

# A new species of *Gourretia* (Decapoda: Axiidea: Gourretiidae) from the Persian Gulf, Iran

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*Sampling in subtidal waters of the Persian Gulf revealed a new species of ghost shrimp from the family Gourretiidae. Gourretia qeshmensis sp. nov. resembles G. sinica from the South China Sea and G. manihinae from Tanzania. Gourretia qeshmensis sp. nov. differs from these two species by characters of the ischium of the large cheliped, pereopod 3, exopod of the uropod and maxilliped 3.*

**Keywords:** Crustacea, Decapoda, *Gourretia*, new species, Persian Gulf, ghost shrimp

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## INTRODUCTION

Ghost shrimps or mud shrimps are common burrowing decapods in littoral and sublittoral marine environments. The number of known species of ghost shrimps continues to grow (Dworschak, 2005). The number of accepted families in the Axiidea, the infraorder that includes ghost shrimps, is disputed, ranging from four (possibly nine) (Dworschak *et al.*, 2012) to 19 (Sakai, 2011). The genus *Gourretia* de Saint Laurent, 1973 to which this new species belongs was placed in Gourretiidae Sakai (1999) in Sakai's (2011) comprehensive revision, but in Ctenochelidae Manning & Felder, 1991 by Dworschak (2009), Liu & Liu (2010) and Pachelle *et al.* (2013). The most recent phylogenetic analyses involving both morphological and molecular data support the acceptance of the family Gourretiidae (Gary C.B. Poore, personal communication 23 August 2015) and the placement of *Gourretia* within it.

Sakai (2011) included five genera within Gourretiidae and removed half of the 12 species of *Gourretia* then accepted into *Paragourretia* Sakai, 2004. *Paragourretia*, type species *Gourretia phuketensis* Sakai, 2002, was said to differ from *Gourretia* in possession of a lateral notch on the uropodal exopod but not all species possess such a notch. The 14 accepted species, in both genera, are listed in WORMS (Poore, 2015). The new species lacks a uropodal exopod notch so its position within *Gourretia* is not in doubt.

*Gourretia* is characterized by: a carapace lacking dorsal oval; subpediform maxilliped 3, usually with distolateral meral spine, and with exopod present; larger cheliped with proximal meral hook; male pleopod 1 uniramous, biarticulate, distal segment distally bifurcate; male pleopod 2 biramous, foliaceous, and with digitiform appendix interna.

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## MATERIALS AND METHODS

Material was deposited in the Iranian Institute for Oceanology and Atmospheric Science (INIOAC). The drawings were made with the aid of a drawing tube mounted on a Nikon SMZ1500 stereomicroscope.

## RESULTS

### SYSTEMATICS

Family Gourretiidae Sakai, 1999  
Genus *Gourretia* de Saint Laurent, 1973  
Species *Gourretia qeshmensis* sp. nov.  
(Figures 1–3)

**Holotype:** Iran, Persian Gulf, west of Qeshm Island (26°35'12.87"N 55°8'0.67"E), INIOC-1-36S (male, total length 10.12 mm, carapace length 2.5 mm).

### DESCRIPTION

**Rostrum** triangular in dorsal view more than 3/4 length of eye-stalks (Figure 1C); lateral projections triangular. Carapace without dorsal oval, smooth, ornamented with tuft of setae on the branchial region; cardiac prominence absent; linea thalassinica complete; cervical groove located about in posterior quarter.

Ratio of lengths of pleomeres 1–6 and telson measured along midline 2.5: 2.2: 1.25: 1.25: 1.25: 1.6. Pleomere 1 (Figure 1A) longer than wide; pleura 3–5 with tuft of setae on posterolateral margins; pleomere 6 as long as wide, subquadrate in dorsal view, pleuron without row of setae. **Telson** (Figure 1E, F) 1.1 times as wide as long, basally parallel-sided, posterior margin tapering to rounded apex, without median spine. **Uropodal endopod** 1.2 times as long as wide, distally rounded, with marginal row of setae, without median carina

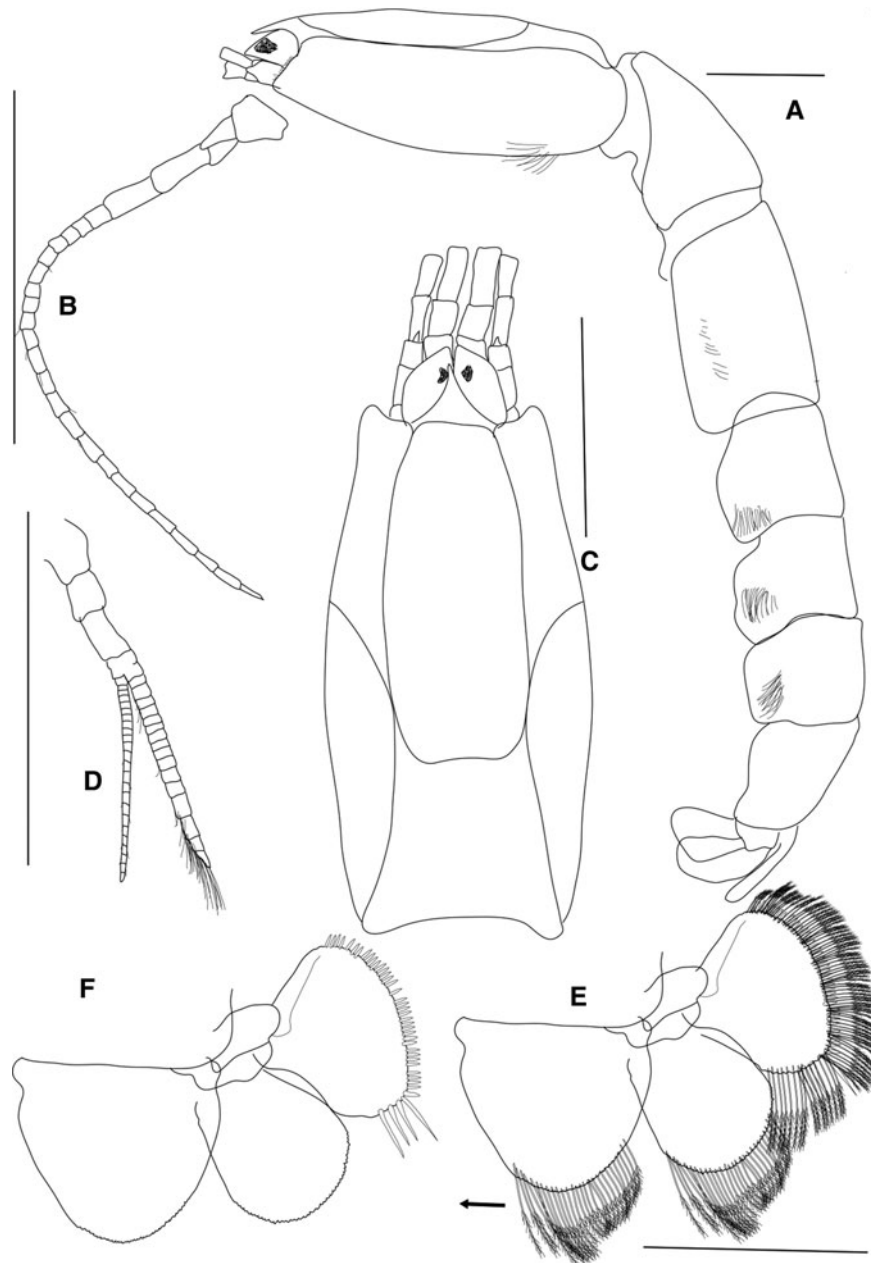


Fig. 1. *Gourretia qeshmensis* sp. nov. Holotype, INIOC-1-36S. (A) lateral view of body; (B) antenna; (C) dorsal view of carapace and cephalic appendages; (D) antennule and (E) telson; (F) details of telson and uropod. Scale bar: 1 mm.

on dorsal face; *exopod* subtriangular, widening distally, without dorsal plate, lacking lateral notch or incision, margins armed with spines, large setae and 4 strong spines at the distolateral corner (Figure 1F).

*Eyestalk* (Figure 1A, B) elongate, triangular in dorsal view with acute tip, reaching distal third article 1 of antennular peduncle; cornea in distal third, with small black pigmented area. *Antennular peduncle* (Figure 1C, D) shorter and wider than antennal peduncle; terminal article longer than penultimate. *Antennal peduncle* slender; terminal article shorter length as of penultimate article (Figure 1B, C).

*Mandible* (Figure 2B) with 9 acute teeth on incisor process, mandibular palp 3-articled, article 3 larger than others armed with tuft of setae.

*Maxilliped 1* (Figure 2A) with endopod reaching near to apex of basal endite.

*Maxilliped 2* (Figure 2C) with narrow 2-articled exopod just exceeding ischium, tip of endopod quadrate, exopod and endopod ornamented with setae.

*Maxilliped 3* (Figure 2D) with narrow 2-articled exopod; ischium of endopod with projection ventroproximally, crista dentata of 8 teeth, proximal tooth biggest; merus with spinous projection distally; carpus proximally narrow, broad distally; propodus subovate; dactylus finger-like.

*Pereopods 1 (chelipeds)* unequal and dissimilar. *Major cheliped* (Figure 3A) strong; ischium elongate, 2.5 times as long as wide, upper margin slightly concave and unarmed; lower margin straight, armed with 6 strong teeth on ventral margin acute at tip; merus shorter than ischium, about 1.5 times as long as wide, upper margin convex, smooth, lower margin convex with a sharp curved proximal tooth; carpus 0.7 times as long as wide, upper margin straight, lower distal

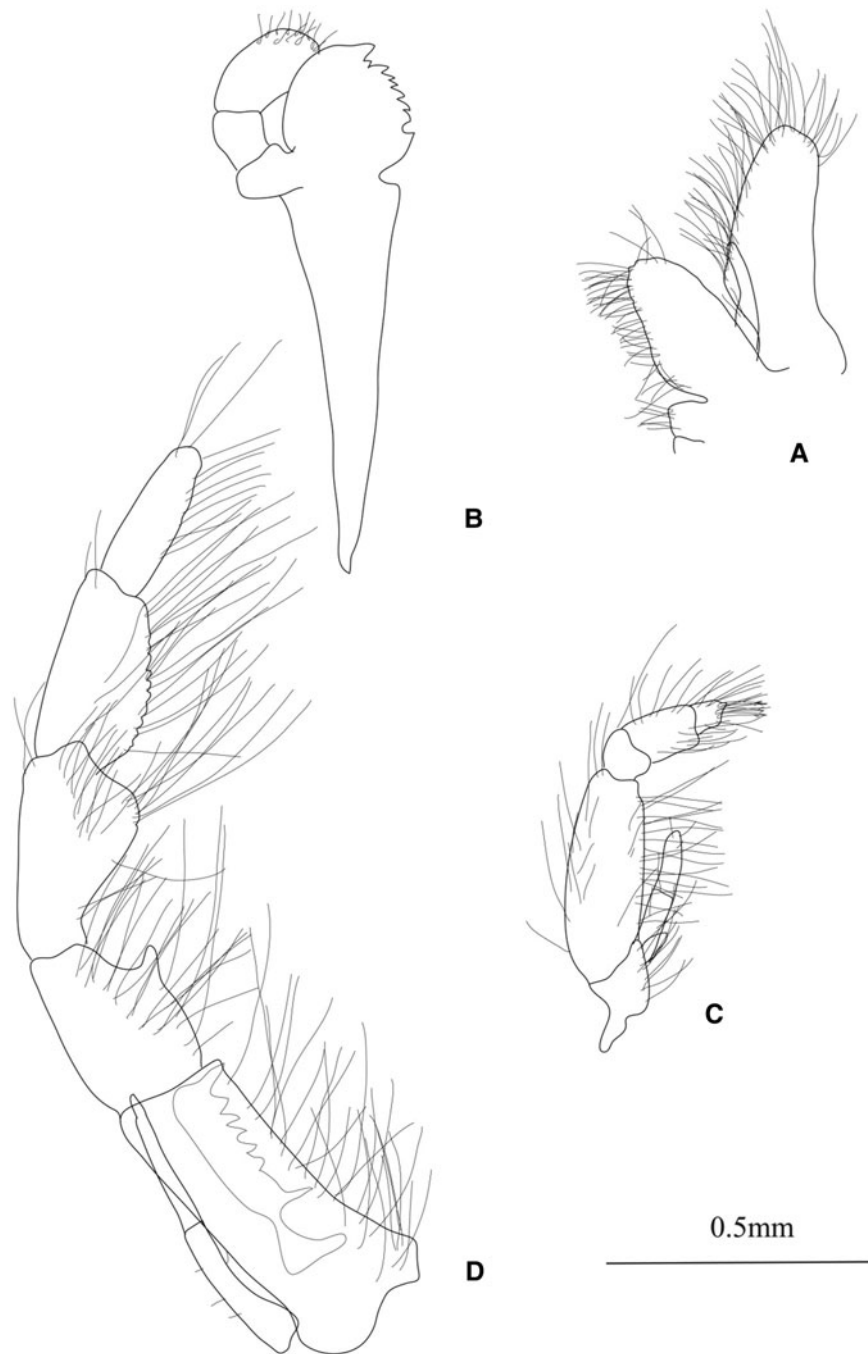
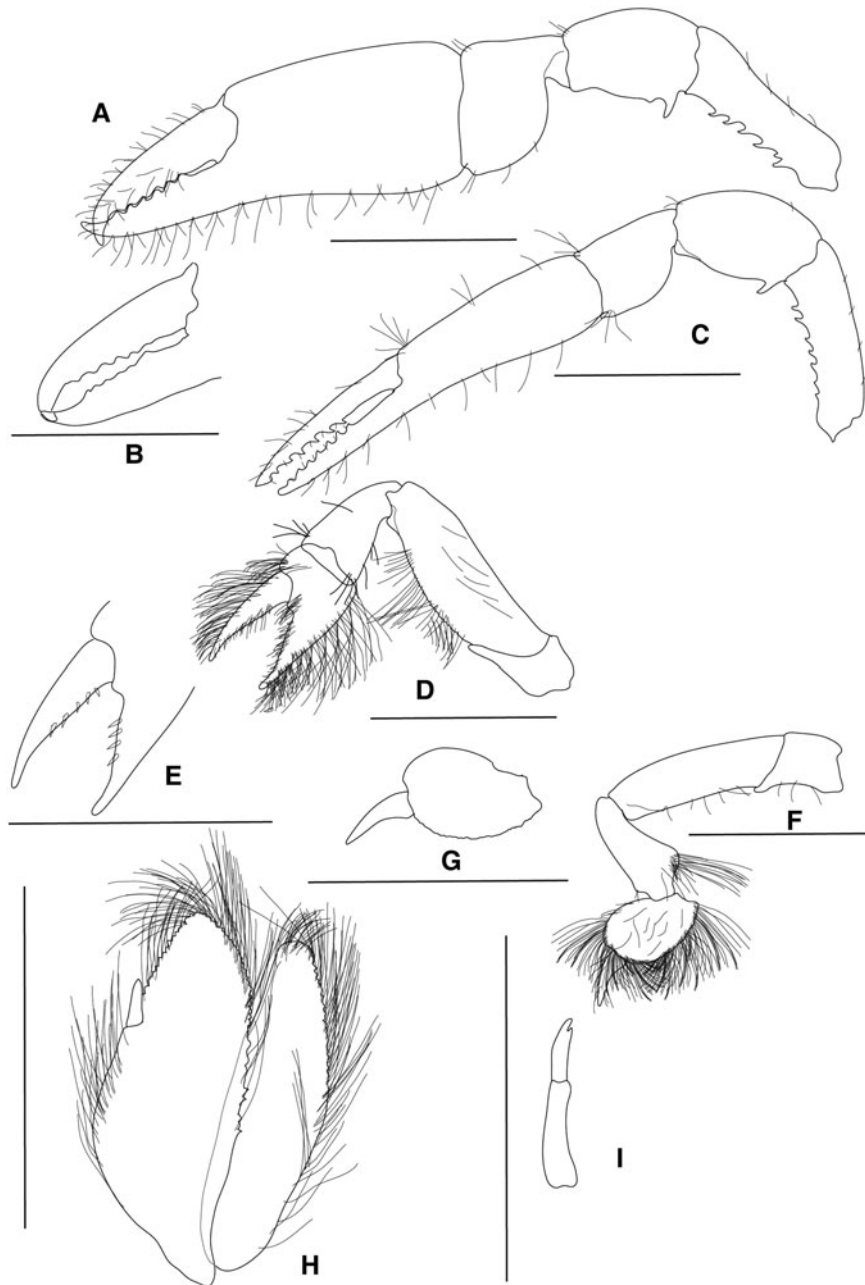


Fig. 2. *Gourretia qeshmensis* sp. nov. Holotype, INIOC-1-36S. (A) maxilliped 1; (B) mandible; (C) maxilliped 2; (D) maxilliped 3, mesial face. Scale bar: 0.5 mm.

margin broadly rounded and smooth; propodus elongate, 1.5 times as long as wide; fixed finger as long as upper margin of palm, cutting edge with series of 7 triangular teeth; dactylus slender, slightly incurved distally, bearing 6 rounded teeth on cutting edge (Figure 3B). *Minor cheliped* (Figure 3C), ischium 3 times as long as wide, upper margin slightly concave and unarmed, lower margin straight, armed with 7 sharp denticles; merus globose upper margin convex, smooth, lower margin almost straight, with a strong and sharp tooth at the proximal end; carpus 1.3 times as long as wide, upper margin almost straight, lower proximal margin gradually tapering to base; propodus elongate, 2.7 times as long as wide, fixed finger slender, cutting edge with series of

7 triangular teeth; dactylus slender, slightly overreaching fixed finger, cutting edge with series of 7 triangular teeth. *Pereopod 2* (Figure 3D) ischium short; merus with rounded projection on lower proximal angle, with mesial row of setae; carpus broad distally; propodus upper and lower margins with row of setae; dactylus upper margin with row of setae, cutting edge of fingers both with 5 sharp spines (Figure 3E). *Pereopod 3* (Figure 3F) ischium about 0.3 length of merus; merus 4 times as long as wide; carpus lower margin convex, broad distally; propodus ovate nearly 1.3 times as long as wide; dactylus elongate, 3.5 times as long as wide, acute at tip (Figure 3G). *Pereopods 4 and 5* missing.



**Fig. 3.** *Gourretia qeshmensis* sp. nov. Holotype, INIOC-1-36S. (A) large cheliped, inner surface; (B) dactylus and fixed finger of large cheliped; (C) small cheliped, inner surface; (D) pereopod 2; (E) details of chelate in pereopod 2; (F) pereopod 3; (G) propodus and dactylus of pereopod 3; (I) pleopod 1; (H) pleopod 3. Scale bar: 1 mm.

*Male pleopod 1* (Figure 3I) uniramous, 2-articled, article 2 shorter than first, apically bifid.

*Male pleopod 2* missing.

*Pleopods 3–5* (Figure 3H). biramous, foliaceous, endopod wider than exopod, with a slender appendix interna.

**Etymology.** The species is named for its type locality, Qeshm Island.

**Remarks.** Placement of the new species in *Gourretia* follows Manning & Felder (1991), Tudge *et al.* (2000) and Sakai (2011). Sakai's (2011) key to species would take the new species close to *G. manihinae* Sakai, 1984 from Tanzania but the species also resembles the more recently described *G. sinica* Liu & Liu, 2010 from the South China Sea. However it differs from both in the shapes of

maxilliped 3, major and minor chelipeds, pereopod 2, uropodal exopod and telson. It should be noted that differences in spine number and size may change with size of the individual, aged and sexual maturity specimens as Liu & Liu (2010) mentioned and illustrated in their work. The maxilliped 3 ischium bears a projection at the rectangular proximal inner angle (*vs* strong tooth in *G. sinica* and *G. manihinae*), and its crista dentata has 8 strong and sharp spines (*vs* 14 small spines in *G. sinica*). The telson of *G. qeshmensis* is shorter than in *G. manihinae* and in *G. sinica*. The three species appear to differ in the armature of the uropodal exopod. In *G. qeshmensis* the posterior margin is armed with denticles and four strong spines while *G. manihinae* and *G. sinica* lack such denticles, although it is likely that these spines were not illustrated

by the authors of the earlier species. The large cheliped has six ischial spines in *G. qeshmensis*, four in *G. manihinae* and five in *G. sinica*. The cutting edge of the fixed finger has six teeth in *G. qeshmensis* whereas *G. sinica* and *G. manihinae* have two teeth. Another diagnostic character of *G. qeshmensis* is seven teeth on the lower margin of the ischium of the small cheliped (vs five teeth in *G. sinica* and four teeth in *G. manihinae*). In addition, the number of spines on the fixed finger and dactylus of pereopod 2 in *G. qeshmensis* (five on each margin) differentiates *G. sinica* (with four) and *G. manihinae* (unarmed).

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