

A NEW SPECIES OF *AMPHITHOE* (*PLEONEXES*)
(AMPHIPODA: AMPHITHOIDAE)
FROM THE NORTH-EAST ATLANTIC
WITH A REDESCRIPTION OF
A. (P.) GAMMAROIDES (BATE)

By ROGER J. LINCOLN

INTRODUCTION

A SHORT review of the subgenus *Pleonexes* is given in a recent paper by Mateus & Afonso (1974) together with a table of comparative characters for the six recognized species. *Pleonexes* was only recently relegated from the familiar generic status to that of a subgenus by Barnard (1970) on the evidence of a gradation of characters between *Amphithoe* and *Pleonexes*. The subgenus is identified in the Atlantic by the marked expansion of the propodus of pereopods 5–7 and the pair of prominent hooked spines on the distal margin of the telson, although an examination of all *Amphithoe* species reveals a gradation of these characters which suggests that *Pleonexes* may not be a valid subgenus.

Only three species of *Amphithoe* (*Pleonexes*) are recognized from the north-east Atlantic and Mediterranean, namely *A. (P.) bicuspis* (Heller) from the Adriatic, *A. (P.) pomboi* Mateus & Afonso from the Azores and *A. (P.) gammaroides* (Bate), which is the only widespread species recorded along the coast of Europe from southern Norway to the western Mediterranean and including the British Isles.

After examining the amphipods in the British Museum (Natural History) as part of the preparation for a new handbook on the amphipod fauna of the British Isles, it is clear that there are in fact two quite distinct species of *Pleonexes* in collections from British localities. The two species differ considerably in body size and especially in the relative proportions and robust nature of the antennae, as well as other structural characters. Collections from more northerly areas, especially Shetland Isles and the west coast of Scotland, consist only of the larger of the two species which is the true *gammaroides*, while material from the south coast of England, southern and south-western Ireland belongs mostly to the new and smaller species which is described below as *Amphithoe (Pleonexes) neglectus* n. sp.

The confusion over the identification of the two species can probably be explained by the fact that Sars (1894), in his excellent monograph on the amphipods of Norway, figured the female of the true *gammaroides* (actually a specimen from southern Norway originally ascribed to *Sunamphithoe hamulus* by Boeck but now recognized to be a synonym of *gammaroides*), while his figures of the male are not of *gammaroides* but the new species, *neglectus*. Fortunately, Sars offers an explanation of this in his

text (page 584) where he states that he had no male specimen of *gammaroides* from Norway and had illustrated material collected in France.

Two other species should be referred to the synonymy of *gammaroides*, namely *Sunamphithoe longicornis* Boeck and *Sunamphithoe hamulus* Bate. An examination of the type *S. hamulus* has shown it to be the female of *gammaroides* and not of *Sunamphithoe conformata* Bate as proposed by Stebbing (1906).

DESCRIPTION OF SPECIES

Amphithoe (Pleonexes) neglectus n. sp.

(Figs 1a ; 2a-h ; 3a-g ; 4a-g)

Pleonexes gammaroides : Sars, 1894 : 582 (part), pl. 207 (♂) ; Stebbing, 1906 : 642 (part).

DIAGNOSIS. Length up to 5 mm ; antennae subequal, moderately setose, equal to half body length or less. Gnathopod 1 propodus elongate oval. Gnathopod 2 ischium without distinct lobe on anterior margin ; in male propodus broadly oval, tumid, palmar surface concave with distinct inner and outer palmar margin, delimited from posterior margin by rounded angle. Pereopod 5 basis very much expanded, broader than long. Telson with prominent marginal hooks and pair of mediolateral setae.

DESCRIPTION. Length 4-5 mm, body rather slender, compressed, urosome segment 1 with pair of dorsal setules (Fig. 1a) ; colour in spirit whitish with scattered dark chromatophores on body, coxal plates, basal segments of pereopods and antennal peduncles. *Coxal plates* 1-5 moderately large, distal margins rounded with numerous small setules ; coxal plate 1 produced slightly forwards ; plate 2 with anterior margin very broadly rounded ; plate 4 entire, not excavate posteriorly ; plate 5 with small posterior lobe, and large anterior lobe about equal to length of plate 4. *Epimeral plates* 1-3 rounded ; plates 2-3 (Fig. 4c) with small setule inset in posterodistal margin. *Head* with lateral lobes broadly convex, only moderately produced ; eyes small and rounded, visual elements distinct. *Antennae* (Fig. 2a, b) relatively short and setose, equal or little less than half body length, of subequal length or with antenna 1 little longer than 2 ; accessory flagellum absent ; antenna 1 peduncle article 1 robust with 2-3 distoventral, and 1-2 small mid-ventral, spinules ; article 2 little shorter than 1 ; article 3 about half length of 2 ; flagellum about 15 to 18-articulate, each article with distinct elongate aesthetasc ; antenna 2 more robust than 1 especially in male, peduncle articles 4 and 5 subequal, or article 5 slightly longer than 4 ; flagellum moderately setose, shorter or equal to peduncle article 5, about 9-articulate with proximal articles often swollen (Fig. 2b). *Upper lip* entire, margin rounded, setulose. *Mandible* with distinct molar ; left mandible (Fig. 2f) with 5 spines in spine-row, right mandible (Fig. 2g) with 4 spines ; palp 3-articulate, article 1 short, article 2 with single large distal seta, article 3 with group of about 9 large terminal setae. *Lower lip* (Fig. 2c) with inner and outer lobes distinct, setulose. *Maxilla* 1 (Fig. 2d) inner plate very small with single small seta, outer plate with about 9 robust spines ; palp 2-articulate, article 1 very short, article 2 elongate and curved, reaching beyond apex of outer plate with 2-3 small

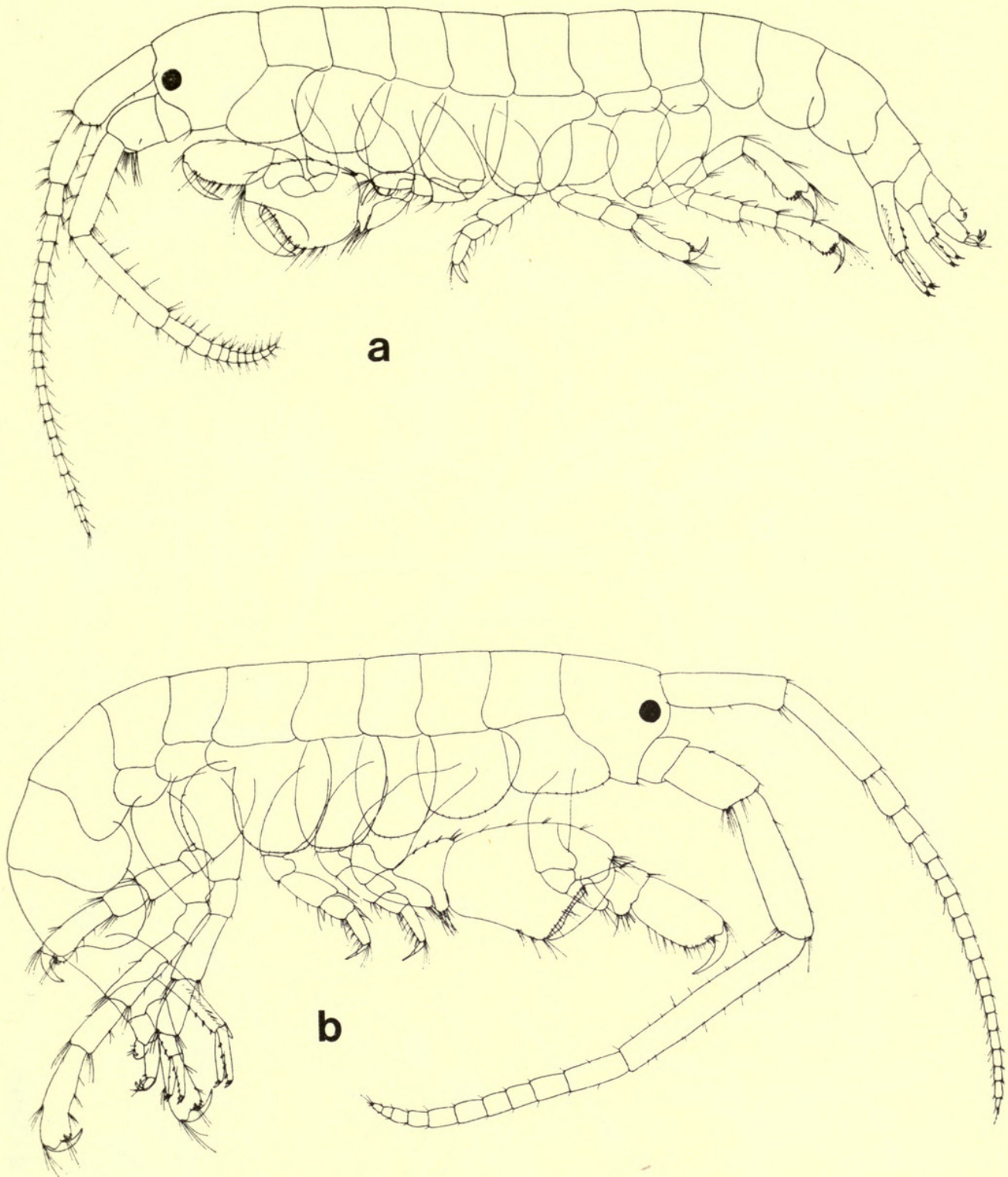


FIG. 1. (a) *Amphithoe (Pleonexes) neglectus* n. sp. male, entire ; (b) *Amphithoe (Pleonexes) gammaroides* (Bate), male, entire.

terminal spines. *Maxilla* 2 (Fig. 2e) inner plate with several long, inner-marginal, plumose setae ; inner margin also fringed with fine short setules ; outer plate longer than inner, outer and distal margins fringed with fine short setules, distal margin with several long setae. *Maxilliped* (Fig. 2h) inner plate short ; outer plate elongate oval with inner margin finely serrate, marginal spines increasing in length distally ; palp 4-articulate, setose. *Gnathopod* 1 (Figs 3a, 4f) generally similar in male and female ;

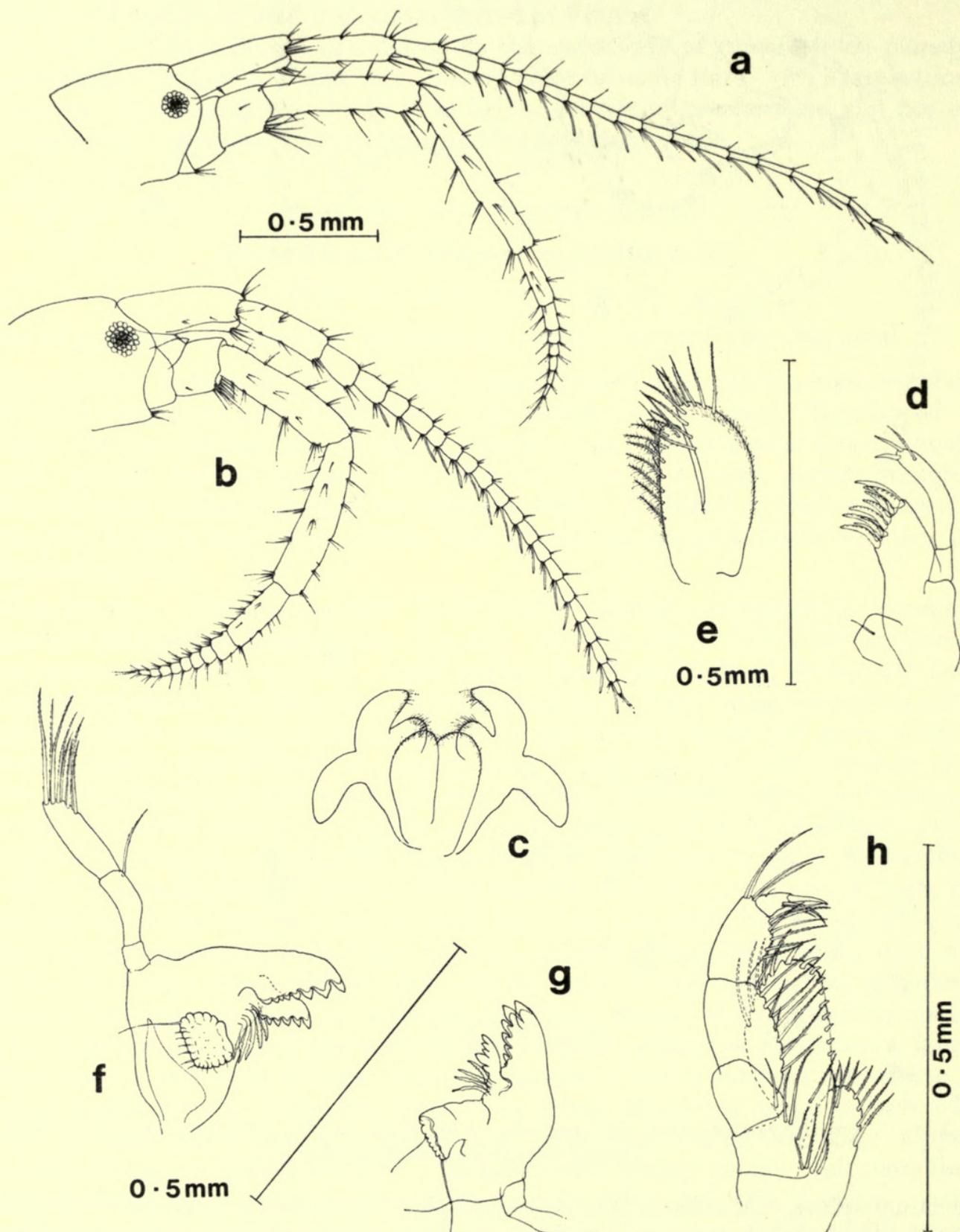


FIG. 2. *Amphithoe (Pleonexes) neglectus* n. sp. male; (a) head and antennae; (b) head and antennae, robust; (c) lower lip; (d) maxilla 1; (e) maxilla 2; (f) left mandible; (g) right mandible; (h) maxilliped.

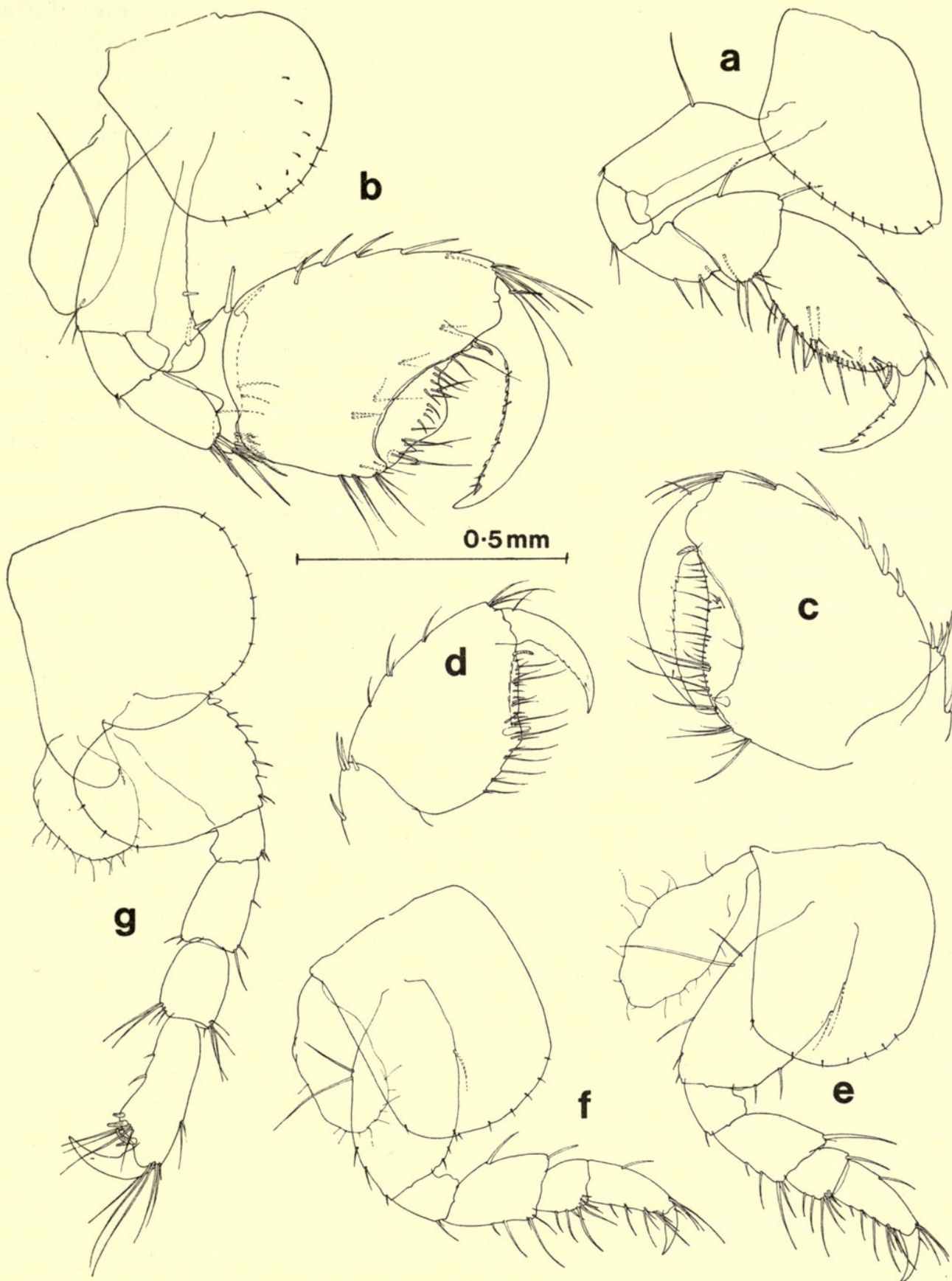


FIG. 3. *Amphithoe* (*Pleonexes*) *neglectus* n. sp. male; (a) gnathopod 1; (b) gnathopod 2; (c) gnathopod 2, propodus; (d) gnathopod 2, propodus, small male; (e) pereopod 3; (f) pereopod 4; (g) pereopod 5.

basis robust, narrow proximally with posterior margin rather angular, anterodistal angle with small rounded lobe ; merus with few distal setae ; carpus much shorter than propodus, anterior margin convex with large median spine and 1-2 large distal spines, posterior margin rounded with few long setae ; propodus elongate oval, palm convex and poorly defined from posterior margin, delimited by single large spine, distal margin of palm with single curved striated spine close to base of dactylus, posterior and palmar margins moderately setose ; dactylus little longer than palm, inner margin toothed. *Gnathopod 2 female* (Fig. 4g) little larger and more robust than 1 ; basis with large anterodistal lobe bearing 1-2 small spinules ; carpus with posterior lobe rather slender and produced ; propodus broadly oval, anterior margin with 4-5 small groups of setae, palm convex, oblique, delimited from posterior margin by obtuse angle and single large spine ; posterior and palmar margins strongly setose, palmar margin with single curved, striated, spine close to base of dactylus. *Gnathopod 2 male* (Fig. 3b) very much larger and more robust than in female ; basis with very large anterodistal lobe bearing 2-3 small spines ; carpus very short with slender posterior lobe, anterior margin with strong median and distal spines ; propodus very broad and robust, anterior margin strongly convex with several small groups of setae or spines, palm complex with concave surface between distinct inner and outer palmar margins (Fig. 3c), delimited by obtuse angle and single stout spine ; in smaller specimens the outer palmar margin may be indistinct (Fig. 3d) ; palm weakly setose with single striated spine close to base of dactylus. *Pereopods 3-4* (Fig. 3e, f) basis narrowly oval, anterior and posterior margins weakly setose ; merus broad distally ; carpus short ; propodus about equal to length of merus, tapering distally ; dactylus weakly curved and about half length of propodus ; merus, carpus and propodus with few long setae. *Pereopod 5* (Fig. 3g) basis broader than long with very large posterior lobe, anterior margin with several short spines ; merus little longer than carpus ; propodus broad distally, palm with 3-4 short, and 1 long curved, striated spines ; inner and outer palmar surface with small group of long setae. *Pereopod 6* (Fig. 4a) more elongate than 5 ; basis with moderately large posterior lobe which narrows distally to produce sinuous posterior margin ; merus, carpus and propodus similar to pereopod 5 only more elongate. *Pereopod 7* (Fig. 4b) slightly longer than 6 ; basis narrowly oval with only small posterior lobe and convex posterior margin. *Uropods* (Fig. 4d) short and spinose. *Uropod 1* peduncle with 3 distomarginal spines and many long outer-marginal setae, distoventral angle with short blunt process ; outer ramus with about 3 marginal spines and small group of terminal spines ; inner ramus equal to length of outer, with only small group of apical spines. *Uropod 2* peduncle with 2 distomarginal spines ; outer ramus with 2 marginal spines ; inner ramus equal to length of outer, with only apical spines. *Uropod 3* (Fig. 4e) peduncle robust with single distal spine ; outer ramus with pair of large curved spines and finely denticulate dorsal margin ; inner ramus with small apical spine and about 6 long setae. *Telson* fleshy, entire, with distinct distolateral hooks and pair of mediolateral setae.

HOLOTYPE. Portsmouth, ♂ collected from *Sargassum*. BM(NH) reg. no. 1975:467:1.

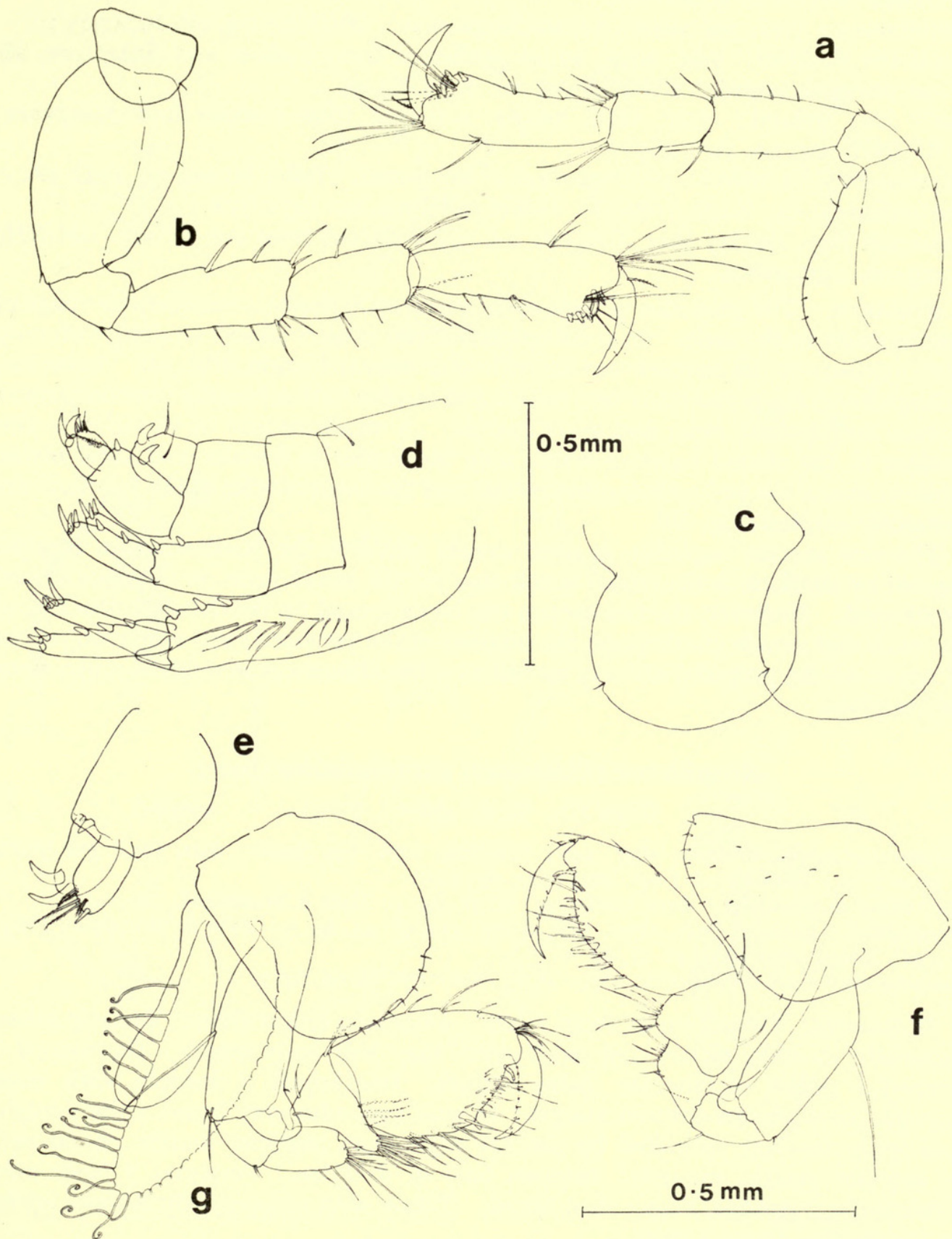


FIG. 4. *Amphithoe* (*Pleonexes*) *neglectus* n. sp. a-e, male; f-g, female: (a) pereopod 6; (b) pereopod 7; (c) epimeral plates 2-3; (d) urosome and uropods; (e) uropod 3, inner aspect; (f) gnathopod 1, female; (g) gnathopod 2, female.

OTHER MATERIAL EXAMINED

- Portsmouth : 7♂♂, 3♀♀ collected from *Sargassum*. BM(NH) reg. no. 1974:365:10.
 Loch Ine, Ireland : 5♂♂, 30♀♀, 20 juv. collected from *Codium* and *Stilophora*, all specimens damaged. BM(NH) reg. no. 1975:464:55.
 Loch Ine, Ireland : 5♂♂, 18♀♀, 10 juv. collected from *Codium* and *Stilophora*. BM(NH) reg. no. 1975:465:33.
 Trevone Bay, Cornwall : 3♀♀ from algae at low-water. BM(NH) reg. no. 1974:366:3.
 Portnafranca, Co. Mayo, Ireland : 1♀ BM (NH) reg. no. 1971:63:1.
 Colieragh Bay, Bantry Bay, Ireland: 1♂, 3♀♀ collected from low water. BM(NH) reg. no. 1975:466:4.

REMARKS. The propodus of the second gnathopod shows a considerable range of development in the male. In small specimens the palm is almost straight with only little evidence of the concave surface and outer palmar margin (Fig. 3d). However, in large males the propodus is very robust and swollen with a broadly concave palmar surface and distinct inner and outer margin. A small amount of variation is also evident in the second antenna which may be slender in females and some males, while in others the peduncle is quite robust and the basal articles of the flagellum are distinctly swollen (Fig. 2b).

The new species, *neglectus*, is most closely allied to the Mediterranean *bicuspis* figured by Giordani Soika (1950) which also has the broad palm on the male second gnathopod. However, the two species can be separated by the detailed structure of the male and female gnathopods, the setation of the pereopods and the arrangement of spines on the propodal articles, as well as other differences in relative proportions and setation.

***Amphithoe (Pleonexes) gammaroides* (Bate)**

(Figs 1b ; 5a-g ; 6a-e ; 7a-g)

- Pleonexes gammaroides* Bate, 1857 : 147 ; Stebbing, 1906 : 642 (part) ; Sars, 1894 : 582 (part) pl. 207 (♀) ; Chevreux & Fage, 1925 : 335, fig. 344.
Amphithoe gammaroides : Bate, 1862 : 235, pl. 41, fig. 4 ; Bate & Westwood, 1863 : 427.
Sunamphithoe hamulus Bate, 1857 : 148 ; 1862 : 250, pl. 43, fig. 5 ; Bate & Westwood, 1863 : 430 ; Boeck, 1872 : 594, pl. 27, fig. 1.
Sunamphithoe longicornis Boeck, 1870 : 165 ; 1872 : 596, pl. 27, fig. 2.

DIAGNOSIS. Length up to about 8 mm ; antenna 2 longer than 1, sparsely setose especially in male, robust and much more than half body length. Gnathopod 1 propodus rather rectangular, palm oblique. Gnathopod 2 ischium with large asymmetrical lobe on anterior margin ; in male propodus very broad, palm straight and finely toothed, delimited by distinct angle from posterior margin, distal part of anterior margin expanded towards base of dactylus. Pereopod 5 basis only moderately expanded, longer than broad. Telson with pronounced marginal hooks and numerous dorsal setules.

DESCRIPTION. Length 6-8 mm ; urosome segment 1 with pair of dorsal setae ; colour bright green with scattered dark chromatophores on sides of body. Coxal plates moderately large, margins rounded with numerous short setules ; coxal plate 1

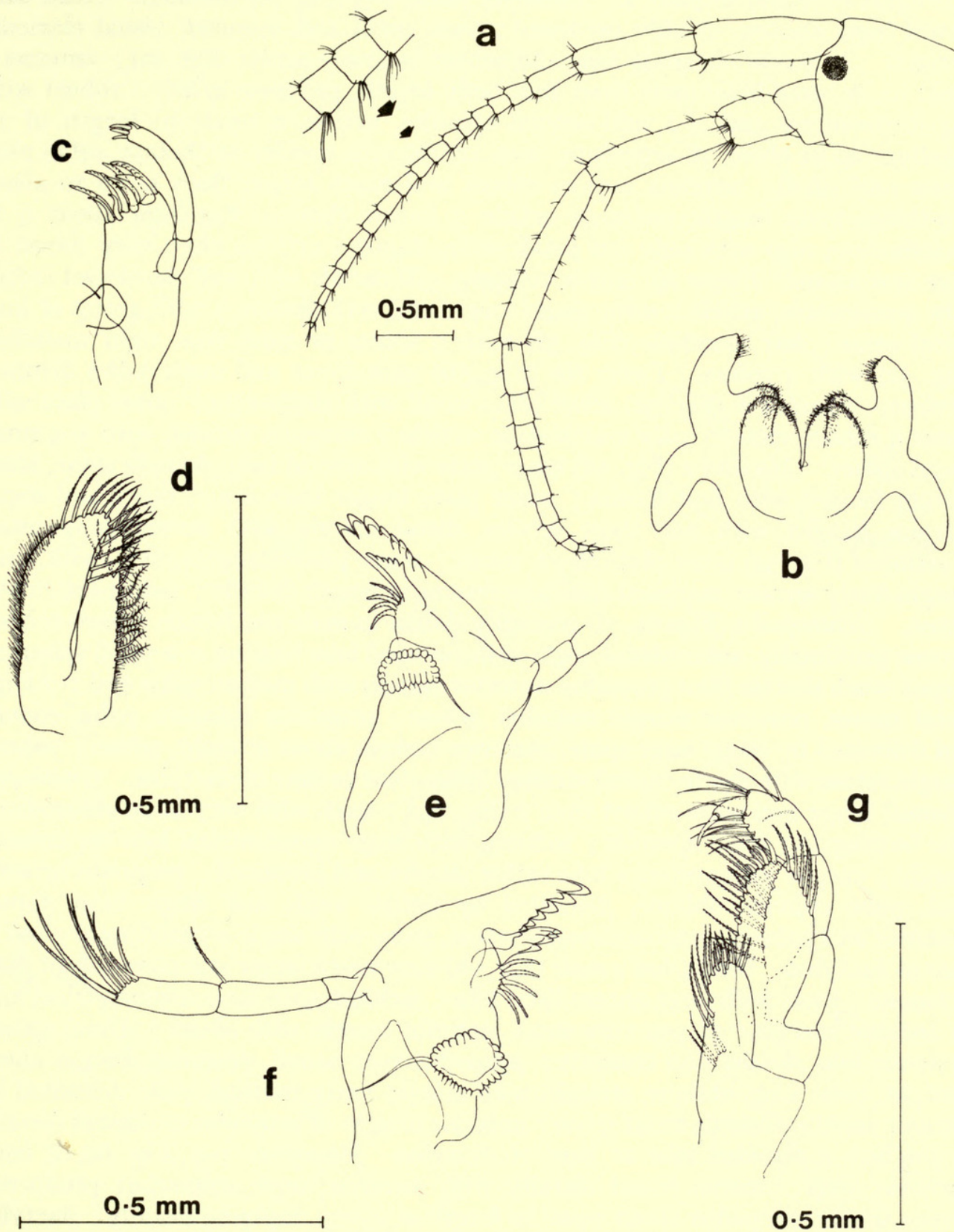


FIG. 5. *Amphithoe* (*Pleonexes*) *gammaroides* (Bate), male: (a) head and antennae, large male; (b) lower lip; (c) maxilla 1; (d) maxilla 2; (e) right mandible; (f) left mandible; (g) maxilliped.

produced slightly forwards; plate 2 very broadly rounded; plate 5 with anterior lobe equal to length of plate 4. *Epimeral plates* 1-3 (Fig. 7c) rounded. Head with lateral lobes convex, weakly produced; eyes small and rounded, visual elements distinct. *Antennae* relatively long and robust, sparsely setose (Fig. 5a); antenna 1 equal to, or often little more than, half body length, peduncle article 1 robust with 3-4 distoventral and 1-2 mid-ventral spinules, article 2 equal to length of 1; flagellum up to about 18-articulate, each article with slender aesthetasc, setae very sparse and small; antenna 2 more robust and much longer than 1, up to about two-thirds body length, peduncle article 5 longer than 4, flagellum about 9 to 13-articulate, also with only few small setae, flagellar articles often very robust in large specimens. *Upper lip* entire, setulose. *Mandible* with well developed molar, palp 3-articulate, article 2 with single long distal seta, article 3 with group of long apical setae; left mandible (Fig. 5f) with 5 spines in spine row, right mandible (Fig. 5e) with 4 spines. *Lower lip* (Fig. 5b) with inner and outer lobes distinct, setulose. *Maxilla* 1 (Fig. 5c) inner plate small with single seta; outer plate with about 9 robust spines; palp 2-articulate, article 2 elongate, curved, with 3-4 small apical spines. *Maxilla* 2 (Fig. 5d) inner plate with several long plumose setae, inner margin fringed with fine setules; outer plate longer than inner, outer and distal margins fringed with fine short setules, distal margin with several long setae. *Maxilliped* (Fig. 5g) inner plate short, setose; outer plate elongate, oval, with inner margin finely serrate, marginal spines increasing in length distally; palp 4-articulate, setose. *Gnathopod* 1 (Figs 6a, 7f) generally similar in male and female; basis robust, narrow proximally, anterodistal angle with rounded lobe bearing 1-2 small spinules; carpus much shorter than propodus, anterior margin with median spine and 1-2 large distal spines, posterior margin rounded, setose; propodus elongate, palm convex and delimited by single large spine, posterior margin about straight, setose; palmar margin setose with single curved striated spine close to base of dactylus. *Gnathopod* 2 *female* larger and more robust than 1 (Fig. 7g); basis with very large anterodistal lobe bearing 2-3 small spinules; ischium with large asymmetrical lobe on anterior margin; carpus with posterior lobe rather slender and produced; propodus broadly oval, palm convex, oblique, delimited by obtuse angle and single large spine; posterior and palmar margins strongly setose, palm with single striated spine close to base of dactylus. *Gnathopod* 2 *male* (Fig. 6b) very much larger and more robust than in female; basis with large anterodistal lobe; ischium with large asymmetrical lobe on anterior margin; carpus very short, anterior margin with about 5 strong spines, posterior lobe slender and elongate; propodus very broad, posterior margin about straight, palm long, oblique, straight with margin finely toothed, palm delimited by distinct angle and single stout spine; anterior margin of propodus expanded distally to produce a rounded lobe at base of dactylus. *Pereopods* 3-4 (Fig. 6c, d) basis narrowly oval; merus broad distally with anterior angle somewhat produced; carpus short; propodus about equal to length of merus, tapering distally; dactylus only weakly curved and about half length of propodus. *Pereopod* 5 (Fig. 6e) basis broadly expanded but still longer than wide; merus longer than carpus; propodus broad distally, palm with 3-4 short spines and 1 long curved spine, inner and outer palmar surface with small group of long setae. *Pereopod* 6 (Fig. 7a) longer than 5;

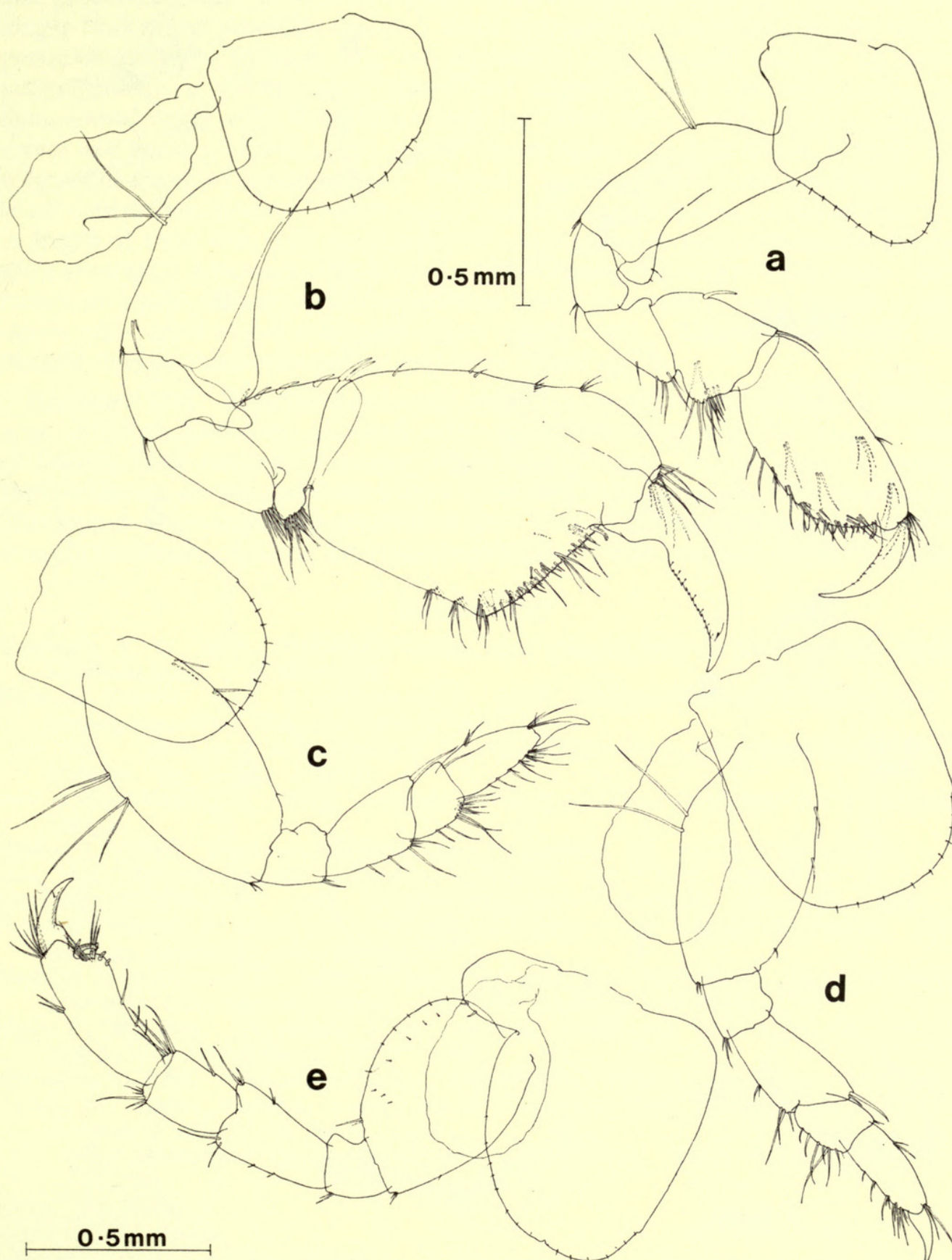


FIG. 6. *Amphithoe* (*Pleonexes*) *gammaroides* (Bate), male: (a) gnathopod 1; (b) gnathopod 2; (c) pereopod 3; (d) pereopod 4; (e) pereopod 5.

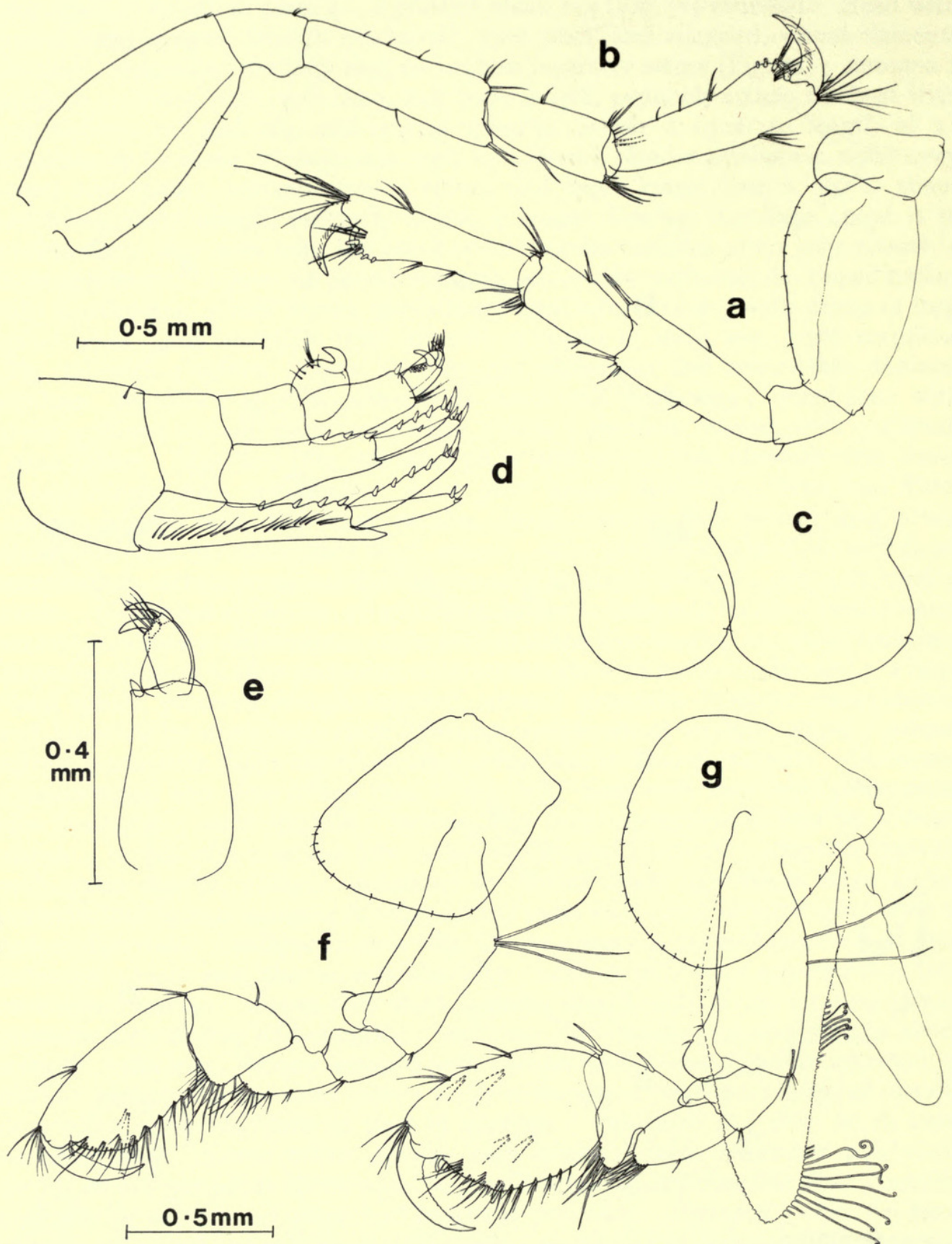


FIG. 7. *Amphithoe* (*Pleonexes*) *gammaroides* (Bate), a-e, male; f-g, female: (a) pereopod 6; (b) pereopod 7; (c) epimeral plates 2-3; (d) urosome and uropods; (e) uropod 3, inner aspect; (f) gnathopod 1, female; (g) gnathopod 2, female.

basis with moderately large posterior lobe which narrows distally; merus, carpus and propodus similar to pereopod 5 only more elongate. *Pereopod* 7 (Fig. 7b) little longer than 6 but generally similar; basis only narrowly oval with weakly convex posterior margin. Uropods (Fig. 7d) moderately elongate and spinose. *Uropod* 1 peduncle with 4 distomarginal spines and numerous long outer-marginal setae, distoventral angle with large blunt process; outer ramus with about 4 marginal spines and small group of apical spines; inner ramus equal to length of outer with only small group of apical spines. *Uropod* 2 peduncle with 3 marginal spines and small ventrodiscal process; outer ramus with 3 marginal spines; inner ramus equal to length of outer with only small group of apical spines (occasionally small marginal spine present). *Uropod* 3 (Fig. 7e) peduncle elongate with single distal spine; outer ramus with pair of large curved spines and finely denticulate dorsal margin; inner ramus with small apical spine and about 5 long setae. *Telson* fleshy entire, with distinct distolateral hooks and several short dorsal setae.

DISTRIBUTION. This species is quite widely recorded in the north-east Atlantic area, although probably confused with *neglectus* over part of its range: coast of Europe from northern Norway (Vader, 1969, 1971), British Isles, to western Mediterranean, Azores and Canary Isles (Chevreux & Fage, 1925). It is possible that Chevreux & Fage confused *gammaroides* and *bicuspis*, and that *gammaroides* does not occur in the Mediterranean. The figured material was collected from the Shetland Isles.

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