

New record of the snapping shrimp *Alpheus edwardsii* (Audouin, 1826) (Crustacea: Alpheoidea) in Basrah, Iraq

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Abstract

Specimens of the snapping shrimp *Alpheus edwardsii*, were collected from the intertidal zone of Faw and Shatt Al-Basrah channel in Basrah city, Iraq during October 2016. Photographs by digital camera and measurements were presented. Guides and keys were used for identification of this species.

Keywords new record; snapping shrimp; *Alpheus edwardsii*; Alpheoidea.

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1 Introduction

Caridean shrimps are known almost exclusively from the families Palaemonidae and Atyidae. There are however, not reported of shrimps from the family Alpheidae recorded in the Iraqi coast, but recorded in Arabian Gulf a small number of species in the genera *Potamalpheops* and *Alpheus*. The shrimp genus *Alpheus* Fabricius, 1798 presently includes 294 valid species worldwide (De Grave and Fransen, 2011; Anker, 2012; Anker and De Grave, 2012; Anker et al., 2016). The true diversity of this genus remains largely unknown, with estimates of about 400 species, but few of them are a cost-importance and significance, even those with a very simple value. Since empirical evidence points to the existence of many cryptic lineages (Knowlton, 1993; Knowlton and Mills, 1992; Anker, 2001).

As with other Caridea, the Alpheidae of the Gulf (Arabian= Persian) are still relatively poorly known; a brief historical overview to the known fauna is provided (De Grave, 2007). It is well known that holes and burrows of fishes (gobies) in the intertidal zone provide cryptic habitats for various invertebrate taxa, including mollusks, polychaetes, and in particular, decapod crustaceans (Berggren, 1991; Anker et al., 2007; Anker, 2012; Al Yamani et al., 2012; Anker et al., 2015). Recent sampling with the help of a bait suction pump has much contributed to the discovery of these symbiotic animals. In regards to the caridean genus *Alpheus* Fabricius, 1798. Snapping shrimps of the genus *Alpheus* Fabricius, 1798 live from the intertidal zone to great depths, occurring especially in coastal tropical and subtropical ecosystems such as estuaries, mangroves and

coral reefs (Chace, 1988; Anker et al., 2006). Anker and De Grave (2009) described this species from the intertidal mudflats of northern Kuwait. This medium size species (CL of male from 6.0 mm to 10.0 mm) is readily distinguished from its congeners in the area by having a distinct spine-shaped tooth on the mesial face of the palm of the large cheliped, in particular from its sympatric and more common species *Alpheus lobidens*. Anker and De Grave (2009) mentioned that *Alpheus lutosus* is sympatric with *A. lobidens* De Haan, 1849, in the muddy estuaries of Kuwait.

The aim of the study is to complete the collection of information about the presence of shrimp in Iraqi internal and territorial waters, therefore it was recorded the kind of shrimp belonging to the genus *Alpheus*.

2 Materials and Methods

Specimens of this species collected from the intertidal zone under rocks in mud and holes in mudflat of Iraqi coast regions, Faw and Shatt Al-Basrah channel in Basrah city, Iraq (Fig. 1). As it was found hiding among the rocks, hand-held models collected during the lower tidal, through October 2016. Specimens Kept by 70-80% alcohol and taken to laboratories of Marine Science Center (MSC), University of Basrah, Iraq.

The imaging device using an electron microscope (Carl Zeiss - 426126) is made in Germany, with a camera (Canon – pc1309) made in Japan, a touch a screen (LG) with software (Hasco) which is also used for measurements in addition to the regular use of the ruler (cm).

Adopt classification from Tiwari (1965), Banner and Banner (1972, 1981, 1982), and Al Hatoom (2008).

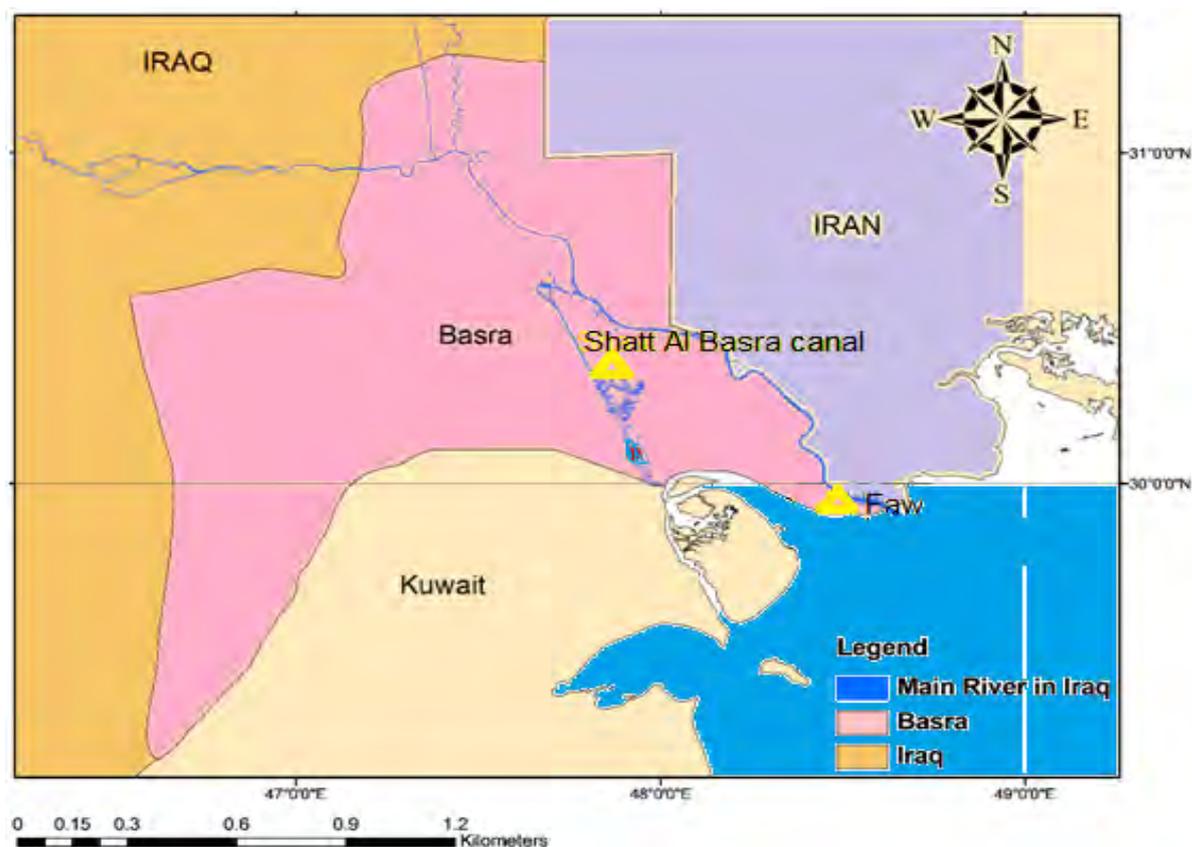


Fig. 1 Map of the collection of shrimp samples in Iraqi coast regions, Faw and Shatt Al-Basrah channel in Basrah city, Iraq.

3 Results and Discussion

Taxonomy

Class: Malacostraca

Order: Decapoda

Infraorder: Caridea Dana, 1825

Family: Alpheidae Rafinesque, 1815

Genus: *Alpheus* Weber, 1795

Alpheus edwardsii (Audouin, 1826) (Fig. 2)

Without name, Savigny, 1809. Description de l' Egypte, Atlas Crust.: pl. 10, fig. 1.

Athanas edwardsii Audouin, 1827. Description de l' Egypte, ed. 2, 22: 274.

Alpheus edwardsii Guerin Meneville, 1829-44. Iconographie du Regne animal, vol. 2, Crust.: pl. 21, fig. 5; vol. 3, Crust.: 15.

Alpheus audouini Coutiere, 1905. Fauna and Geography of the Maldive and Laccadive Archipelagoes: 2 (4): 911, fig. 52.

Neotype: 33 mm male from Suez, collected by L. Vaillant, 1864.

Neoallotype: 35 mm female from same collection as neotype.

Neoparatypes: 3 males and 6 females 22-35 mm in length, from same collection as neotype.

Material examined (MSC)

All shrimp length (four male) (TL) of 25 mm and a length of carapace (CL) 8 mm, along the large chela 13 mm and width of 4 mm, length of palm 5 mm and a length of finger 3.5 mm. (Text-fig. 3)

Small chela length of 11 mm, the proportion of the length of fingers to palm 1:1 (Text-fig. 3 E & F). It was collected during October 2016 from the intertidal zones of the rocks in mud and holes in mudflat of Iraqi coast regions, Faw and Shatt Al-Basrah channel in Basrah city.

DIAGNOSIS

Rostrum triangular, apex acute, carina obtuse; somewhat variable in length from, slightly shorter to slightly longer than the first segment of antennular peduncle. Orbital hoods rounded, unarmed, separated from rostrum by shallow grooves. The same as in original description (Tiwari, 1965).

Rostrum and rostral triangle rounded dorsally and curving into orbitorostral grooves, Proximal shoulder of superior saddle and inferior shoulder projecting as rounded teeth; rostrum broader (Text-fig. 4 A & B & C & E). These also agree with (Banner & Banner, 1982). Orbitorostral margin not concave (Text-fig. 4 A & B).

In this study, large chela 3.25 times as long as broad with fingers 0.27 of total length. These ratios agree with Al Hatoom (2008). Whereas it was more than 2-3 times with the same morphological characteristics (Al Hatoom, 2008). The fingers 0.7 as long as palm (Text-fig. 3 A & B & C & D). This description agrees with Banner and Banner (1972).

Proximal shoulder of superior saddle of large chela rounded to acute and overhanging floor of groove, Inferior shoulder on outer face of large chela projecting into an acute subacute tooth, Inferior shoulder of outer face of large chela smooth (Text-fig. 3 A & B & C & D). Proximal edge of groove obtuse, never acute, overhanging floor of groove; distal margin of groove rounded; groove continued on inner face as poorly defined triangular depressed area, the apex of which reaches to proximal quarter of chela; groove continued on outer face as well-defined quadrangular depression, proximal portion reaching linea impressa and interiorly extending 0.3 width of palm.

Merus of small cheliped 2.5 to 3.2 times as long as broad, spine at the far end of the inner inferior margin very short. Supero-internal angle of carpus acute. Chela somewhat compressed, about four times as long as high. Palm with upper and lower borders entire, without notches or grooves, no spiniform angle on the palm

near articulation with dactylus. Dactylus in males subspatulate, balaeniceps-shaped; in females simple, almost as long as or slightly shorter than palm (Tiwari, 1963). the proportion of the length of fingers to palm 1:1 (Text-fig. 3E & F).

Third leg (Text-fig. 4 E & F) carpus 0.64 times as long as merus, about four times as long as broad, its extremities not produced. Propodus 1.4 times as long as carpus, about 5 times as long as broad, armed with 7 spines on its inferior edge, distalmost spine apical. Dactylus curved, simple, acute, 0.37 as long as propodus.

Telson 2 times as long as posterior margin is broad ; spines on dorsal surface small ; outer pair of terminal spines as long as dorsal spines, inner spines a little longer, the seta long on margin of uropod and telson (Text-fig. 4 D).

Habitat

Muddy intertidal, estuaries, mangroves, rocky-cobble intertidal. Intertidal zone and estuarine mudflats range, on sandy-rocky shores, most abundant in the mid to upper tidal range, in gravelly substrata with lower mud content.

Distribution

A. Edwardsii was recorded in the Western Indian Ocean; Gulf of Mannar; Piearl Banks in Ceylon; Indonesia; New Caledonia and Sandwich Islands; Indo-West Pacific (Red Sea to New Zealand and Hawaii); Hawaii (Tiwari, 1965). It is one of the migratory species through the Suez Canal as it was recorded for the first time in the Mediterranean Sea in Egypt in 1924. It spreads in the Indian Ocean and western Pacific Ocean and the Red Sea and rcored in Syria (Al Hatoom, 2008).



Fig. 2 Photo of the snapping shrimp of *A. edwardsii* (Audouin, 1826), side view of the male, in MSC.

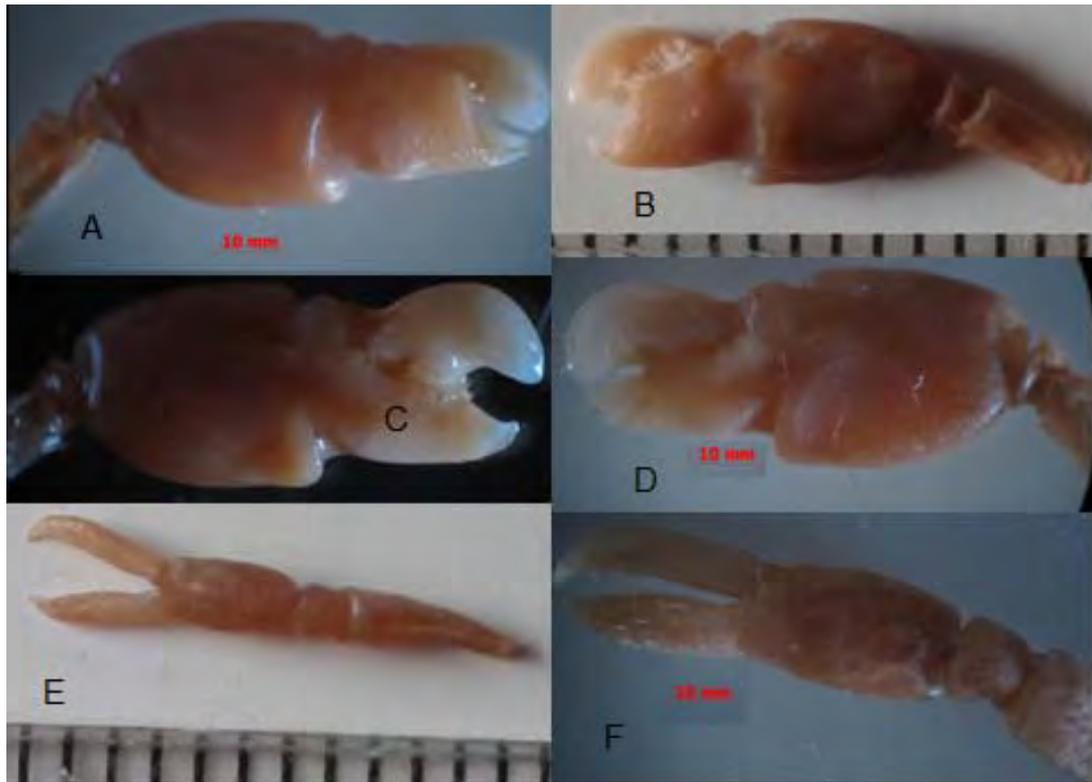


Fig. 3 Some of the important parts taxonomic shrimp *A. edwardsii*; A,B: large cheliped, outer face; C,D: large cheliped, inner face; E,F: small cheliped; outer face.



Fig. 4 Some of the important parts taxonomic shrimp *A. edwardsii*; A,B: anterior region, dorsal view; C,E: dorsal and lateral view of anterior region; D: telson and uropods; F: third pereopod.

References

- Anker A. 2001. Taxonomie et évolution des Alpheidae (Crustacea, Decapoda). Thèse de Doctorat. 2 volumes, 547 + 331 pp. Muséum National d'Histoire Naturelle, Paris, France
- Anker A. 2012. Revision of the western Atlantic members of the *Alpheus armillatus* H. Milne Edwards, 1837 species complex (Decapoda, Alpheidae), with description of seven new species. *Zootaxa*, 3386: 1-109
- Anker A, Ahyong ST, Noel PY, Palmer AR. 2006. Morphological phylogeny of alpheid shrimps: parallel preadaptation and the origin of a key morphological innovation, the snapping claw. *Evolution*, 60: 2507-2528
- Anker A, De Grave S. 2009. A new snapping shrimp (Crustacea Decapoda, Alpheidae, *Alpheus*) from the estuarine mudflats of Kuwait. *Zoologische Mededelingen*, 83(25): 811-817
- Anker A, De Grave S. 2012. Description of *Alpheus cedrici* sp. n., a strikingly coloured snapping shrimp (Crustacea, Decapoda, Alpheidae) from Ascension Island, central Atlantic Ocean. *ZooKeys*, 183: 1-15
- Anker A, Hurt C, Knowlton N. 2007. Three transisthmian snapping shrimps (Crustacea: Decapoda: Alpheidae: *Alpheus*) associated with innkeeper worms (Echiura: Thalassematidae). *Zootaxa*, 1626: 1-23
- Anker A, Komai T, Marin IN. 2015. A new echiuran associated snapping shrimp (Crustacea: Decapoda: Alpheidae) from the Indo-West Pacific. *Zootaxa*, 3914: 441-455
- Anker A, Tavares M, Mendonça JB. 2016. Alpheid shrimps (Decapoda: Caridea) of Trindade & Martin Vaz Archipelago, off Brazil, with new records, description of a new species of *Synalpheus* and remarks on zoogeographical patterns in the oceanic islands of tropical southern Atlantic. *Zootaxa*, 4138(1): 1-58
- Al Hatoom BS. 2008. Crustaceans Decapoda fertility and efficiency of the survey when Penaeidae shrimp in the beach town of Jableh water. Master Thesis, Tishreen University, Faculty of Science, Syria
- Al Yamani FY, Skryabin V, Boltachova N, Revkov N, Makarov M, Grintsov V, Kolesnikova E. 2012. Illustrated Atlas on the Zoobenthos of Kuwait. K.I.S.R
- Audouin V. 1827. Description de l' Egypte ou recueil des observations et des recherches qui ont ete faites en Egypte pendant l' expedition de l' armee franchise (Ed. 2), 22: 249-290, Atlas Hist, nat., vol. 2, Crust., 1-13
- Banner AH, Banner DM. 1972. The Establishment of a Neotype for *Alpheus edwardsi* (Audouin). Department of Zoology, University of Hawaii, Honolulu, Hawaii, USA
- Banner DM, Banner AH. 1981. Annotated checklist of the alpheid shrimp of the Red Sea and Gulf of Aden. *Zoologische Verhandelingen*, Leiden 190: 1-99
- Banner DM, Banner AH. 1982. The Alpheid shrimp of Australia. Part I. theremaining alpheids, principally the genus *Alpheus*, and family Ogrididae. *Records of the Australian Museum*, 34(1): 1-357
- Berggren M. 1991. *Athanopsis rubricinctuta*, new species (Decapoda, Natantia, Alpheidae), a shrimp associated with an echiuroid at Inhaca Island, Moçambique. *Journal of Crustacean Biology*, 11(1): 166-178
- Chace Jr FA. 1988. The caridean shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition, 1907-1910, Part 5: Family Alpheidae. *Smithsonian Contributions to Zoology*, 466: 1-99
- Coutiere H. 1905. Marine Crustacea, XV. Les Alpheidae. In: *Fauna and Geography of the Maldive and Laccadive Archipelagoes*. (Gardiner JS, ed). 2(4): 852-921, pis. 70-87, 127-139. Cambridge University Press, Cambridge (vol. dated 1906)
- De Grave S. 2007. Notes on some shrimp species (Decapoda: Caridea) from the Persian Gulf. *Annalen des Naturhistorischen Muse in Wien*, 108B: 145-152
- De Grave S, Fransen CHJM. 2011. Carideorum catalogus: the recent species of the Dendrobranchiate, Stenopodidean, Procarididean and Caridean shrimps (Crustacea: Decapoda). *Zoologische Mededelingen*, 85: 195-588

- Guerin Meneville FE. 1829-44. Iconographie du Regne animal de G. Cuvier, ou representation d'apres nature de l'une des especes. d'animaux. Avec un texte de la science. Ouvrage pour servir d'Atlas a tous les traites de Zoologie. Vol. 2, Crust., 3: 1-48
- Knowlton N. 1993. Sibling species in the sea. *Annual Review of Ecology and Systematics*, 24: 189-216
- Knowlton N, Mills DK. 1992. The systematic importance of colour and colour pattern: evidence for complexes of sibling species of snapping shrimp (Caridea: Alpheidae: Alpheus) from the Caribbean and Pacific coasts of Panama. *Proceedings of the San Diego Society of Natural History*, 8: 1-5
- Savigny JC. 1809. Crustaces. Description de l' Egypte ou recueil des observations et des recherches qui ont ete faites en Egypte pendant l' expedition de l' armee frangaise. *Atlas Crust.*, 1-13
- Tiwari KK. 1965. Alpheid shrimps (Crustacea: Decapoda: Alpheidae) of Vietnam.— *Annales de la Faculté des Sciences, Université de Saigon*, 1963: 269-362