

DIOPATRA BULOHENSIS, A NEW SPECIES OF ONUPHIDAE (POLYCHAETA) FROM SUNGEI BULOH, SINGAPORE

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ABSTRACT.- A new species of onuphid worm, *Diopatra bulohensis*, from Sungei Buloh, Singapore is described. This is also the second *Diopatra* species to be reported from Singapore waters. The new species is related to *D. maculata* Paxton; the main differences lie in the absence of indentations on the cutting plates of mandibles, pigmentation patterns of the dorsal branchiferous region, and the occurrence of pectinate setae and subacicular hooks.

INTRODUCTION

A recent checklist of polychaetes in Singapore waters indicated a total of 64 species with 29 species as first records (Tan & Chou, 1993). Of these only one species from the family Onuphidae, *Diopatra neopolitana* (Della Chiaje) was documented from the shore of Kampong Mata Ikan (Vohra, 1972). The genus, *Diopatra* is characterised by the presence of a pair of tentacular cirri, with branchial filaments arranged in a spiral manner around the main trunk. Members of this genus have an anteriorly rounded prostomium with the following attachments: a pair of short frontal subulate palps and five occipital antennae. Most species are also found to construct elaborate tubes, decorated with broken shells and leave debris.

It has been noted that the taxonomy is unclear at specific level although the genus *Diopatra* is well described (Paxton, 1993). This is due to the lack of distinct diagnostic features as well as superficial similarities among species within the genus. A total of 40 species are recognised by Fauchald (1977) and recent revisions of this genus were made by Paxton (1986, 1993).

The present paper reports the discovery of another species of *Diopatra*, collected from Sungei [=River] Buloh, Singapore using the Smith-McIntyre grab as well as the Naturalist's Rectangular dredge. A total of five stations were sampled from Sungei Buloh (Fig. 1) and a general description of the area can be found in Quek & Chua (1990). This species differ from *D. maculata* Paxton, 1993 in a number of morphological features and are described

here as a new species. Specimens of this new species were catalogued and deposited at the Zoological Reference Collection (ZRC), School of Biological Sciences, National University of Singapore.

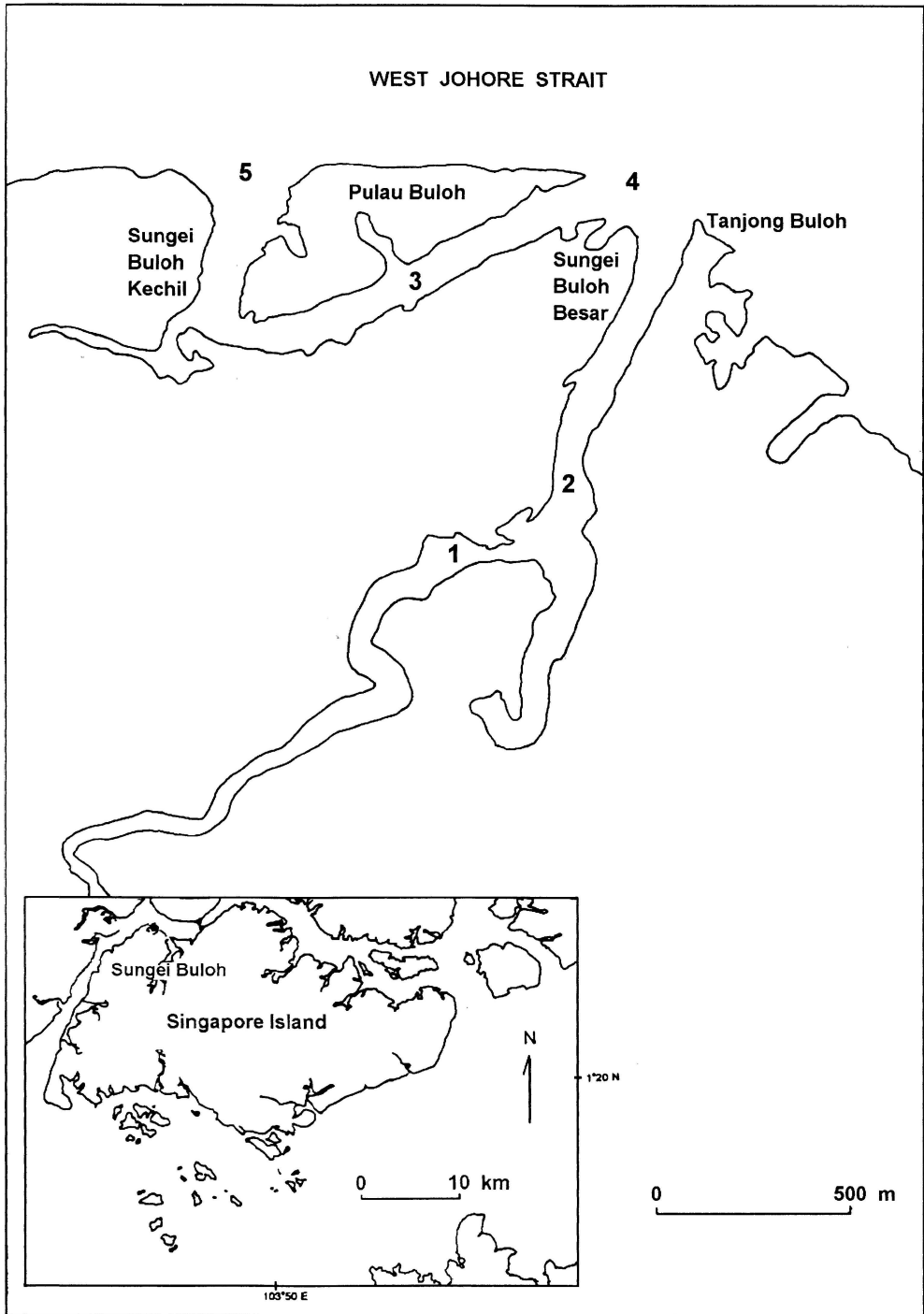


Fig.1. Map of Sungei Buloh indicating sites of collection. Insert shows location of Sungei Buloh in Singapore.

SYSTEMATICS

FAMILY ONUPHIDAE KINBERG, 1865
SUBFAMILY ONUPHINAE KINBERG, 1865

Genus *Diopatra* Audouin & Milne Edwards

Diopatra bulohensis, new species

(Figs. 2 and 3)

Material examined.- ZRC 1996.314 (Holotype, station 3); ZRC 1996.332 (Paratypes, 14 specimens, station 3); 1991.5618-5629 (Paratypes, 12 specimens, station 3); 1990.11630-11633 (Paratypes, 4 specimens, station 3); 1991.5718-5720 (Paratypes, 3 specimens, station 4); 1991.5553 (Paratype, 1 specimen, station 1); 1991.5102-5105 (Paratypes, 4 specimens, station 3); 1991.17164-17169 (Paratypes, 6 specimens, station 5); 1991.5566-5583 (Paratypes, 18 specimens, station 2). All specimens incomplete.

Description.- Live specimen appeared as dark reddish brown. Length 78 mm, number of setigers 101 (incomplete), width 8.0 mm (including parapodia). Body of specimen anteriorly cylindrical but flattening posteriorly. Specimen with following colour marking (Fig. 2A): even brown pigmentation on prostomium, palps and ceratophore rings; brown pigmentation of annulated ceratophores occurred on inner rings on some of smaller specimens; basal end of occipital antennae and peristomial cirri with aggregated brown patch; dorsum of peristomium and 25-30 anterior setigers with two distinct brown bands on anterior margin and broader band posteriorly; additional brown spots on presetal lobes and base of dorsal cirri of anterior parapodia.

Anteriorly rounded prostomium with subulate frontal palps. Ceratophores of antennae with 7-9 proximal rings and long distal ring. Antennae styles long and slender, posterior styles usually long, reaching posterior setiger 10-12, shorter anterior laterals to setiger 3-4. Pair of 3/4 circles nuchal grooves; tentacular cirri about 1.5 times as long as peristomium, attached subdistally on moderately long peristomium.

Each of first five anterior parapodia with single digitiform postsetal lobe and two truncate presetal lobes. First three parapodia with low straight transverse fold enclosing two oblique rounded presetal lobes (Fig. 2B). Two lobes placed *en echelon* with inferior lobe dorso-anteriorly to superior lobe when viewed from anterior side. However, no overlapping of presetal lobes on fourth setiger (Fig. 2C). Setae arising from transverse fold and from fold between the presetal lobes. Both presetal lobes greatly reduced or absent from setiger 6 (Fig. 2D). Dorsal cirri digitiform, shorter digitiform ventral cirri on anterior four parapodia. Ventral cirri replaced by glandular pads from setiger 5 onwards. Branchiae (Fig. 2C) spiralled from setiger 4, 10-12 whorls with 1-3 brown bands on basal end. Branchiae always longer than dorsal cirri. Single filaments from setiger 83 and absent shortly thereafter.

Anterior four pairs of setiger with 3-5 strong, 3-4 slender pseudocompound hooks and two slender limbate setae. Both strong unidentate (Fig. 2E) and bidentate (Fig. 2F) hooks present and all with low pointed hoods. Slender hooks of some specimens mostly bidentate (Fig. 2G) with 1-2 as unidentate. Setae on setiger 5 all limbate (16 setae). Anterior slender limbate setae becoming shorter, wider, and laterally serrated (Fig. 2H) on posterior setigers. Pectinate setae (Fig. 2I), slightly curved with 10-12 teeth in straight combs from about setiger 9 or 10. Posterior cultriform limbate setae (Fig. 2J) replaced by two bidentate hooded subacicular hooks (Fig. 2K) from setiger 20 to 25.

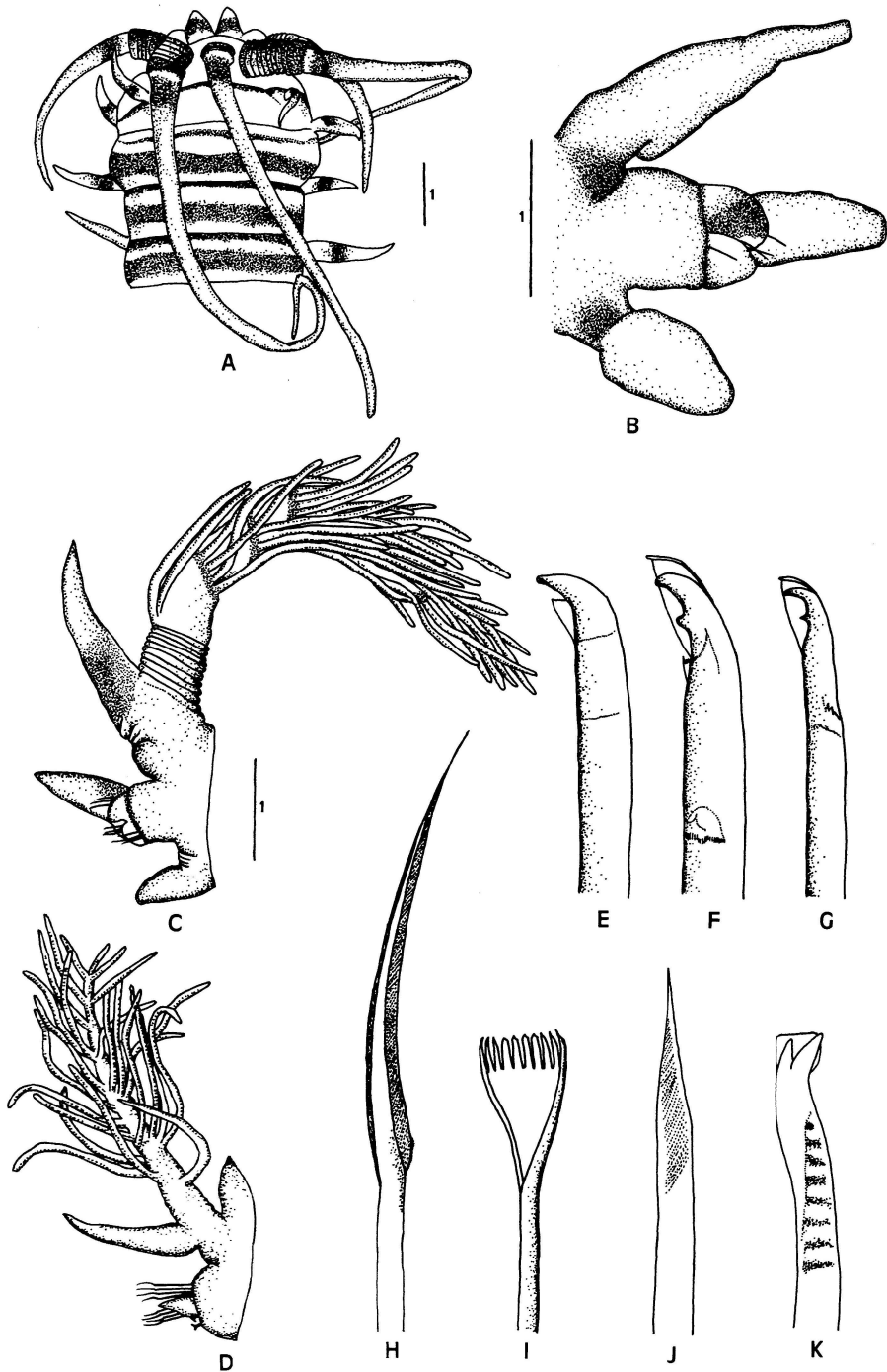


Fig. 2. *Diopatra bulohensis*, new species. (ZRC1996.314, Holotype). A. dorsal view of anterior end; B. first parapodium, anterior view; C. fourth parapodium, anterior view; D. sixth parapodium, anterior view; E. large unidentate median pseudocompound hook from setiger 1, x100; F. large bidentate median pseudocompound hook from setiger 1, x100; G. slender bidentate pseudocompound hook from setiger 20, x100; H. median limbate seta from setiger 20, x100; I. pectinate seta from setiger 10, x100; J. lower cultriform limbate seta from setiger 20, x100; K. subacicular hook from setiger 22, x100. (Scale bars in mm)

Mandible (Fig. 3A) slender with high cutting plates with no obvious incision. Slender shafts darkly sclerotized. All specimens with missing right Mx III (Fig. 3B). Maxillary formula: Mx I = 1 + 1; Mx II = 7 + 7 (6-8); Mx III = 7 (6-8) + 0; Mx IV = 6 + 6; Mx V = 1 + 1.

Tube is typical of *Diopatra* species with inner parchment-like layer with outer layer of foreign particles such as shell fragments attached at different angles.

Remarks.- This species is related to *Diopatra maculata* described by Paxton (1993: 125) with distribution at Western Australia, Northern Territory, and Queensland. Falcate pseudocompound hooks, considered to be relatively rare in members of *Diopatra* are present in both species. The main difference lies in the absence of indentations in cutting plates of mandibles of *D. bulohensis*. Anterior segments of *D. bulohensis* has uniform brown pigmented bands while that of *D. maculata* consists of irregular brown spots. Another difference is in the occurrence of pectinate setae starting at setiger 9 or 10 and setiger 40 in *D. bulohensis* and *D. maculata* respectively. The appearance of a pair of subacicular hooks occurs on earlier setigers (setiger 13-18) in *D. maculata* as compared to *D. bulohensis* where it starts at setiger 20 to 25.

Etymology.- The name of the new species is derived from the place it was collected at Sungei Buloh.

Distribution.- Specimens of this species have a restricted distribution at Sungei Buloh. Of the five location sampled, stations 2 and 3 (Fig. 1) yielded the most abundant onuphid specimens with 18 and 35 specimens respectively. Station 2, along Sungei Buloh Besar and station 3, situation at Sungei Buloh Kechil were also found to have a high abundance of

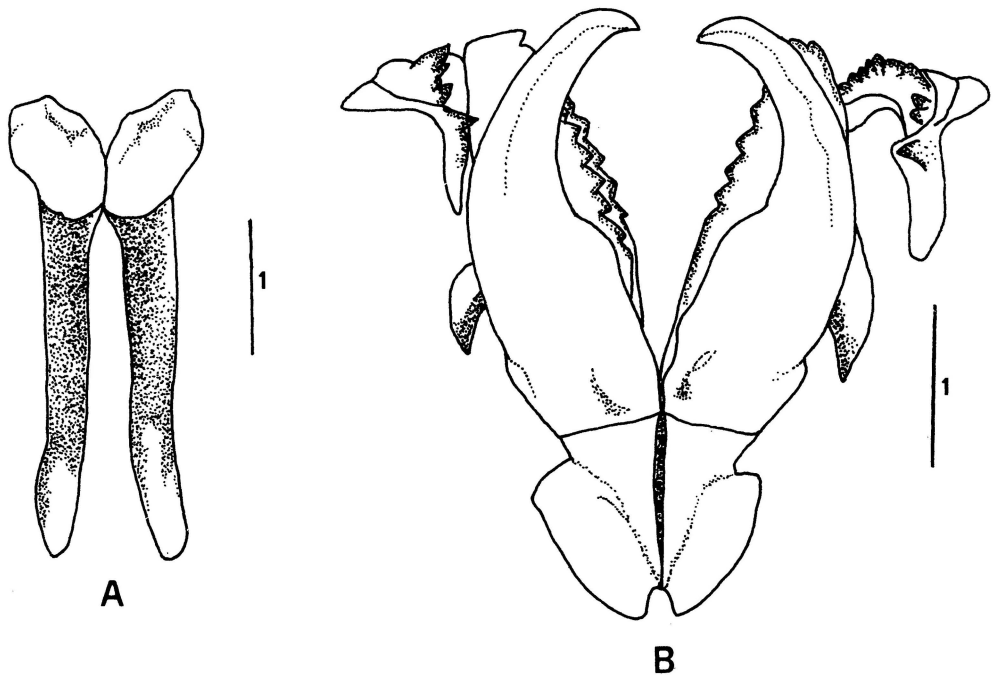


Fig. 3. *Diopatra bulohensis*, new species, (ZRC1996.314, Holotype). A. mandibles; B. asymmetrical maxillae. (Scale bars in mm)

bivalve species (> 1000) from the family Mytilidae and Solenidae (Chuang et al., 1991). The high occurrence of such bivalves could explain the abundance of *D. bulohensis* as the shells from these bivalves could be used by the polychaetes in tube building (Tan, 1993). The habitats at these stations are characterized by low salinities, averaging at 25.0 ‰, due to the mixing of freshwater draining from inland (Tan et al., 1993).

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