

# Redescription of *Annina mesopotamica* Ahmed, 1971 (Crustacea, Cirolanidae, Isopoda) from Basrah, Iraq

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*Annina mesopotamica* (Ahmed, 1971), from Iraq (Shat-Al-Arab River bank, Basrah) is redescribed. *A. mesopotamica* can be distinguished from other species of the genus in having a pair of short and blunt dorso-lateral horns on the male pereonite 2. A revised generic diagnosis is provided for the genus *Annina*.

**Key words:** redescription, Isopoda, Cirolanidae, *Annina mesopotamica*.

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## INTRODUCTION

The genus *Annina* Budde-Lund, 1908 is a small genus of Cirolanidae with only five known species. A revised diagnosis of *Annina* was given by Jones (1983), and a key to the genus was presented by Schotte (1994). *Annina* species are known only from near the northern perimeter of the Indian Ocean region, where they occur in tropical estuaries, mangroves, and subterranean waters. The genus includes *Annina lacustris* Budde-Lund, 1908, from East Africa (Zanzibar and Kenya, salt water pools); *A. Kumara* Bowman, 1971 from Malaysia and Singapore (mangroves); *A. mesopotamica* Ahmed, 1971, from Iraq (Shat-Al-Arab River bank, Tannoma); *A. fustis* Bowman and Iliffe, 1991, from Thailand (muddy bottom of stream and pools) and *A. mannai* Schotte, 1994, from West Bengal, India (freshwater of the Ganges River).

*Annina mesopotamica* was originally described as *Excirolana mesopotamica* by Ahmed (1971) from Tannoma, Iraq, but Jones (1983) transferred this species to *Annina* Budde-Lund, 1908. The original description of the species is brief, with small illustrations of only some appendages. During a study on the isopod collection of the Smithsonian Institution Natural Museum of Natural History (USNM) I found some specimens from Iraq labeled as *Excirolana mesopotamica*, and this material is redescribed here in.

## MATERIAL AND METHODS

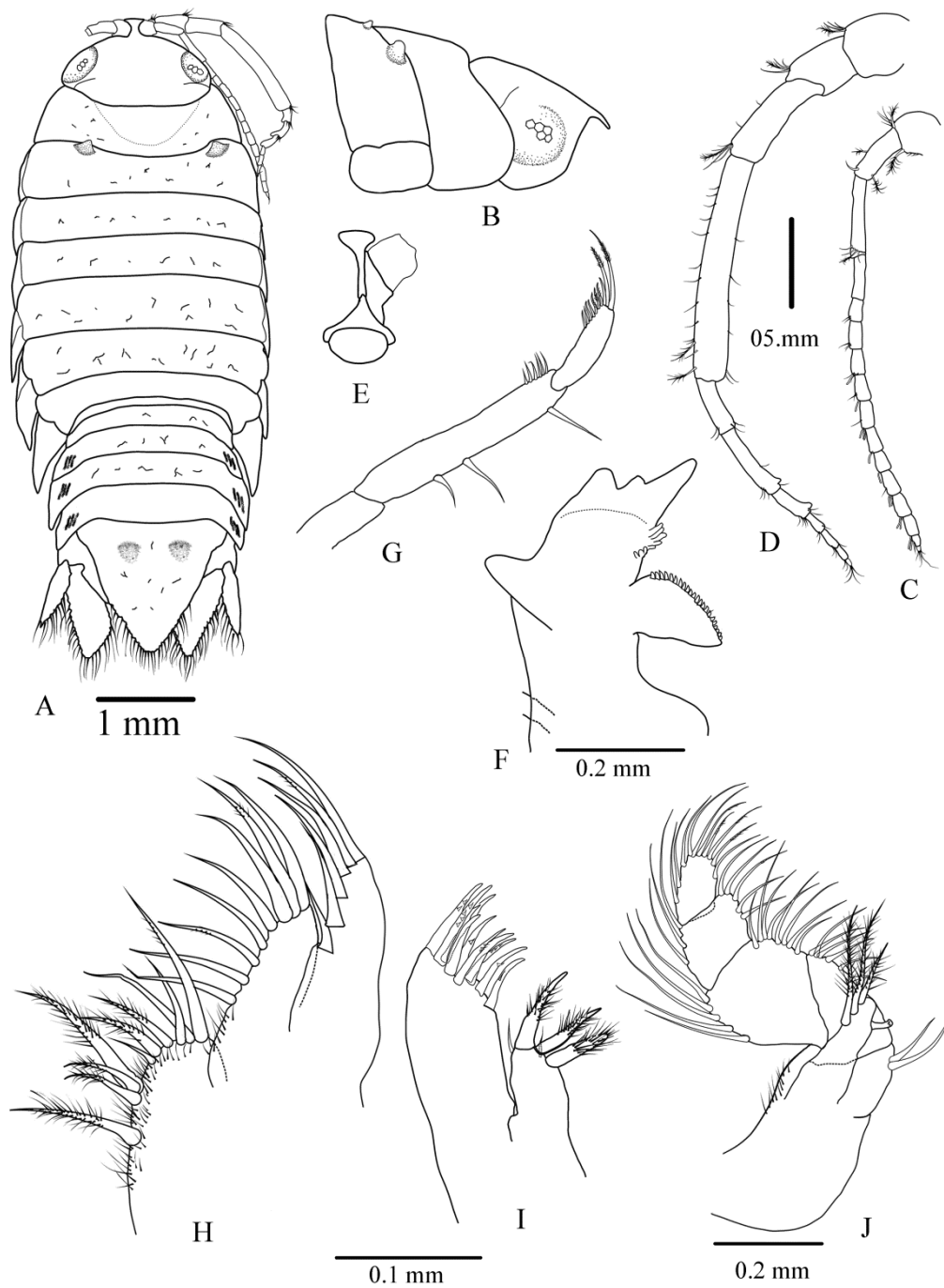
Material is from the Isopod collection of the USNM. Pencil drawings were made using a *camera lucida* mounted on a compound microscope (Olympus BX 51) and a stereomicroscope (Olympus SZX12). The pencil drawings were scanned and imported into Corel Draw (version X5) for digital inking, and then processed using Adobe Photoshop (version CS2).

## RESULTS

### Taxonomy

Family CIROLANIDAE Dana, 1852

Genus *Annina* Budde-Lund, 1908



**FIGURE 1.** *Annina mesopotamica* (Ahmed, 1971), male, (USNM 213137); A, dorsal view; B, lateral view; C, antennule; D, antenna; E, epistome; F, left mandible; G, palp of left mandible; H, maxillule; I, maxilla; J, maxilliped.

*Annina* Budde-Lund, 1908: 304; Monod, 1930: 134; Monod, 1968: 499.– Chappuis, 1927: 69.– Delamare-Deboutteville, 1960: 645.– Jones & Icely 1981: 266.– Jones, 1983: 309.– Bruce, 1986: 219.– Bowman and Iliffe, 1991: 247.– Schotte, 1994: 268.

**Type species:** *Annina lacustris* Budde-Lund, 1908, from the East Africa coast, Zanzibar.

**Generic diagnosis.** Individuals show marked sexual dimorphism: only males bearing processes or horns on cephalon and/or pereonites 1 and 2. Eyes large, usually with transverse un-faceted gap dividing dorsal and ventral halves. Antennule peduncle article 3 equal or slightly shorter than combined lengths of articles 1 and 2. Antennal peduncle article 5 equal to or longer than 1-4 combined; basal flagellar articles are longer than apical ones. Mandibular palp elongate, palp article 2 twice as long as other articles, bearing 2–3 long simple setae on dorsal margin. Maxilliped endite with 1 coupling hook. Propodus of pereopod 1 more slender and elongate than that of pereopods 2–3. Propodus 1–3 inferior margins armed with serrate robust setae. Endopods of pleopods 3–5 without plumose marginal setae; exopods of pleopods 3–5 without a partial transverse suture. Pleopods 1–4 with approximately 3 coupling hooks; pleopod 5 without coupling hooks. Appendix masculina arising sub-medially, not reaching or extending just to apex of endopod. Pleonite 1–2 narrower than pleonites 3–5. Uropodal exopod lamellar, lanceolate, shorter and much narrower than endopod, distally acute, medial margin bearing long plumose setae; endopod lamellar, both margins bearing long plumose setae without robust setae.

**Remarks.** The genus *Annina* is closely related to *Exciorolana* Richardson, 1912, and has been confused with that genus on occasion (e.g. Ahmed 1971; Bowman 1971; Jones 1981). *Annina* is differentiated from *Exciorolana* by having dorsal processes or horns on the male cephalon and/or pereonites 1 and/or 2, and a transverse non-faceted band across the eyes. In addition, in *Annina* the antennal peduncle article 5 is longer than the length of articles 3 and 4 combined (in *Exciorolana* it is equal to or shorter) and the first flagellar articles are longer than the terminal ones (equal in *Exciorolana*). *Annina*'s mandible has a longer palp article 2 than in *Exciorolana*, bearing a few long dorsal setae. In *Exciorolana* the inferior margin of the merus of pereopods 1–3 bears some molariform stout setae (absent in *Annina*), and the exopod of pleopods 3–5 has a partial transverse suture (*Annina* lacks such suture). Finally, sexual dimorphism is pronounced in *Annina* but not obvious in *Exciorolana*.

***Annina mesopotamica* (Ahmed, 1971)**

*Exciorolana mesopotamica* Ahmed, 1971: 80–82, figs 3–4.

*Annina mesopotamica*.—Jones, 1983: 310.– Bruce, 1986: 219.– Bowman & Iliffe, 1991: 247.– Schotte, 1994: 268.

**Type locality:** Tannoma (opposite Basrah City).

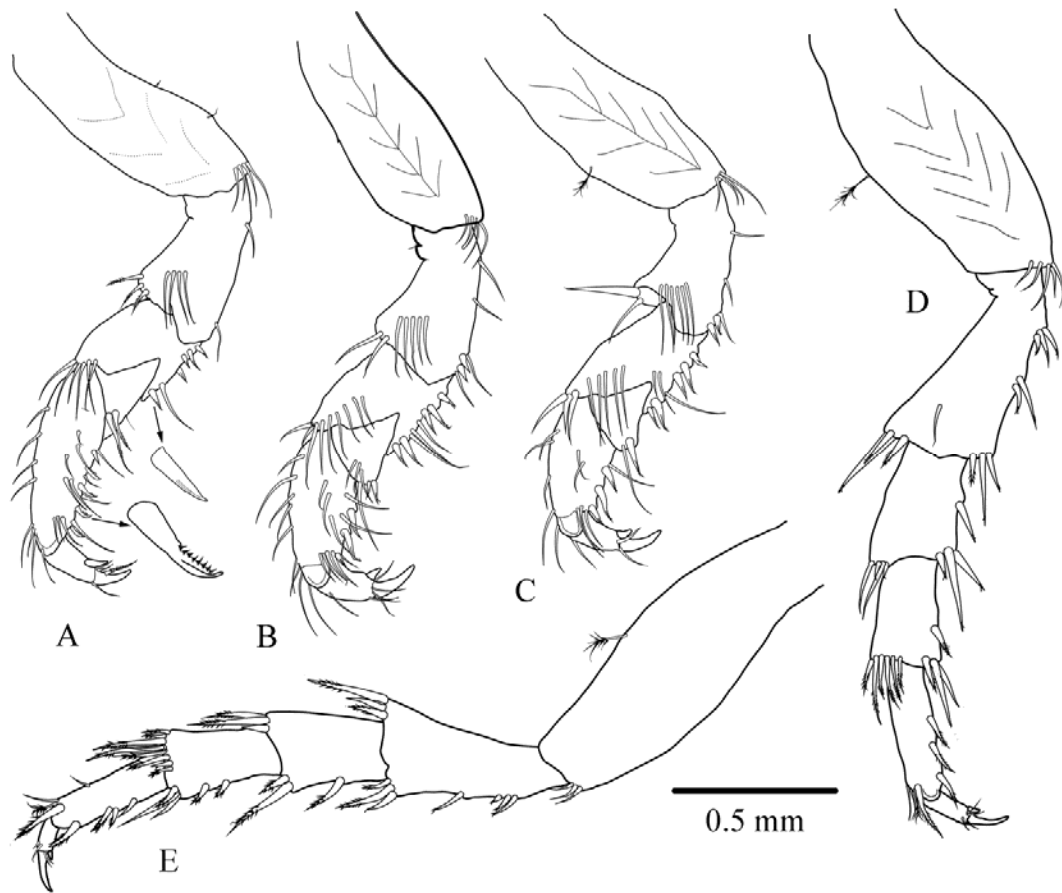
**Material examined.** 3 ♂ and 4 ♀, Basrah, Shatt-Al-Arab River bank, Iraq, muddy clay, 19 September 1972, coll. H. E. Gruner, (USNM 213137).

**Description of male** (from Basrah, Shatt-al-Arab River bank).

Body 2.4 times as long as greatest width, widest at pereonite 5 (Fig.1A). *Head* with broadly rounded rostrum; lateral transverse furrow posterior to each eye (Fig.1A). *Pereonite* 1 without processes; pereonite 2 with short blunt dorso-lateral horns (Figs. 1A, B).

*Pleon* with pleonite 1 slightly concealed by pereonite 7. Pleotelson triangular, with a pair of shallow dorso-lateral depressions, narrowly rounded apex; posterior margin without robust setae. (Fig.1A).

*Antennule* reaching to posterior margin of pereonite 2 (Fig.1C), peduncle article 5 about 1.5 times as long as combined lengths of articles 3 and 4; flagellum with 14 articles, second of which is longest, articles 5–12 each bearing aesthetascs.



**FIGURE 2.** *Annina mesopotamica* (Ahmed, 1971), male, (USNM 213137); A–E, pereopods 1, 2, 3, 6 and 7 respectively.

*Antenna* (Fig.1D) peduncle article 1 usually not freed in dissection; flagellum with 7 articles, extending to posterior of pereonite 2, flagellar articles 2 and 3 bearing disto-ventrally blunt projection.

*Frontal lamina* (Fig. 1E) lateral margins concave, narrowing towards base, anteriorly rounded.

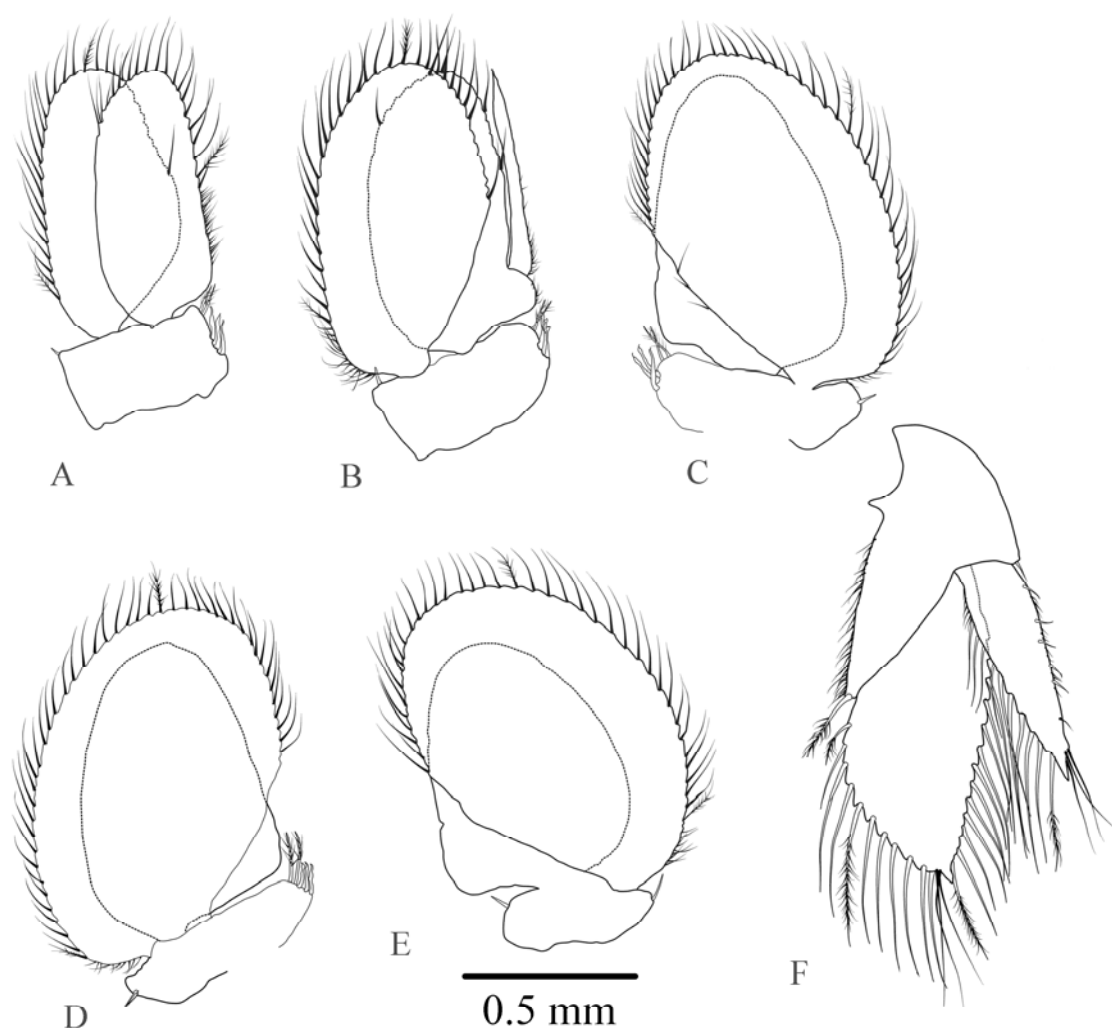
*Left mandible* (Fig. 1F) molar process anterior margin with approximately 22 teeth; spine row composed of 8 spines; mandibular palp (Fig. 1G) article 2 lateral margin with 3 simple setae and medial margin with 6 setae, palp article 3 with 10 robust biserrate setae.

*Maxillule* (Fig. 1I) lateral endite with 11 robust simple or weakly serrated setae; mesial endite with 3 large circumplumose setae and 2 short simple setae.

*Maxilla* (Fig. 1H) lateral and middle endites each with 6 and 8 long finely plumose setae; mesial endite with 4 long finely plumose and 6 robust circumplumose setae.

*Maxilliped* (Fig. 1J) endite bearing 3 long circumplumose setae and 1 coupling hook; palp article 1 with 2 long setae on medial margin; palp articles 2–5 with both margins setose, those of medial margins shorter than those of lateral margins, with some serrated setae on article 5.

*Pereopod 1* (Fig. 2A) basis 2.4x as long as wide, inferodistal corner with 4 long simple setae; ischium superodistal margin with 3 long biserrate setae, inferior margin with 2 simple setae, medial surface with 4 long simple setae; merus superodistal corner with 6 long simple setae, inferior margin with 5



**FIGURE 3.** *Annina mesopotamica* (Ahmed, 1971) male, (USNM 213137); A–E, pleopods 1–5 respectively; F, uropod.

short robust and 1 long simple setae; carpus triangular, inferior margin with 2 long biserrate setae; propodus inferior margin with 5 simple setae and 4 robust serrate setae, superior margin with 4 long simple setae, superodistal corner with 4 simple setae; dactylus with minute secondary unguis.

*Pereopod 2* (Fig. 2B) ischium superodistal margin with 2 long biserrate setae, inferior margin with 4 long simple and 2 short robust setae, medial surface with 5 long simple setae; merus superodistal corner with 2 long simple setae, medial surface with 7 long simple setae, inferior margin with 5 short robust and 2 long simple setae; carpus triangular; propodus inferior margin with 3 short robust setae, superior margin with 5 long simple setae, superodistal corner with 4 simple setae; dactylus with minute secondary unguis.

*Pereopod 3* (Fig. 2C) similar to pereopod 2, as illustrated.

*Pereopod 6* (Fig. 2D) basis 2.3 times as long as wide, superior margin with 1 sensory palmate setae; ischium superodistal angle with 3 robust biserrate setae, inferior margin with 3 sets of robust setae; merus superodistal angle with 4 robust setae; carpus superodistal margin with 6 biserrate setae,

inferodistal margin with 3 long bifid or robust setae; propodus inferior margin with 3 short robust biserrate setae, superodistal corner with 2 long simple, 1 robust biserrate and 1 sensory palmate setae.

*Pereopod 7* (Fig. 2E) similar to pereopod 6 as illustrated.

*Pleopod 1* (Fig. 3B) exopod and endopod subequal in length, with 33 and 20 plumose marginal setae; sympod mesial margin with 3 coupling hooks and 2 plumose setae, lateral margin with a simple seta.

*Pleopod 2* (Fig. 3C) exopod and endopod with 38 and 16 plumose marginal setae; appendix masculina arising sub-medially, extending to apex of endopod with acute apex; sympod mesial margin with 3 coupling hooks and 2 plumose seta, lateral margin with a simple seta.

*Pleopod 3* (Fig. 3D) exopod with 45 plumose marginal setae; endopod shorter than exopod, lacking marginal setae; sympod with 3 coupling hooks and 2 plumose seta, lateral margin with a simple seta,

*Pleopod 4* (Fig. 3E) similar to pleopod 3, exopod with 49 plumose marginal setae.

*Pleopod 5* (Fig. 3F) exopod with 40 plumose marginal setae; sympod without coupling hook, mesial and lateral margins each are bearing a simple seta.

*Uropod* (Fig. 1A, 3G) peduncle medial margin fringed with small fine setae, disto-medial corner with a single long plumose seta; endopod extending beyond pleotelson apex, with very acute apex, medial margin convex fringed with about 11 plumose marginal setae, lateral margin weakly convex with about 13 plumose marginal setae; exopod shorter than endopod, apically acute with some long simple setae, lateral margin with some short setae, medial margin with about 10 plumose marginal setae.

**Female.** Apart from primary sexual characters, cephalon and pereonite 1 and 2 without processes or horns; antenna peduncle article 4 shorter and first flagellar articles shorter than male and without disto-ventral projection.

**Remarks.** *Annina mesopotamica* can be distinguished from all other species of the genus by having two short and blunt dorso-lateral horns on pereonite 2 in males. This species is most similar to *A. fustis* Bowman & Iliffe, 1991 from Thailand (muddy bottom of streams and pools). *Annina fustis* differs from *A. mesopotamica* in having the pair of horns on pereonite 2 extending beyond half-length of pereonite 1 (horns short, not freely extending in *A. mesopotamica*). In *A. kumara* and *A. fustis* the flagellar article 1 of the antenna is very long and has blunt projection disto-ventrally; in *A. mesopotamica* article 1 of the antenna is shorter than the second and is devoid of a disto-ventral projection.

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