

Rhogobius pressulus n. sp. (Copepoda: Siphonostomatoida) from a Deep-Sea Hydrothermal Vent at the Galapagos Rift¹

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ABSTRACT: A new species of dirivultid copepod, *Rhogobius pressulus*, is described from a depth of 2451 m at a hydrothermal vent on the Galapagos Rift in the eastern Pacific. The new taxon is differentiated from its only congener by the broad suboval fifth leg, the shape of the genital segment, and the form of the postgenital segments. Males are unknown.

PREVIOUS EXAMINATION OF material obtained by means of manned submersibles (DSRV *Alvin* and DSRV *Cyana*) at deep-sea hydrothermal vents in the eastern Pacific has revealed a large number of new copepods, both siphonostomatoids and poecilostomatoids (Humes 1987, 1988a, b; in press). Among these copepods, at both the Galapagos Rift (00°48.8' N, 86°11' W) and the East Pacific Rise (12°48.8' N, 103°56.7' W), the siphonostomatoid *Rhogobius contractus* Humes, 1987, was reported from depths of 2447–2635 m. A second species of *Rhogobius* Humes, 1987, is here described from the Galapagos Rift.

Siphonostomatoida Thorell, 1859
Dirivultidae Humes and Dojiri, 1980

Rhogobius Humes, 1987
Rhogobius pressulus n. sp.

Figures 1–16

TYPE MATERIAL: 5 ♀♀, in 2451 m, Galapagos Rift, 00°48.0' N, 86°13.0' W, 7 December 1979. DSRV *Alvin* dive no. 990 (Hollis, Jones, Tuttle). Holotype and two paratypes deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

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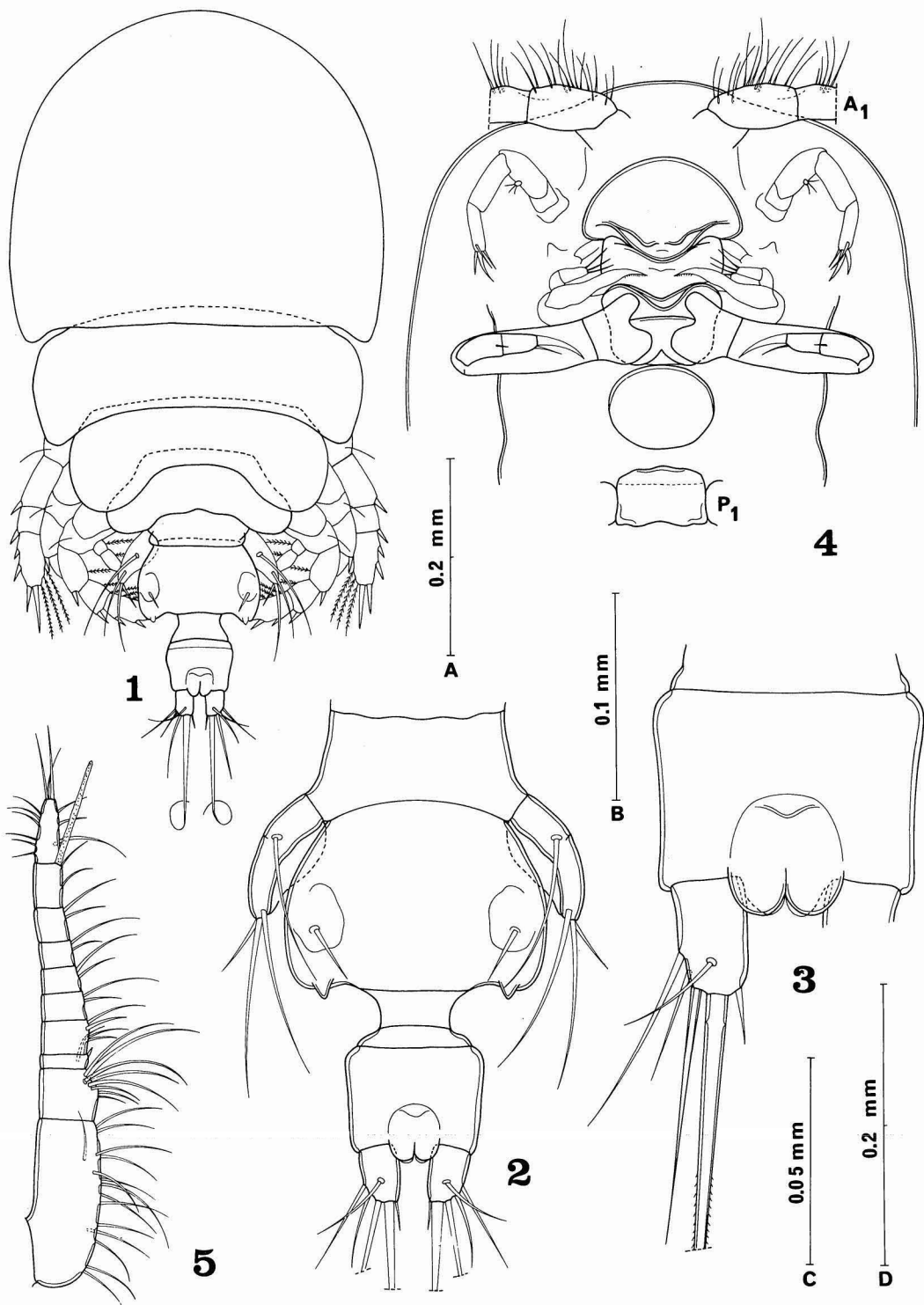
DESCRIPTION OF FEMALE: Body (Figure 1) with broad cephalosome. Length (not including setae on caudal rami) 0.73 mm (0.67–0.78 mm) and greatest width 0.35 mm (0.34–0.36 mm), based on four specimens in lactic acid. Greatest dorsoventral thickness 0.22 mm. Segment bearing leg 1 fused with cephalosome. Epimeral areas of metasomal segments rounded. Ratio of length to width of prosome 1.33 : 1. Ratio of length of prosome to that of urosome 2.40 : 1.

Segment bearing leg 5 (Figure 2) 52 × 101 μm. Genital segment broad, 90 × 125 μm, ratio of length to width 1 : 1.4, rounded laterally and having pair of conical protuberances posterolaterally and slightly dorsally. Genital areas located dorsolaterally just posterior to middle of segment. Each area bearing seta 25 μm (Figure 2). Three postgenital segments. First segment short and greatly constricted, 15.5 × 34 μm, with very weakly sclerotized walls. Second segment also short, 10 × 50 μm, with slightly sclerotized walls. Third segment large and broad, 47 × 68 μm in greatest dimensions, 63 μm wide posteriorly with pair of broad rounded flaps terminally between caudal rami (Figure 3).

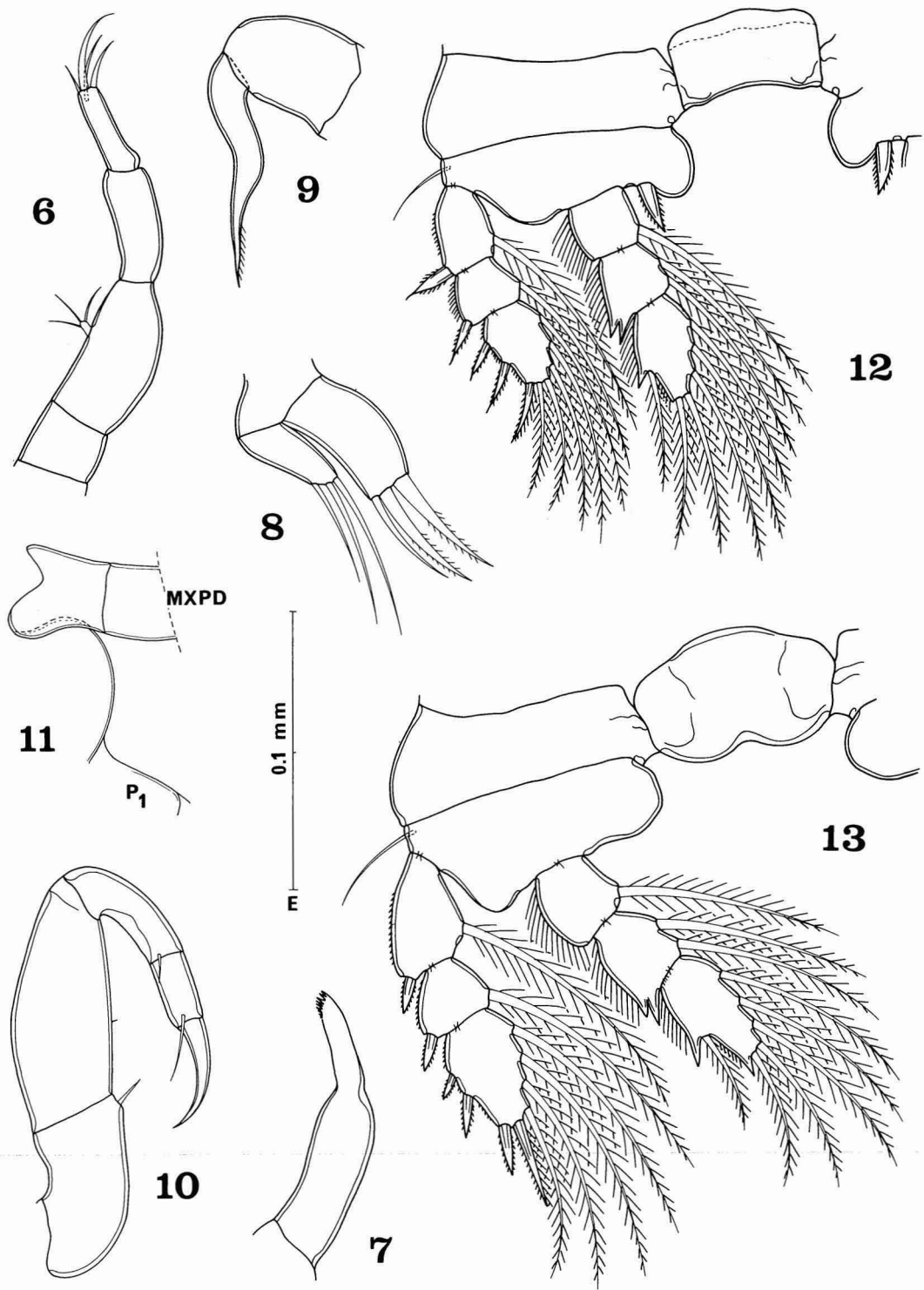
Caudal ramus (Figure 3) small, 26 × 15.5 μm, ratio 1.67 : 1. Outer lateral seta 44 μm, dorsal seta 20 μm, outermost terminal seta 23 μm, and innermost terminal seta short, 9 μm. All these setae smooth. Two long median terminal setae, outer 66 μm and smooth, inner 170 μm with minute barbules along midregion.

Body surface lacking visible sensilla.

Egg sac unknown.



FIGURES 1–5. *Rhogobius pressulus* n. sp. Female: 1, dorsal (scale A); 2, urosome, dorsal (scale B); 3, anal segment and caudal ramus, dorsal (scale C); 4, cephalosome, ventral (scale D); 5, first antenna, dorsal (scale B). A₁ = first antenna, P₁ = leg 1.



FIGURES 6–13. *Rhogobius pressulus* n. sp. Female: 6, second antenna, anterodorsal (scale E); 7, mandible, posterior (scale C); 8, first maxilla, anterior (scale C); 9, second maxilla, posterior (scale E); 10, maxilliped, posterior (scale E); 11, protuberance between maxillipeds and first pairs of legs, lateral (scale B); 12, leg 1 and intercoxal plate, anterior (scale B); 13, leg 2 and intercoxal plate, anterior (scale B). (See Figures 1–5 for scales B and C.) MXPDP = maxilliped, P₁ = leg 1.

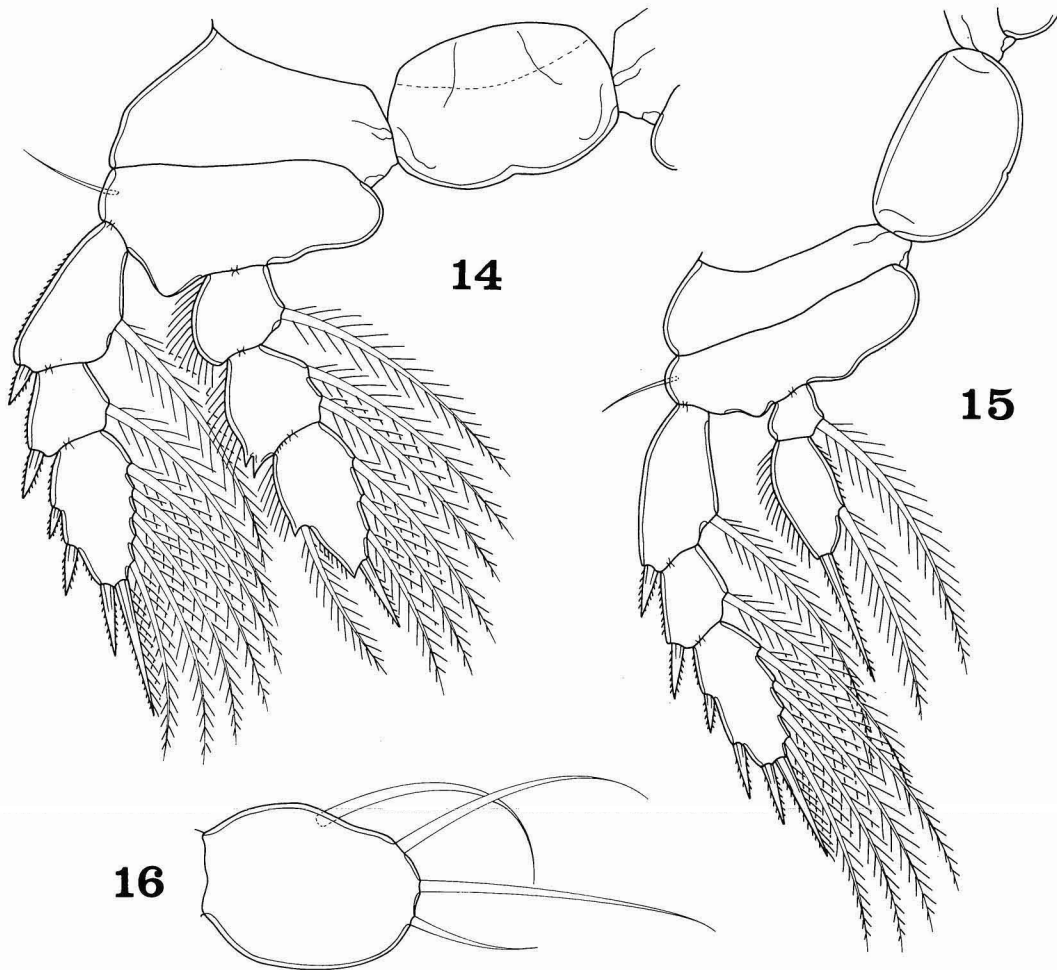
Rostral area not developed (Figure 4). First antenna (Figure 5) 230 μm long, not including setae. Lengths of its 10 segments (measured along their posterior nonsetiferous margins): 42 (78 μm along anterior margin), 26, 6, 16, 11, 11, 11, 16, 21, and 31 μm , respectively. Armature: 15, 8, 2, 4, 2, 2, 2, 2 + 1 aesthete, and 12. All setae smooth.

Second antenna (Figure 6) 135 μm long excluding setae. Second segment of protopod with convex inner edge. Exopod with 3 setae. Second segment of endopod with 3 apical setae and 1 subapical seta.

Oral cone (Figure 4) short, not forming true siphon. Labrum broad. Mandible (Figure 7), first maxilla (Figure 8), and second maxilla (Figure 9) resembling those of *Rhogobius contractus*. Maxilliped (Figure 10) also similar to that of *R. contractus*, but seta on inner side of second segment extremely minute and hardly visible, and claw shorter, 34 μm .

Ventral protuberance between maxillipeds and first pair of legs rounded (Figures 4, 11).

Legs 1–4 (Figures 12–15) biramous with three-segmented rami, except for two-segmented endopod of leg 4. Spine and setal



FIGURES 14–16. *Rhogobius pressulus* n. sp. Female: 14, leg 3 and intercoxal plate, anterior (scale B); 15, leg 4 and intercoxal plate, anterior (scale B); 16, leg 5, ventral (scale E). (See Figures 1–5 for scale B and Figures 6–13 for scale E.)

formula as follows (roman numerals indicate spines, arabic numerals represent setae):

| | | | | | | |
|----------------|------|-----|-------|-----|-----|---------------------|
| P ₁ | coxa | 0-0 | basis | 1-I | exp | I-1; I-1; II, I, 5 |
| | | | | | enp | 0-1; 0-2; 1, 2, 3 |
| P ₂ | coxa | 0-0 | basis | 1-0 | exp | I-0; I-1; II, II, 4 |
| | | | | | enp | 0-1; 0-2; 1, 2, 3 |
| P ₃ | coxa | 0-0 | basis | 1-0 | exp | I-1; I-1; II, II, 5 |
| | | | | | enp | 0-1; 0-2; 1, I, 3 |
| P ₄ | coxa | 0-0 | basis | 1-0 | exp | I-1; I-1; II, II, 4 |
| | | | | | enp | 0-1; I-1 |

Inner spine on basis of leg 1 finely barbed and 23 μm long. Proximalmost outer spine on third segment of exopod in legs 2-4 distinctly smaller than other exopod spines. Leg 4 with exopod 146 μm long. First segment of endopod 19 \times 23 μm , its feathered seta 114 μm ; second segment 49 \times 23 μm , its plumose seta 83 μm and its apical barbed spine 52 μm .

Leg 5 (Figures 2, 16) broad, suboval, 57 \times 44 μm , without definite division between two segments. Seta 80 μm arising slightly dorsally on area of first segment. Three remaining setae 75, 83, and 34 μm . All setae apparently smooth.

Leg 6 probably represented by seta on genital area (Figure 2).

Color of living specimens unknown.

MALE: Unknown.

ETYMOLOGY: The specific name *pressulus*, Latin meaning drawn together or compressed, alludes to the constricted first postgenital segment.

REMARKS: *Rhogobius pressulus* may be distinguished from *R. contractus* in several ways: (1) The genital segment in the new species is broadly rounded laterally, with a pair of small posterolateral processes, while in its congener this segment is subhexagonal, without posterolateral processes. (2) The three postgenital segments are not equally developed, the first and second segments being short, weak, with the first segment greatly constricted, and the anal segment massive, while in *R. contractus*

the three postgenital segments are nearly equally developed, with the first segment only moderately constricted. (3) The ratio of length to width of the caudal ramus is 1.68 : 1, but in *R. contractus* this ratio is 1.28 : 1. (4) The inner edge of the second segment of the protopod of the second antenna is convex, more so than in *R. contractus*. (5) The inner spine on the basis of leg 1 is 23 μm , shorter than in *R. contractus* where it is 31 μm . (6) In legs 2-4, the proximalmost spine on the third segment of the exopod is shorter than adjacent spines, while in the previously known species this spine is nearly the same length as adjacent spines. (7) Leg 5 is suboval, without clear distinction of the two segments, while in *R. contractus* this leg is elongate, with the two segments separated.

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