margin of ophthalmic somite (ant. Mar.).

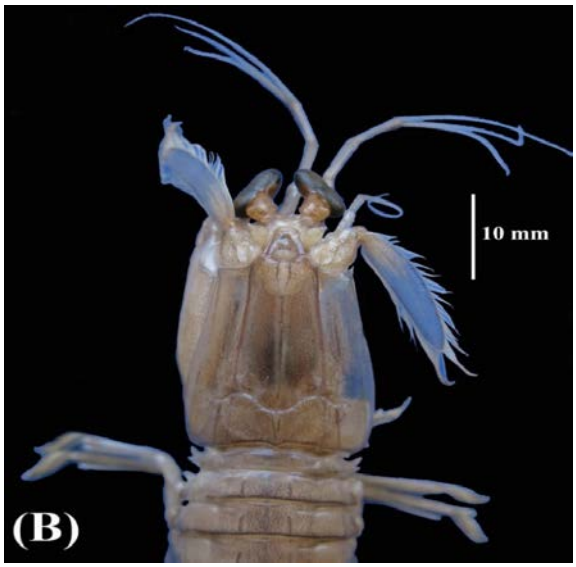


Fig. 3-B: Enlarged anterior part showing carapace and thoracic somites

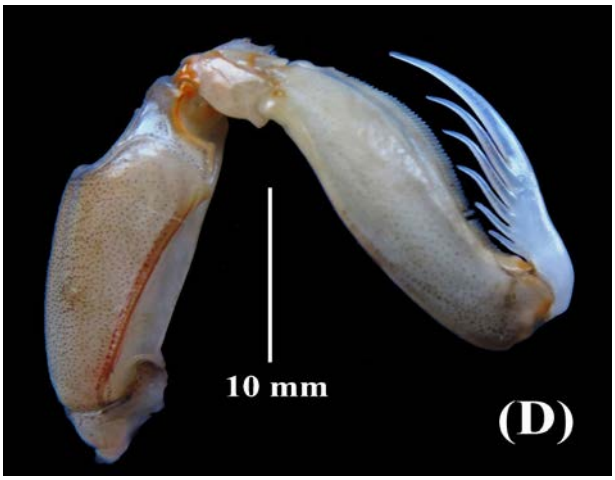


Fig. 3-D: Raptorial claw, right lateral.

Fig. 3-E. Telson and uropods

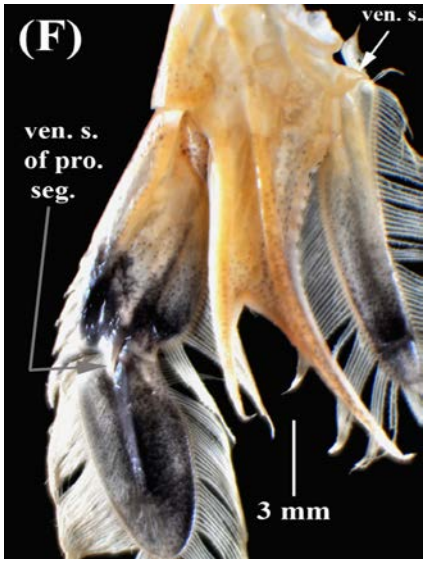


Fig. 3-F: Uropod, right ventral showing ventral spine (ven. s.), and ventral spine of proximal segment (ven. s. of pro. seg.).

Measurements: Male; TL 111 mm, CL 23 mm, rostral plate length = its width = 4 mm. A1 peduncle 9 mm, A2 scale length 16 mm. Female; TL 104 mm, CL 21.5 mm, rostral plate length = its width = 3.5 mm. A1 peduncle 8.5 mm, A2 scale length 15 mm.

Description:

Carapace: Carapace with anterolateral spines, median carina, dorsal pit, and lacking distinct anterior bifurcation. Anterior width of carapace 0.54-0.55CL (Fig. 3B). Eyes well developed, T-shaped, with bilobed cornea, almost reaching the end of A1 peduncle segment 1; anterior margin of ophthalmic somite rounded; cornea width more than twice the eye peduncle. Ocular scales fused, quadrated laterally, with median depression. Rostral plate subtriangular, unarmed anteriorly, lacking median carina; with slight margins sinuous (Fig. 3C). Al peduncle equals 0.39 CL. A1 somite dorsal processes with sharp, triangular apices directed anterolaterally. A2 scale length equals 0.7 CL

Raptorial claw dactylus with 6 teeth; opposable margin of propodus of claw lined with low, blunt pectinations; outer margin broadly curved (Fig. 3D)

Mandibular palp 3-segmented. MXP 1-4 with epipod.

Thorax: TS 5-8 each with distinct IM carina, but TS 6-8 each with SM carina. Lateral process of TS 5 bilobed, with anterior large spine and posterior slender spine, both slightly inclined anterolaterally. Lateral process of TS 6-7 with triangular lobes, pointed but not spined posterolaterally. TS 8 anterolateral margin is triangular.

Abdomen: AS (1-6) each with distinct SM, IM, LT, and MG carinae, except AS 6 where MG carina is lacking. Abdominal carinae spined as follows: SM on 4-6, IM on 3-6, LT on 2-6, MG on 1-5. AS 6 with ventrolateral spine in front of uropodal articulation.

Telson: Longer than broad, with prelateral lobe as long as margin of LT tooth. Median carina of telson flanked by double row of tubercles converging under apical spine. Primary teeth of telson include two SM, two IM and two LT teeth; Submedian teeth with fixed apices; denticles triangular, SM 5-6, IM 7-9, LT 1; ventral surface with short postanal carina. Numerous tubercles arranged in curved rows on both sides of telson (Fig. 3E).

Uropod: outer margin of protopod smooth; inner margin crenulate; with short ventral spine anterior to endopod articulation; protopod has two terminal spines, with rounded lobe on outer margin of inner spine, broader than adjacent spine, proximal margin between spines concave (Fig. 3F). Uropodal exopod proximal segment longer than distal segment; inner margin with round lobe; outer proximal half straight, with 6-8 movable spines on the distal half, distalmost largest, not exceeding midlength of distal segment; distal margin with long ventral spine. Distal end of uropodal endopod dark, as well as, the distal segment and distal end of the proximal segment of exopod.

Distribution and Habitat: *Erugosquilla massavensis*, the first Red Sea (Indo-Pacific) stomatopod to arrive in the Mediterranean, was first noted from Alexandria, Egypt, by Steuer (1936) under the name *Squilla africana* Calman. He reported that it occurred on fine sand with little mud, *Amphioxus-ground* bottom with few algae, in 15 fms (27 m). Since then, this species has been recorded from Israel, Lebanon, Egypt, Cyprus, Crete, Rhodes Island, Marmara Sea-Turkey, Syria and Libya (Lewinsohn & Manning, 1980; Galil & Kevrekidis, 2002; Kevrekidis & Galil, 2003; Katağan *et al*., 2004; Hassan & Noel, 2007; Shakman & Kinzelbach, 2007).

E. massavensis is common among the most important predators in many shallow, tropical and subtropical marine habitats (El-Sherif *et al*., 2012). It burrows in mud; sand-stones; silt-sand; sand; silt-clay; *Amphioxus*-ground bottoms; sand with little mud at depth of 5-183m (Müller, 1994). However, species of *Erugosquilla* construct U-shaped burrows in soft level substrates (Ahyong, 2001). In the present study, two specimens were collected from 50 m deep by the trawl net. The associated collected fauna is mainly crabs (*Charybdis longicollis*, *Myra fugax* and *Medorippe lanata*).

Remarks: The rostral plate with margins sinuous and the telson with 2 rows of tubercles flanking MD carina are characteristic for discriminating *E. massavensis* from the other species of genus *Erugosquilla* Manning, 1995.

As *E. massavensis* is commercial species in Egypt, El-Ganainy *et al*. (2004) studied its population dynamics in the Eastern Mediterranean waters of Egypt. Moreover, Sallam (2005) investigated the reproductive biology of it in Port Said. As well as, the biochemical compositions and heavy metals accumulation capacity of this shrimp collected from Port Said, Ismailia and Suez regions, have been studied by Sallam *et al*. (2006) and Abdel-Salam and Hamdi (2011, 2014).

Genus: *Clorida* Eydoux & Souleyet, 1842
***Clorida albolitura* Ahyong & Naiyanetr, 2000 Fig. 4 (A-H)**

Synonyms:

Squilla latreillei Dollfus, 1938: 190, Fig. 4; Ingle, 1963:14, Figs 2, 33 [not *C. latreillei* Eydoux & Souleyet, 1842].

Clorida latreillei Blumstein, 1974: 116, Fig. 3; Makarov, 1979: 47-48; Manning, 1995: 189-191, Fig. 119 [not *C. latreillei* Eydoux & Souleyet, 1842].

Clorida albolitura Ahyong & Naiyanetr, 2000: 314-317, Fig. 2; Ahyong & Galil, 2006: 191-193, Fig.1; Galil *et al*., 2009: 701-702, Fig.1.

Material: MMBT (CR-2014-1-3), on 14 September 2014, only one specimen (female) was collected at depth of 50 m, from El-Arish sector, in the far East of the Egyptian Mediterranean coast.

Measurements: Female (n = 1); TL 57 mm, CL 11.5 mm, rostral plate length = 1mm, rostral plate width = 1.8 mm. A1 peduncle 13.5 mm, A2 scale length 5 mm.

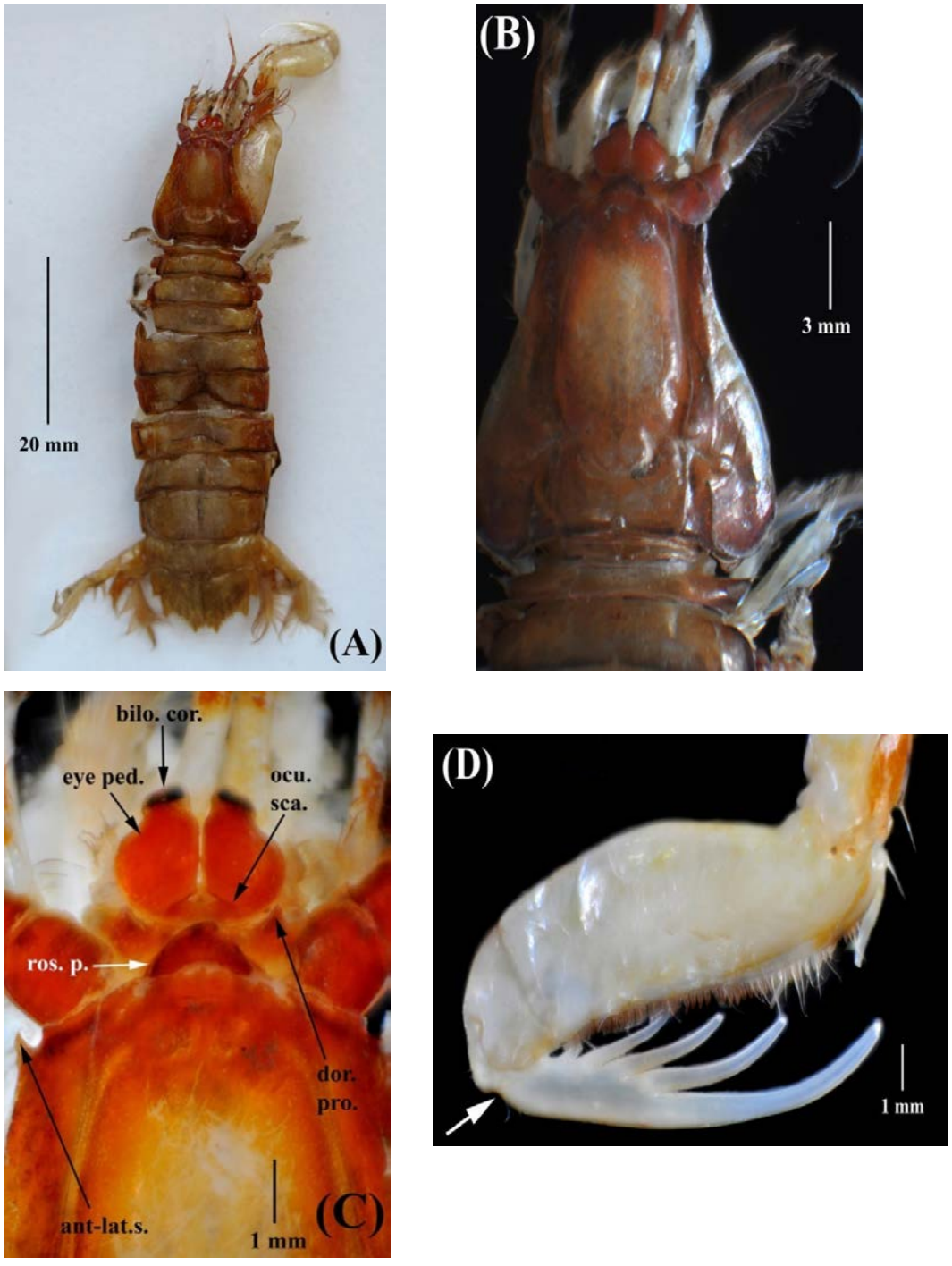
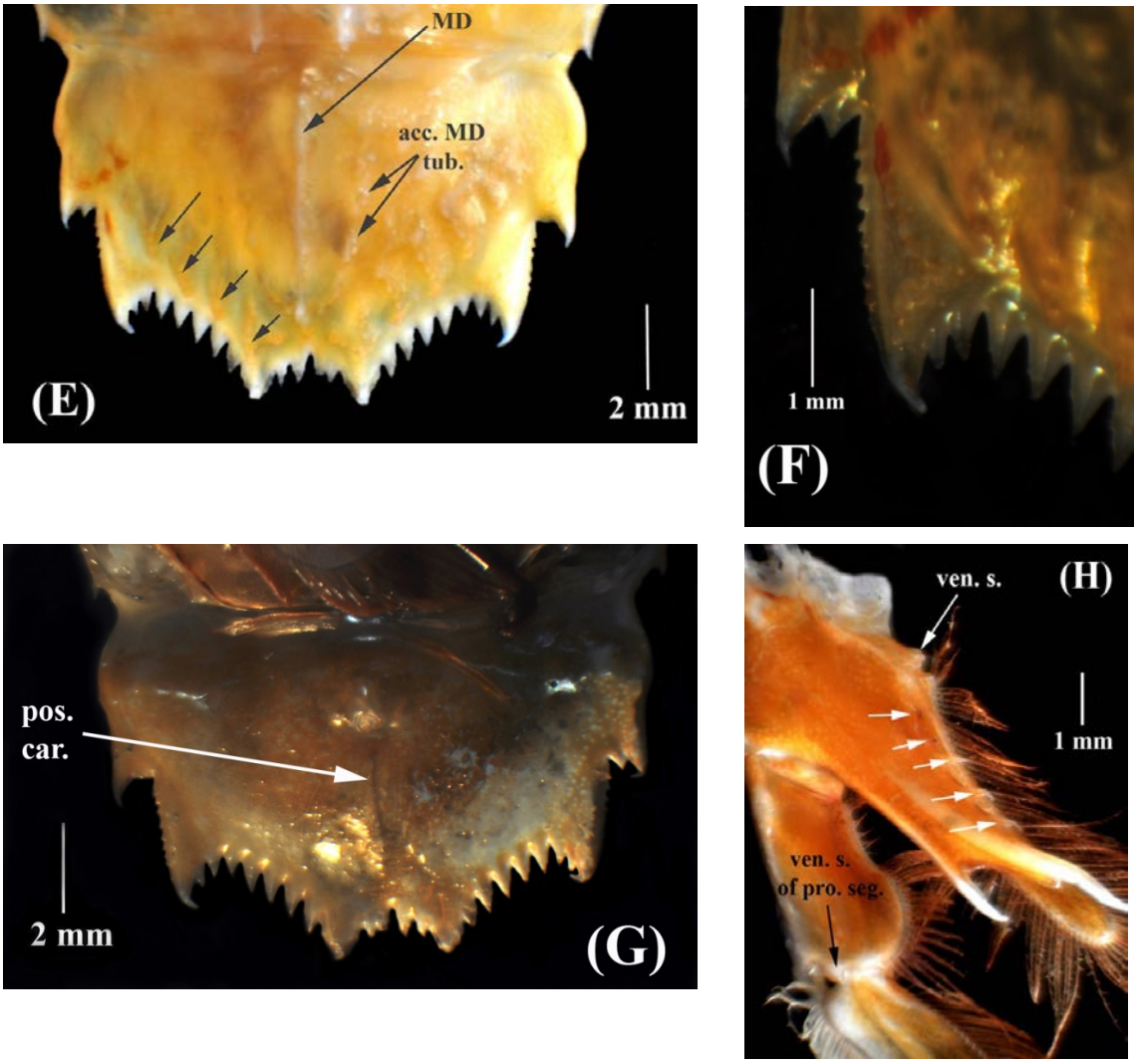


Fig. 4 (A-D). *Clorida albolitura* Ahyong & Naiyanetr, 2000. A. dorsal view. B. Enlarged anterior part showing carapace and thoracic somites. C. Enlarged anterior part of carapace showing anterolateral spine (ant-lat.s.), rostral plate (ros. p.), dorsal process of A1 somite (dor. pro.), ocular scale (ocu. sca.), eye peduncle (eye ped.), and bilobed cornea (bilo. cor.). D. Raptorial claw, right lateral with five teeth; arrow shows the basal notch.



Figs. 4 (E-H): E. Telson, dorsal showing median (MD) carina, accessory median tubercles (acc. MD tub.); arrows demonstrate the coarse tubercles. F. Margin of intermediate tooth of telson, left dorsal. G. Telson, ventral showing long postanal carina (pos. car.). H. Uropod, right ventral showing ventral spine (ven. s.), ventral spine of proximal segment (ven. s. of pro. seg.); arrows demonstrate positions of the 5 slender spines.

Description:

Carapace: Carapace with anterolateral spines but without median carina, dorsal pit or anterior bifurcation. Its anterior width 0.55CL. Posterolateral angles of carapace rounded and convex (Fig. 4B). Eye small, not reaching midlength of A1 peduncle segment 1; bilobed cornea; cornea width 0.75 mm, about half eye peduncle. Ocular scales fused, rounded laterally. Rostral plate broader than long; apex rounded, unarmed anteriorly, without median carina (Fig. 4C). Al peduncle equals 1.17 CL. A1 somite dorsal processes with short, triangular apices. A2 scale length equals 0.43 CL.

Raptorial claw dactylus with 5 teeth; opposable margin of propodus of claw lined with low, blunt pectinations; outer margin broadly curved, proximal margin with basal notch (Fig. 4D).

Mandibular palp 3-segmented. MXP 1- 4 with epipod.

Thorax: TS 6-8 each lacking SM carina. Lateral process of TS 5 with slender spine, slightly inclined anterolaterally. TS 6 lateral process broadly rounded. TS 7 lateral process subtruncate; anterolateral angle obtusely rounded, often slightly deflected dorsally producing shallow emargination laterally; posterolateral angles obtusely rounded. TS 8 anterolateral margin triangular.

Abdomen: AS (1-5) each has low, divergent SM carina, with more distinct IM, LT, and MG carinae. Abdominal carinae spined as follows: SM on 6, IM on 5-6, LT on 5-6, MG on 4-5. AS 6 smooth medially, irregular IM carinae; with ventrolateral spine anterior to uropodal articulation.

Telson: broader than long; prelateral lobe longer than margin of LT tooth (Fig. 4E). Two SM teeth; denticles triangular, each with blunt dorsal tubercle, SM 3 (2 on the left dorsal, and 1 likely to be split into 2 smaller tentacles on the right dorsal), IM 7, LT 1; accessory median carina composed of 5 coarse tubercles; dorsolateral surface with 4 rows of coarse tubercles; dorsal tubercles of primary teeth (LT, IM and SM) are distinct; margin of IM teeth crenulate (Fig. 4F). Telson ventral surface with long postanal carina, extending beyond half distance to posterior margin (Fig. 4G).

Uropod: outer margin of protopod smooth; inner margin with 5 slender spines; with short ventral spine anterior to endopod articulation (Fig. 4H); protopod has two terminal spines, with rounded lobe on outer margin of inner spine, broader than adjacent spine, proximal margin concave.

Uropodal exopod proximal segment shorter than distal segment; inner proximal half straight, inner distal half with round lobe; outer margin with 7 movable spines, distalmost spatulate, not exceeding midlength of distal segment; distal margin with short, triangular, ventral spine. Exopod proximal segment with dark-brown patch distally.

Distribution and Habitat: *Clorida albolitura* is Indo-West Pacific species (Ahyong & Galil, 2006); distributed in Madagascar, Andaman Sea, the Gulf of Thailand, Vietnam, Taiwan, and Australia (Ahyong & Naiyanetr, 2000). Ahyong & Galil (2006) reported it for the first time from the Eastern Mediterranean (Ashdod, Israel) as lessepsian migrant whereas, it was collected from 55 m deep, on a meadow of *Antedon mediterranea* Lamarck (Echinodermata). Also, it has been recorded from the Bay of Iskenderun on the Mediterranean coast of Turkey (Galil *et al*., 2009).

C. albolitura is predatory and burrows in sandy-mud substrates at depths of 31-110 m (Ahyong, 2001). In the present study, a single specimen was collected from 50 m deep, associated with crabs (genera: *Charybdis*, *Myra* and *Medorippe*), gastropod (genus: *Murex*) and echinoderm (genus: *Schizaster*).

According to the available literature, the present record of *C. albolitura* is the first from the Egyptian Mediterranean waters,

which represents an addition to the biodiversity of the Egyptian fauna.

Remarks: *Clorida albolitura* can be discriminated from other species of the genus by the combination of having anterolateral spine on TS 5, low, divergent submedian carinae on AS (1–5), and the long postanal carina on the ventral surface of the telson. These characters are also used to separate *C. albolitura* from the most resembles *C. latreillei*. According to Ahyong & Galil (2006), the previous reports of *C. latreillei* from the Red Sea area, each based on the same specimen from the Gulf of Suez (Dollfus, 1938; Ingle, 1963) are likely to be *C. albolitura*.

The distinctive flask-shaped eye in which the cornea is bilobed but actually narrower than the stalk can easily distinguishs *C. albolitura* from all other Mediterranean stomatopods.

Comparison between the recorded species:

Table (1) demonstrates a comparison between the three species of mantis shrimps that recorded from the Egyptian Mediterranean coast.

Table 1: A comparison among the 3 mantis shrimps.

Item	*Squilla mantis* (Linnaeus, 1758)	*Erugosquilla massavensis* (Kossmann, 1880)	*Clorida albolitura* Ahyong & Naiyanetr, 2000
Size	Moderate to large Max. length 200 mm	Moderate to large Max. length > 200 mm	Small Reaching 75 mm long
Eye	Cornea bilobed, wider than the stalk (T-shaped).	Cornea bilobed, wider than the stalk (T-shaped).	Cornea bilobed, distinctly narrower than the stalk (flask-shaped).
Rostral plate	Subrectangular, unarmed anteriorly, with median carina.	Subtriangular, unarmed anteriorly, lacking median carina.	Broader than long, apex rounded, unarmed anteriorly, without median carina.
Al peduncle	0.27 CL.	0.39 CL.	1.17 CL.
A2 scale length	0.7-0.8 CL.	0.7 CL.	0.43 CL.
Carapace	Carapace with median carina, dorsal pit, and anterior bifurcation.	Carapace with median carina, dorsal pit, lacking distinct anterior bifurcation.	Carapace without median carina nor dorsal pit or anterior bifurcation.
Raptorial claw dactylus	With 6 teeth.	With 6 teeth.	With 5 teeth.
MXP	1-5 with epipod	1-4 with epipod	1-4 with epipod
Thoracic somites	1- TS (6-8) each with SM and IM carinae. 2- TS 5 lateral process a sharp tooth, laterally; with small ventral spine bent forwards.	1- TS (6-8) each with SM and IM carinae. 2- Lateral process of TS 5 bilobed.	1- TS (6-8) each lacking SM carinae. 2- Lateral process of TS 5 with slender spine, slightly inclined anterolaterally.
Abdominal somites	AS (1-6) each with distinct SM, IM, and LT carinae. AS (1-5) each with MG carina.	AS (1-6) each with distinct SM, IM, and LT carinae. AS (1-5) each with MG carina.	AS (1-5) each has low, divergent SM carina, with more distinct IM, LT, and MG carinae.
Telson	1- Dorsal surface of telson smooth marked by curved rows of pits around MD carina. 2- Margins of IM teeth not crenulate. 3- Ventral surface with short postanal carina. 4- with 2 dark chestnut spots surrounded by a white ring.	1- Dorsal surface of telson with numerous tubercles arranged in rows that converge under the apex of the MD carina. 2- Margins of IM teeth not crenulate. 3- Ventral surface with short postanal carina. 4- without these 2 dark spots.	1- Dorsolateral surface of telson with 4 rows of coarse tubercles; accessory MD carina composed of 5 coarse tubercles. 2- Margins of IM teeth crenulate. 3- Ventral surface with long postanal carina. 4- without these 2 dark spots.
Origin	Mediterranean species	Indo-Pacific species	Indo-West Pacific species

Twelve species of stomatopods are known for the Mediterranean Sea (Colmenero *et al*., 2009). Eight species have been recorded in the Italian seas (Manning, 1977; Froglia & Manning, 1989). However, six species have been recorded from the eastern Levant: *Squilla mantis* (Linnaeus), *Erugosquilla massavensis* (Kossmann), *Rissoides desmaresti* (Risso), *R. pallidus* (Giesbrecht), *Nannosquilloides occultus* (Giesbrecht) and *Clorida albolitura* (Ahyong & Naiyanetr) (Ahyong & Galil, 2006).

On the other hand, adults of 33 species of stomatopods are known from localities in the Red Sea (Holthuis, 1967). In the present study, three species of stomatopod crustaceans were recorded namely, *Squilla mantis*, *Erugosquilla massavensis* and *Clorida albolitura*. The first one is Mediterranean, whereas, the other two species have been migrated to the eastern Mediterranean through Suez Canal (Ahyong & Galil, 2006). However, the number of the lessepsian migrants for most animal groups is currently increasing with time, so more sampling efforts are needed along the Egyptian Mediterranean coast, especially east to Port Said, to discover these newly migrated fauna such as, *C. albolitura* which recorded for the first time in the current study.

Comparison among the three recorded species of the present study showed some morphological differences among them. However, there are few characters that can easily distinguish between them in the taxonomical tree. The flask-shaped eye can easily discriminate *Clorida albolitura* from the other two species (*Squilla mantis* and *Erugosquilla massavensis*) with T-shaped eye. On the other hand, telson with 2 dark chestnut spots surrounded by a white ring is characteristic to distinguish *Squilla mantis* from *Erugosquilla massavensis*.

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