A New Species of Labidocera acuta (Copepoda, Calanoida, Pontellidae) Collected from the Coast Water of Tartous City (the Eastern Mediterranean Sea)

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Abstract

In this study, a new type of Labidocera acuta has been collected and recorded forthe first time. L. acuta was collected from the coast water of Tartous Cityin the period between March and August(Spring and Summer) 2017 in three regions differ from each other in their environmental characteristics that make them distinct impact on the crustacean zooplankton, The samples were also accompanied with different hydrophysical and hydrochemical measurements in all sampling areas and in different depths. 14 individuals were collected, among which 11 females and 3 males. Results showed that this species appeared in all sampling areas and in different water layers. The species was found to occur in haline range of 31 to 38‰, pH of 6.7 to 8.2 and temperature of 25 to 33 0C. Results showed that this species appeared in all sampling areas and in different water layers.

Keywords: *Copepoda, Labidocera acuta, crustacean, Tartous, Environmental.*

I. INTRODUCTION

Copepods are aquatic crustaceans which are the diminutive relatives of the crabs and shrimps. They are among the smallest (mostly < 1 mm) and most abundant of crustaceans and are usually the dominant member of the marine zooplankton (Niesen, 1982). Copepods are one of the most numerous diverse and biologically important zooplankton groups in theMediterranean sea, so more background information on them is provided here than for the other groups (Razouls *et al*., 2012). There are ten orders of copepods. Generally, copepods are identified based on thestructure of 5th leg, urosomal segments, length of antenna, observations of the genital segments and caudal setae (Al Hanoun and Hamameh, 2011). The orders with most species are Calanoida, Cyclopoida, Poecilostomatoida and Harpacticoida (Al Arraj, 2017). The genus Labidocera Lubbock presently comprises up to 52 species, mainly inhabiting surface waters of tropical to warm temperate regions (Mulyadi *et al*;.2002) . Their assemblages are often good indicators of different or distinctive water masses (TerbiyiK and Polat, 2015). In Eastern Mediterranean Sea, 4 species (*L. acuta*, *L. euchaeta*, *L. rotunda*, and *L. pavo*) are found in neritic waters (Lakkis, 2011). Even though the taxonomic description of the species had already been reported from the study area, the Eastern Mediterranean present senvironmental characteristics that favor the establishmentof species of Indo-Pacific origin (Galil, 2009; Zenetos *et al*., 2010).

II. MATERIALS AND METHODS

A. Sample Collection

zooplankton were collected monthly fromMarch to August 2017 at 9 stations in the coast water of Tartous City (Eastern Mediterranean Sea) (Fig1). The zooplankton samples werecollected through WP-2closing net, (mesh size 200µm, diameter 57 cm, length 255 cm, haulingspeed 0.5 ms^{-1}), from 65 m to the surface, so four fixed-depth strata(0-8-25-65m). The collected samples were preserved in 4% formaldehyde solutionin seawater. The location of the study stations was as follows, from the seashore (A1, B1, C1, 50m), (A2, B2, C2, 500m), (A3, B3, C3, 1000m). A total of 115 samples was collected, To characterise the physical properties of the water column, water temperature (°C) and salinity (‰) were derived from continuous measurements from the sea surface to the bottom at allzooplankton stations by device (Standard Water Sampling). A new species *Labidocera acuta* was identified to the lowest possible taxa using standard keys (Silas and Pillai, 1973; Razouls *et al*., 2011, 2012).

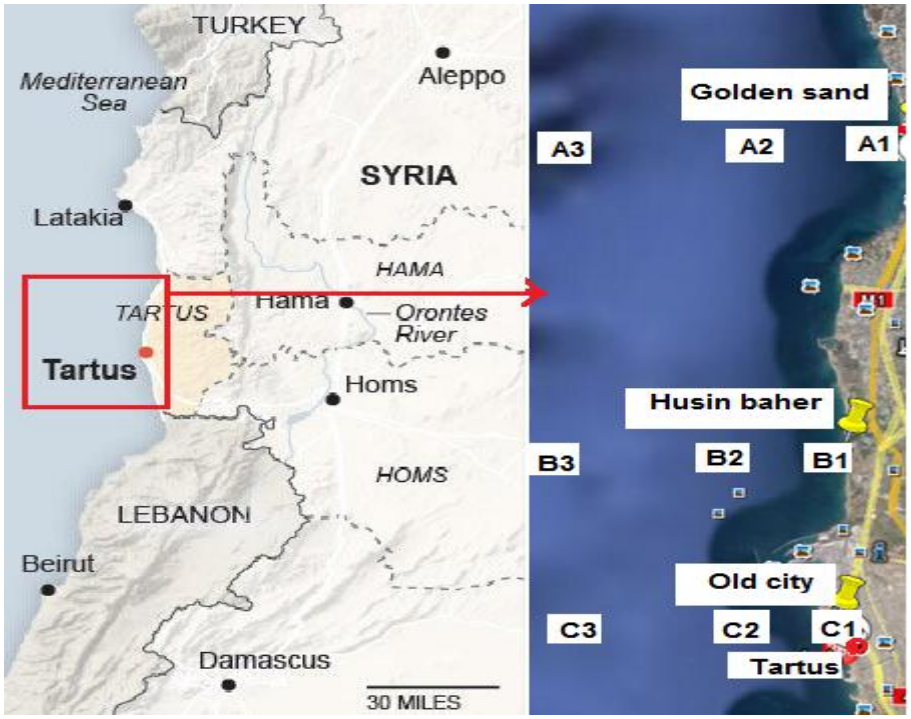

Fig. 1. Location of the sampling station.

1898)
• *Eupontella acuta* (Dana, 1849)
• *Labidocera acuta* (Dana, 1849)
• *Labidocera acuta* (Scott, 1909)

Vertical distribution in coastal zone of Tartous City and its spatial and temporal changes:

Labidocera acuta appeared in all sampling areas and in different water layersin the Spring and Summer 2017 where (Table 1) shows the regions and stations which this Species appeared in its. In the study, the species was found to occur in haline range of 32 to 38‰, pH of 7.2 to 8.4 and temperature of 22.7 to 30.5 ^{0}C (Table 1).

III. RESULTS AND DISCUSSION:
SYSTEMATICS

Kingdom: Animalia
Phylum: Artropoda
Subphylum: Crastacea
Class: Maxillopoda
Subclass: Copepoda
Order: Calanoida (Sars, 1903)
Family: Pontellidae (Dana, 1853)
Genus: *Labidocera* (Lubbock, 1853)
Species: *Labidoceraacuta*
Habitat: Pelagic, Open Sea, Coastal.
Common Name (s):
• *Pontella acuta* (Dana, 1849)
• *Labidocera acutum* (Giesbrecht, 1892)
• *Labidocera acuta* (Giesbrecht and Schmeil,

Table 1-Vertical distribution of *Labidocera acuta* in the regions and stations: (+) found, (-) not found and (T, S, pH).

Regions	Golden sand			Husin baher			Old city		
	A			B			C		
Stations	A1	A2	A3	B1	B2	B3	C1	C2	C3
Depths	8m	25m	65m	8m	25m	65m	8m	25m	65m
L. acuta	+	-	+	+	+	+	-	+	+
T(^{0}C)	30.5	-	23.7	29.9	27.4	22.7	-	26.9	22.8
S(‰)	32	-	38	31.3	35.2	37.3	-	36.9	37.7
pH	8.2	-	7.3	8	7.5	7.2	-	7.9	7.4
Stability(%)	11.13	-	5.60	10.18	9.12	6.12	10.55	7.08	4.50

collected (11) females and (3) males(Fig.2).

The female species were commonly appeared in all sampling areas than the male, so we

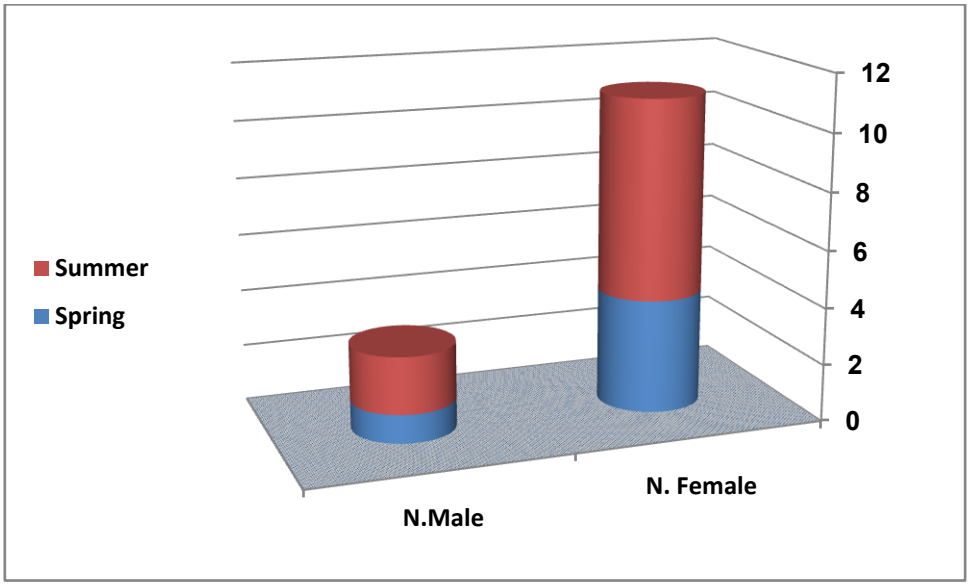

Fig.2-Number of females and males of *L.acuta* in spring and summer.

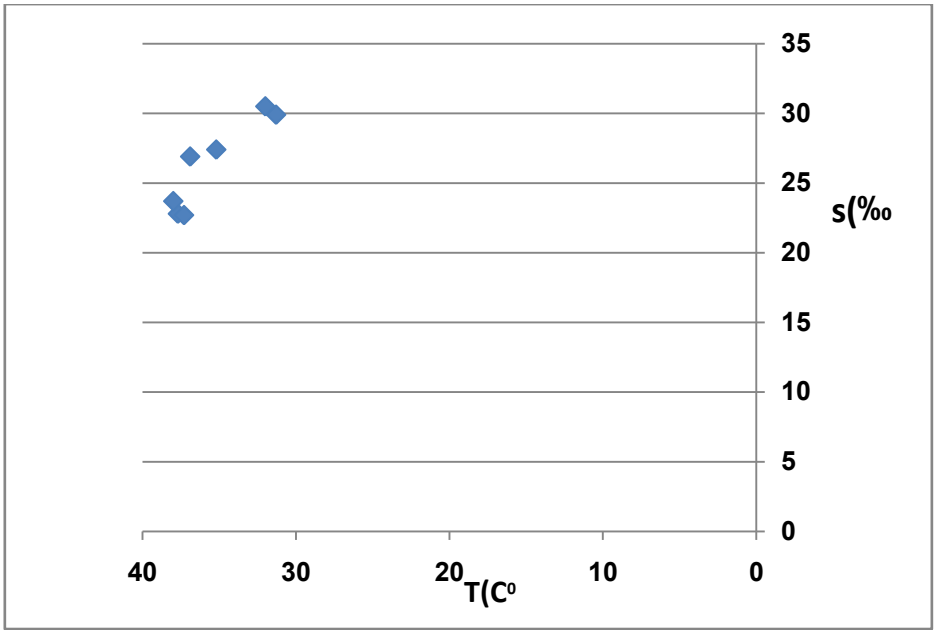

Fig.3-Valuedistributed of temperature and salinity during the period appearing *L.acuta*.

Description:

FEMALE: Body length 3.09-3.20 mm, cephalon rounded with a conspicuous anterior rostral hook. No lateral cephalic hooks, posterior metasome symmetrical with large lateral points. Dorsal eye lenses moderately large, rostrum deeply bifurcate. First antennae with 25 segments, urosome three-segmented, about one-third length of prosome, genital segment asymmetrical with a stout postero-lateral conical process present on its right side which extends half way along the next segment. Anal segment well developed. Fifth leg markedly

It was found throughout this study that the stability of *Labidocera acuta* was high in the stations near the beach (shallow) (Table 1). This species was characterized by adaptation to living in a wide range of temperature changes (Eurythermic), as well as salinity (Euryhaline), so *L.acuta was* oraganism with wide adaptable environmental (Eurybiont) (Table 1) and this results coincided with the results of studies (Razouls *et al*., 2011, 2012; Al Hanoun and Hamameh, 2011; TerbiyiK and Polat, 2015; Galil, 2009; Zenetos *et al*., 2010; Jeong, 2009).

endopodite is claw like (Fig. 4).

asymmetrical with a rather variable exopodite, with relatively large spines on the outer border;

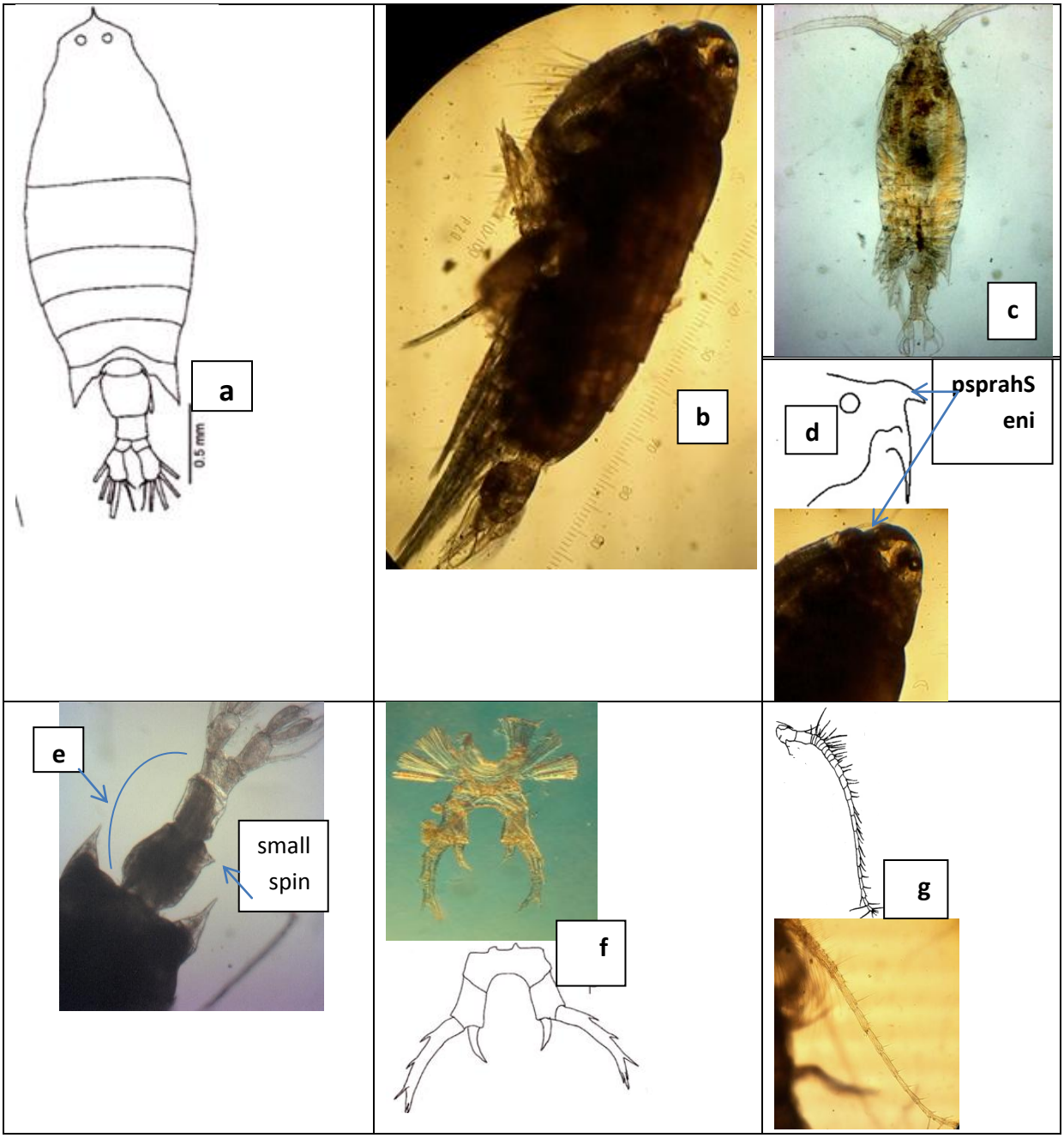

Fig.4- Dorsal view of female (a) and (c), lateral view (b), Sharp spine (d), Urosome segment (e), leg 5 (f), right antennules (g).

five segmented, Urosome segment 1 with a small spine on the right. Left fifth leg with 3 terminal and 1 outer spine; right fifth leg without a thumb on the claw, but with a curved triangular flap (Fig.5).

MALE: Body length 2.73.-3.25mm. Cephalon resembles that of female except that dorsal cuticular eye lenses are larger and placed close together, Right first antennae geniculate, segment 18 with prominent denticulated ridge. Urosome

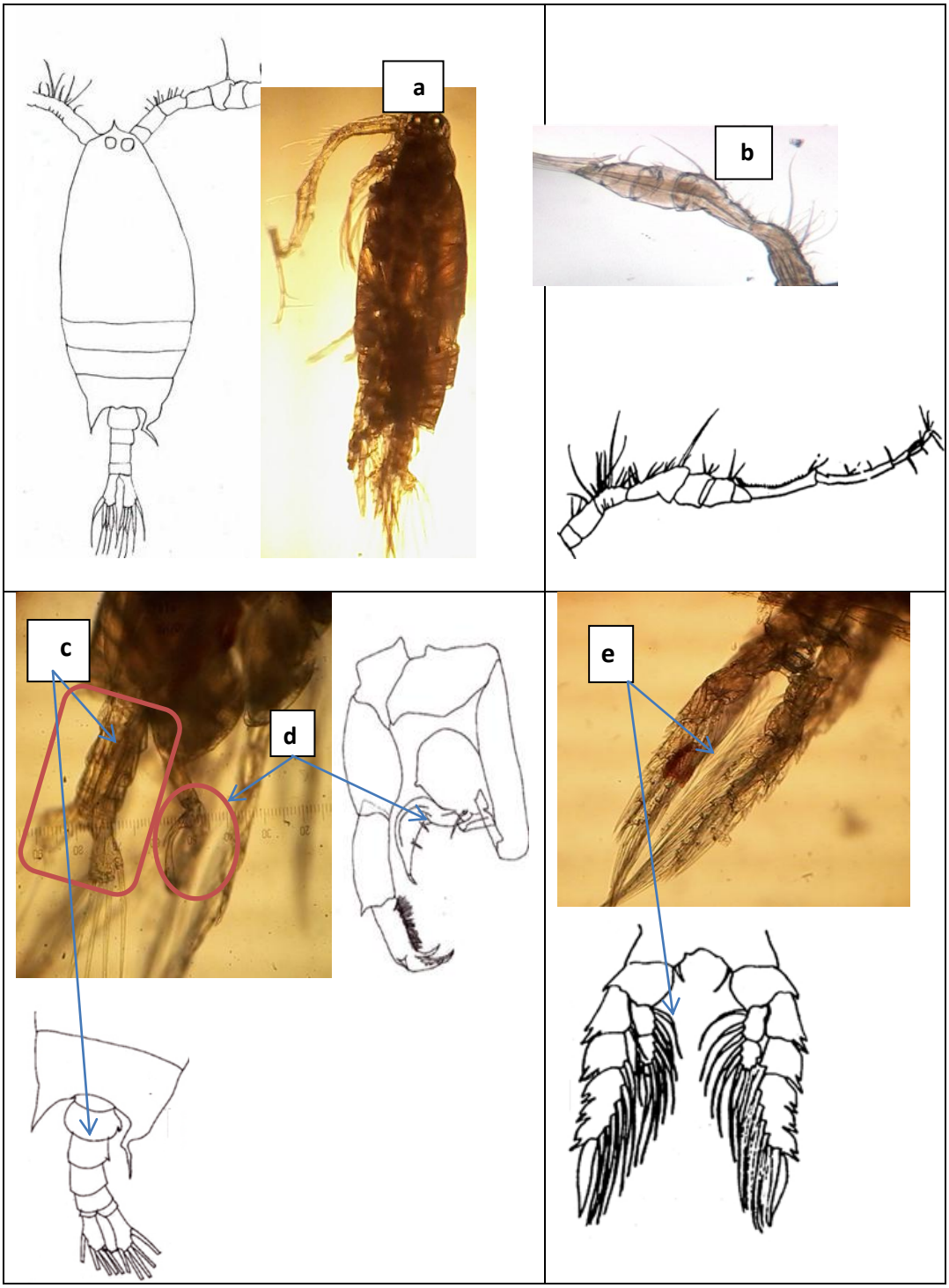

Fig.5- Dorsal view of male (a), right antennules (b), Urosome segment (c), leg 5 (d), swimming leg 4 (e).

Bay, and area study (Tartous City in Eastern Mediterranean Sea).

Biogeography: North Atlantic Ocean, European waters, Coast India, Arabian Sea, Pacific Ocean, Australian waters, Great Barrier Reef, Moreton

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