

FIRST RECORD OF POLYCHAETE *CAPITELLA GIARDI* (FAMILY CAPITELLIDAE) FROM PAKISTANI WATERS

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ABSTRACT

Capitella giardi (Mensil, 1897) of family Capitellidae is reported here for the first time from Pakistani waters. So far, the only capitellid worm known to occur in the coastal waters of Pakistan was *Capitella capitata* (Fabricius, 1780). *Capitella giardi* closely resembles *C. capitata* in having nine thoracic chaetigers of which first six chaetigers bear capillary chaetae only. However, the former differs from the later (1) in having noto-capillaries and neuro-hooks in 7th segment and (2) in lacking capillary chaetae in the 8th and 9th thoracic segments. *C. giardi* also resembles *C. teleta* Blake, Grassle and Eckelbarger, 2009, but differs in the chaetal characters of the 7th thoracic segment. In *C. teleta* 7th segment has noto- and neuro-capillaries, whereas in *C. giardi* 7th segment has noto-capillaries and neuro-hooks.

Key words: Annelida, Polychaeta, Capitellidae, *Capitella giardi*, Pakistan.

INTRODUCTION

Capitella giardi (Mensil, 1897) is a polychaete worm belonging to family Capitellidae Grube, 1862. The family is characterized by: 1) the presence of a short prostomium, without any appendages, 2) the eversible proboscis is armed with soft papillae only, 3) the body is divided into thorax and abdomen but this is defined on internal structure, externally division between thorax and abdomen may not be distinct in several species of the family, 4) thorax bears either capillary chaetae or both capillaries and hooded hooks and 5) in abdomen only hooded hooks are present (Fauchald, 1977).

Generic differentiation within family Capitellidae is difficult and is based on number of thoracic segments and chaetal characters (Magalhaes and Bailey-Brock, 2012). In genus *Capitella* Blainville, 1828, thorax has nine segments. Either capillaries or both capillaries and hooded hooks are present in the thorax, whereas only hooded hooks are present in the abdomen. Eight and ninth thoracic segments bear genital spines or hooks (Fauchald, 1977). Pygidium is without appendages. According to Silva *et al.* (2017) there are 19 nominal species of genus *Capitella* worldwide, whereas World Register of Marine Species (WoRMS) lists 22 species of the genus (accessed on 15 December 2021).

The only capitellid worm known to occur in the coastal waters of Pakistan, so far, is *Capitella capitata* (Fabricius, 1780) reported by Mustaqim (2000) who collected the worm from intertidal mud of the Sandspit backwaters, Karachi. *Capitella capitata* is a complex of species comprising of at least six sibling species (Grassle and Grassle, 1976). *Capitella* sp. 1 (or *Capitella* Type 1) of Grassle and Grassle (1976) has been named *Capitella teleta* by Blake *et al.* (2009).

Capitella giardi closely resembles *C. teleta* but differs in having neuro-hooks in place of neuro-capillaries in 7th thoracic segment. It also resembles *C. capitata* s. str. but differs in lacking neuro-capillaries in 7th thoracic segment as well as in 8th and 9th thoracic segments. Keeping in view the confused state of taxonomy of genus *Capitella*, we are providing herein detailed description and line drawings of the Pakistani materials.

MATERIALS AND METHODS

The worms were collected from settlement panels, made of Perspex (15 x 10 x 0.2 cm), submerged in Korangi Creek (at New Korangi Fish Harbour) (24°48'18.43" N: 67°12'17.76" E). The panels were submerged at a depth of about 4 m for a period of one month, for 12 months from December 2016 to November 2018. The worms were sorted out under stereomicroscope (Olympus SZX9) and preserved in 8% formalin solution. They were later stored in 70% alcohol. Temporary slides were made in 50% glycerol or in lactophenol (a clearing agent). Lactophenol blue solution was also used to stain the worm where necessary. Measurements were taken with ocular micrometer. Line drawings were made with the help of camera lucida fitted on a compound microscope (Olympus CX21).

RESULTS AND DISCUSSION

Capitella giardi (Mensil, 1897), Figs. 1A-E

Capitellides giardi Mensil, 1897: 441-443.

Capitella giardi, Warren, 1976: 205-206; Magalhaes and Bailey-Brock, 2012: 4-7, Figs. 1, 2A-E.

Description

Intact specimens 6 to 14 mm long, 0.7 to 1.0 mm wide for about 38 to 72 chaetigers. Genital spines present in all specimens, few specimens bear eggs in the body cavity. Body elongates, wider on the mid thoracic region (chaetiger 5 is the widest), gradually tapering posteriorly (Fig. 1). Prostomium short, broadly conical, without eyes and appendages (Fig. 2 A). All specimens with invaginated proboscis. Peristomium partially fused with prostomium, it is distinct from prostomium in dorsal view but indistinct in ventral view. Thorax with nine uni-annulate chaetigers; chaetigers 1 to 7 are more or less similar in width, whereas chaetigers 8 and 9 are wider. Chaetiger 1 to 6 with noto- and neuro-capillaries (6 to 8 capillaries per fascicle), chaetiger 7 with 6 – 8 noto-capillaries and 6 – 8 neuro-hooks, chaetiger 8 and 9 with genital spines dorsally and 6 – 8 neuro-hooks ventrally. Chaetiger 8 with two sets of 3 genital spines (Fig. 2 B) directed posteriorly while chaetiger 9 with two sets of 2 genital spines directed anteriorly. Capillary chaetae uni-limbate (Fig. 2 C). Hooded hooks multi dentate, shaft of the hook with a slight constriction, tip of the main fang uncovered (Fig. 2 D).

Abdominal segments (Fig. 2 E) multi-annulated with noto- and neuro-hooks only. Anterior abdominal segments with 3 - 4 noto-hooks and 4 - 6 neuro-hooks in each fascicle, whereas posterior segments with 2 - 4 noto- and neuro-hooks per fascicle. The last few abdominal segments without chaetae. Pygidium broader than long, with four lobes and terminal anus (Fig. 2 F).

Distribution

North Atlantic, Florida (Warren, 1976), Italy (Gravina and Somaschini, 1990), Greece (Gouvis *et al.*, 1998; Faulwetter *et al.*, 2017), Turkey (Yilmaz, 2009), Egypt (Selim, 2009), Hawaiian Islands (Magalhaes and Bailey-Brock, 2012; Carlton and Eldredge 2015) and now from Pakistan.

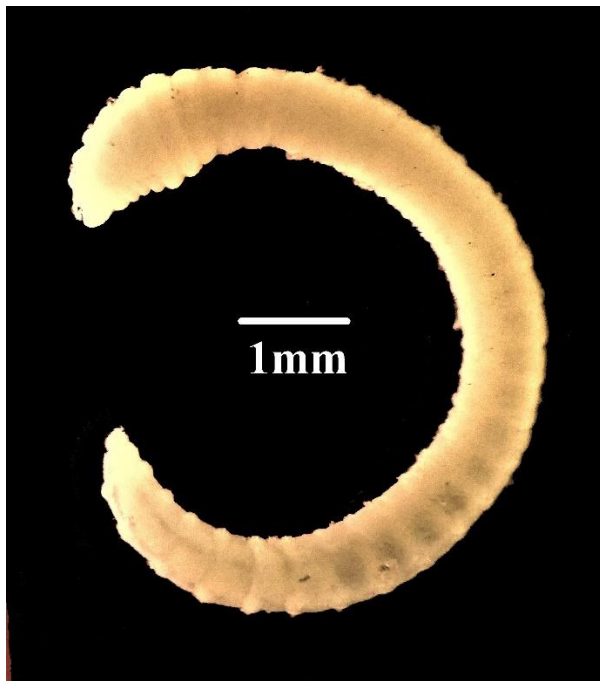


Fig. 1. Photograph of *Capitella giardi* (lateral view) collected from the Korangi Creek, Karachi.

Remarks

Mensil (1897) established genus *Capitellides* for capitellids with genital hooks both in male and female. Warren (1976) referred *Capitellides* to genus *Capitella* because the type species of *Capitella*, *i.e.*, *C. capitata*, has the similar characters that were described for the genus *Capitellides* (Blake, 2009). The genital spines in male and female has

been reported for *C. giardi* (Mensil, 1897), *C. capitata* (Fabricius, 1780), *C. jonesi* (Hartman, 1959), *C. hermaphroditica* Boletsky and Dohle, 1967 and *C. caribaeorum* Warren and George, 1986 (Blake, 2009).

Our specimens agree well with the available descriptions and illustrations of *Capitella giardi* in number of thoracic segments, chaetal arrangement in the thorax and abdomen, and presence of genital spines in both the sexes (Warren, 1976; Magalhaes and Bailey-Brock, 2012). The number of capillaries and hooks per fascicle in the thorax of the present specimens vary from 6 to 8 instead of 4 to 6 as reported by Magalhaes and Bailey-Brock (2012) for Hawaiian Islands specimens.

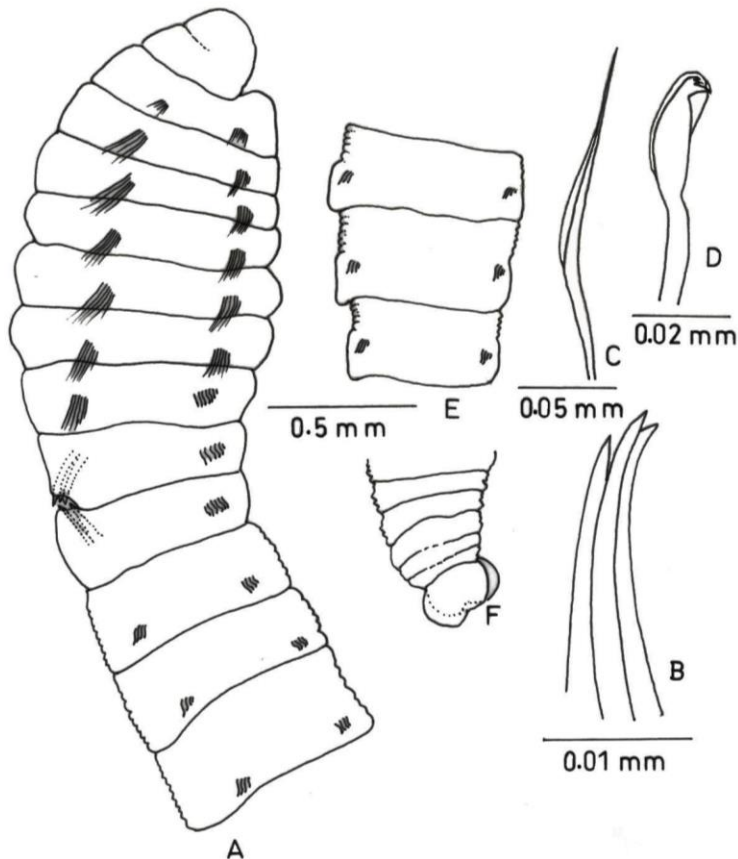


Fig. 2. *Capitella giardi* (Mensil, 1897), A. Anterior part, lateral view; B. genital spines; C. uni-limbate capillary chaeta from thorax; D. hooded hook from thorax; E, 18 – 20 segments of abdomen and F, pygidium

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