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Range extension of *Heterodina qeshmensis* Khalaji & Bruce, 2014 (Isopoda: Sphaeromatidae) from coastal region of Gulf, Qatar

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Abstract
Heterodina qeshmensis Khalaji & Bruce, 2014 (Isopoda, Sphaeromatidae) collected from the subtidal zone of coast of Qatar is described. It can be distinguished from its smooth unornamented dorsal surfaces, wide and concave epistome, pleotelson as long as anterior width narrow apex, appendix masculina with sub-parallel margins not extending beyond the distal margin of the endopod.

Keywords: Isopoda, Sphaeromatidea, *Heterodina*, *Heterodina qeshmensis*, coastal region of Gulf, Qatar

1. Introduction
Heterodina Schotte & Kensley, 2005 [5] small genus of two described species known from the tropical Western Indian Ocean and Caribbean. The type species *Heterodina mccaini* Schotte & Kensley, 2005 [5] was described from the sub-tidal zone (3.0–3.5 m depth) of the Saudi Arabian coast of the Persian Gulf. *Cassidinidea mosaica* (Kensley & Schotte, 1987) [4] from Belize, Caribbean Central America was assigned to *Heterodina* by Schotte & Kensley (2005) [5]. Third species of the genus *Heterodina qeshmensis*, Khalaji & Bruce, 2014 [6] from Iran.
The present paper describes *Heterodina qeshmensis* Khalaji & Bruce, 2014 [6] from coast of Gulf, Qatar.

Systematics
Order ISOPODA Latreille, 1817
Family SPHAEROMATIDAE Latreille, 1925
Genus *Heterodina* Schotte & Kensley, 2005 [5]
Heterodina qeshmensis Khalaji & Bruce, 2014 [6]
(Figures 1–3)

2. Material examined
Ras Laffens, Ras Reken and Ras Ashieij Islands, Qatar, Day and Night collection, St. A=250 and Sta. G= 1000,10 m depth, 26 °C, Salinity 36 ppt, Ph 7.0, DO 7.0 mg/l, 3 males (3.0-3.5 mm), 10 ovigerous females (3.0 mm), 11 non-ovigerous females (2.8-3.0 mm) 29 November, 2006

3. Description
Body (Figure 1A) smooth, oval, moderately convex, widest at pereonite 5. Head with weak rostral point, disto-lateral part not embraced by pereonite 1. Eyes round laterally embraced by extension of pereonite 1. Pereonites 2–7 with coxal plates fringed with fine marginal setae; pereonites 2 and 3 short; pereonites 5 and 6 sub-equal long. Pleon (Figure 1A) with sub-equal to pereopod 7, a short suture line on either side of posterior margin. Pleotelson with posterior margin fringed with fine setae (Figure 1A) rounded apex. Epistome (Fig. 1D) dorsally visible with lateral margin concave, labrum enclosed by epistome.
Antennule (Figure 1B) peduncle article 1 stout, 2 and 3 sub-equal in length; extending to posterior margin of pereonite 1.flagellum composed of 6 articles, each bearing an 3 aesthetasc.
Antenna (Figure 1C) flagellum with 6 articles, extending to the level of posterior margin of pereonite, peduncle article 5 longest.
Mandible (Figure 1H, 1I) incisor with 4 cusps, spine row of 2–3 curved, serrate spines; molar process round; palp articles 2 and 3 with 3 and 6 biserrate setae respectively. Maxilla 1 (Figure 1E) lateral endite with 6 simple robust seta and 3 serrate robust seta on apical margin, mesial endite with7 long comb setae and 1 small simple seta. Maxilla 2 (Figure 1F) inner ramus with

7 simple setae; outer lobes each bearing 5 setae. Maxilliped (Figure 1G) endite with about 8 plumose spines, medial margin with single coupling hook, palp articles 2 to 4 each with a well-developed spines.

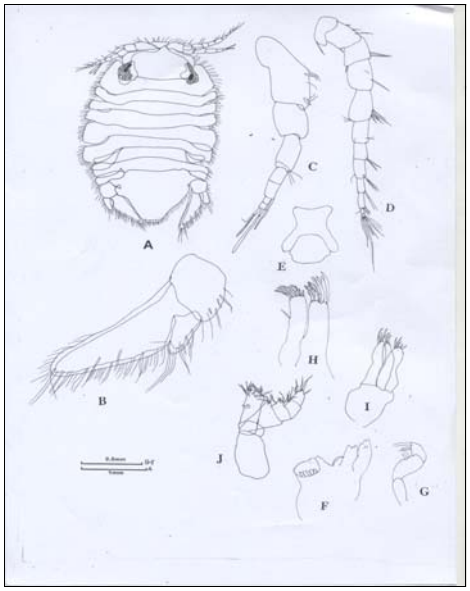

Fig 1: *Heterodina qeshmensis* Khalaji & Bruce, 2014 [6], A, dorsal view; B, uropod; C, antenna 1; D, antenna 2; E, epistome; F, left mandible; G, mandible palp; G, maxilla 1; H, maxilla 2.

Pereopods 1-7 (Figure 2A-2G) uniunguiculate, Pereopod 1 (Figure 2A) robust, basis greatest width, with 2 spines, ischium superior margin with 2 simple robust seta; inferior margin fringed with 6 small setae; merus infero-distal corner with 1 long robust seta, supero-distal corner with 1 long biserrate robust seta; carpus triangular, with 1 biserrate robust seta on infero-distal corner; propodus inferodistal corner with 1 biserrate seta, 1 serrate robust seta and 1 simple seta, supero-distal corner with 1 palmate sensory seta; dactylus with a small secondary unguis. Pereopod 2 similar to pereopod 3, Pereopods 4 and 5 are shorter than pereopods 2–3. (Figure 2B-2E).

Pereopods 6 and 7 (Figure 2F, 2G) are similar except in some details of pereopod 7 such as the number of serrate robust seta on distal margin of carpus.

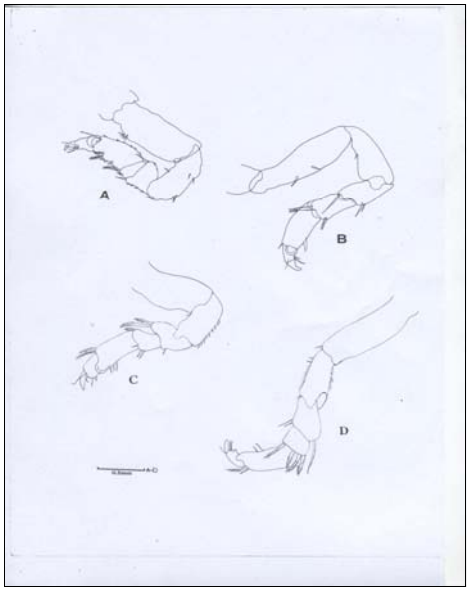

Fig 2: *Heterodina qeshmensis* Khalaji & Bruce, 2014 [6], A, Pereopod 1; B, Pereopod 2; C, Pereopod 4; D, Pereopod 7.

Pleopod 1 (Figure 3A) exopod and endopod with 10 to 11 plumose marginal seta; exopod sub-equal to endopod; peduncle with 3 coupling hooks, lateral margin with single long simple seta.

Pleopod 2 (Figure 3B) exopod and endopod equal in length, with 9 plumose marginal seta respectively; appendix masculina bearing tiny short setae on lateral margin distally, two plumose seta on rounded apex; peduncle with 3 coupling hooks, disto-lateral corner with a single simple seta. Pleopod 3 (Figure 3C) exopod and endopod with 16 and 9 plumose marginal seta, exopod narrower than endopod,; peduncle with 3 coupling hooks, lateral margin with single long simple seta. Pleopod 4 (Figure 3D) both rami subequal, with very weak transverse folds, exopod lateral margin with 1 fine simple setae. Pleopod 5 (Figure 3E) exopod with 2 scale patches, mesial margin with 3 fine simple setae.

Penial process (Figure 3F) fused on basal process, elongated, tapering steadily to rounded apices.

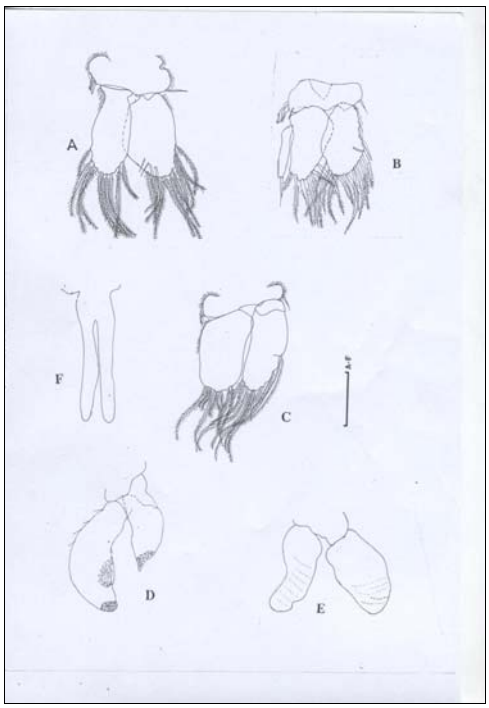

Fig 3: *Heterodina qeshmensis* Khalaji & Bruce, 2014 [6], A, Pleopod 1; B, Pleopod 2; C, Pleopod 3; D, Pleopod 4; E, Pleopod 5; F, Penial process.

Uropod (Figure 1H) extending to distal margin of pleotelson; Endopod of uropod much longer than exopod, distal margin rounded, exopod and endopod lateral margins fringed with long slender setae, smaller fine setae. Exopod much shorter than endopod, distomedian angle rounded.

Female: Similar to male with the exception of the sexual characters.

4. Remarks

The present species is very similar to *Heterodina qeshmensis* Khalaji & Bruce, 2014 [6] and *Heterodina mccaini* Schotte & Kensley, 2005 [5] unornamented dorsal surfaces, wide and anteriorly concave epistome, and the appendix masculina with sub-parallel margins and not extending beyond the distal margin of the endopod.

H. mccaini, in having the penial processes fused along two-fifths of their length, with rami diverging abruptly before tapering to the rounded apices. Penial processes with diverging rami and small acute scales on the distal surface were found in

adult male, as well as sub-adult specimens of *H. mccaini.* Moreover, *H. mccaini* differs by having a pleopod 2 with basally swollen appendix masculina, which extends well beyond the apex of the endopod. Furthermore, merus, carpus and propodus of pereopods are more setose in *H. mccaini.*

The present species differs from lateral endite of Maxilla 1 with 6 simple robust seta and 3 serrate robust seta on apical margin, mesial endite with 7 long comb setae and 1 small simple seta. Maxilla 2 inner ramus with 7 simple setae; outer lobes each bearing 5 setae.

Maxilliped endite with about 8 plumose spines, medial margin with single coupling hook, palp articles 2 to 4 each with a well-developed spines. Penial process not fused on basal process, elongated with rounded apices. Pleopod 2 with appendix masculina sub-equal to the apex of endopod. Merus, carpus and propodus of pereopods are less setose.

Whereas *H. mccaini,* in having the penial processes fused along two-fifths of their length, with rami diverging abruptly before tapering to the rounded apices. Penial processes with diverging rami and small acute scales on the distal surface were found in adult male, as well as sub-adult specimens of *H. mccaini.* Moreover, *H. mccaini* differs by having a pleopod 2 with basally swollen appendix masculina, which extends well beyond the apex of the endopod. Furthermore, merus, carpus and propodus of pereopods are more setose in *H. mccaini.*

5. Acknowledgement

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