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CALLIANIDEA VANDOVERAE SPECIES NOVA (DECAPODA, THALASSINIDEA, CALLIANIDEIDAE) FROM OFF THE CENTRAL EASTERN FLORIDA COAST, U.S.A.

BY

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RÉSUMÉ

Callianidea vandoverae sp. nov., un Crustacé de la famille des Callianideidae récolté à une profondeur de 58 m sur la côte centrale orientale de Florida est décrite et illustrée. Cette nouvelle espèce est proche de *Callianidea leura* des eaux côtières centrales du Queensland, en Australie. Quelques traits de la morphologie des antennules, de la carapace, des péréiopodes et du telson sont comparés à ceux de *C. leura* et d'autres *Callianidea*.

INTRODUCTION

The genus *Callianidea* is a small taxon the members of which superficially resemble callianassid or "ghost shrimp". Fewer than 10 species are assigned to the genus, but these are nonetheless widely distributed in tropical or warm temperate waters of the world ocean, with the majority known from the Indo-, West, or Central Pacific regions (De Man, 1928; Melin, 1939; Edmondson, 1944; Poore & Griffin, 1979). In the Western Atlantic the sole species, *Callianidea laevicauda* Gill, 1859 is known only from Cuba and the Caribbean Sea (Rathbun, 1901; Schmitt, 1935). All members of the genus are lithophilic associating with rocks and coral reef habitats.

In 1975 a single specimen of a second species of *Callianidea* was collected by R/V "Gosnold" during trawling operations off the central eastern Florida coast. This new species was unusual in that it showed closest morphological relationships to *Callianidea leura* Poore & Griffin, 1979, a species at present recorded only from the area of Central Queensland, Australia. Description of the Floridan species was postponed in the hope that additional material might become available. Such has not been the case and so the new species is now described and illustrated in this report. The unique male holotype has been deposited in the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.

Callianidea vandoverae species nova (figures 1-4)

Material examined. — Holotype male. 7.87 × 3.75 mm, cl × cw; 30.8 mm total length; Florida, east of St. Lucie Inlet, 27°10.5′N 80°00.2′W, 58 m, box dredge, 12 August 1975; R/V "Gosnold" 262/773. RMNH D-37056.

Diagnosis. — Body flabby; carapace and abdomen smooth, shining, without armature; rostrum triangular, rounded, with four blunt marginal teeth, a low but distinct median carina; article 1 of antennule 5.6 and 4.7 times longer than succeeding two articles, respectively; propodi of pereopods 3 and 4 noticeably spinulate distally; pleopod 1 of male uniramous, two-segmented, distal article blade-shaped; filaments on pleopods 2 to 5 two-segmented, narrowly ovate; telson length 1.06 times width; uropodal exopod wider than endopod, lateral margins spinulate.

Type locality. — East coast of Florida off St. Lucie Inlet.

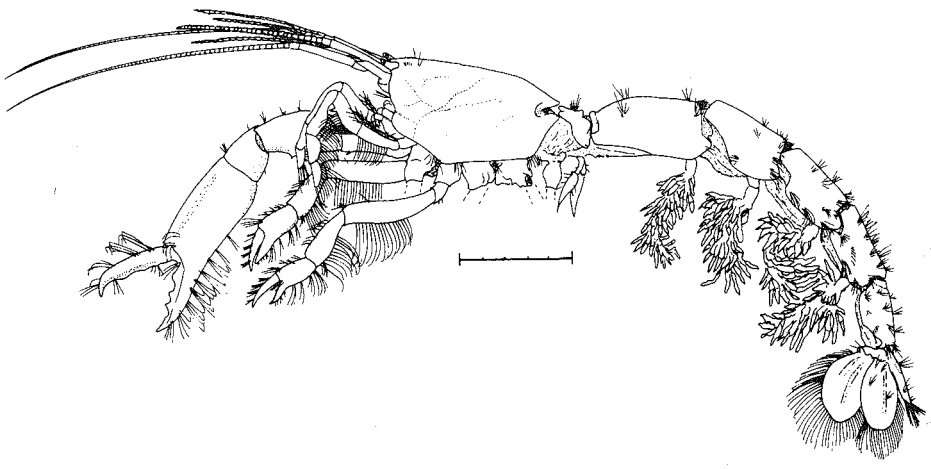

Fig. 1. *Callianidea vandoverae* sp. nov. Holotype male, RMNH D-37056. Pereopods detached or missing (see text). Scale lines in mm.

Description. — Body flabby; carapace laterally compressed, smooth, shining, cervical groove present, remaining grooves indistinct or indiscernible (fig. 1). Rostrum (fig. 2A-C) flat, depressed, broadly and triangularly rounded, extending about one half the length of the eyestalks, armed with four bluntly rounded teeth on anterior and anterolateral margin; a distinct median carina; front (fig. 2C) excavated forming broad "U" , margins unarmed, with a short longitudinal row of thin setae extending obliquely laterad behind, a second tuft adjacent to each eye on outer margin; anterior carapace margin nearly straight ventrad, progressing into broadly rounded "V"-shaped branchiostegal notch, continuing ventrad thereafter nearly straight, turning obliquely downward over pereopod 1 (fig. 2B); ventrolateral margin sinuous; posterolateral margin oblique, meeting at large posteromedial cavity; dorsal carapace margin gently convex posteriad, curving abruptly downward and produced into smooth bluntly rounded constricted protuberance (fig. 1). Eyes small, flattened, tapering distally from widely expanded bases, reaching about one third length of antennal article 1; corneas dark, subdistal.

Antennular and antennal peduncles about equal in size and length; antennular article 1 unarmed, greatly elongate, mesially compressed, 5.6 and 4.7 times as long as succeeding two articles, respectively; latter short, subequal, rounded, unarmed; dorsal flagellum with about 22, ventral flagellum with about 20, segments, widest in former about eight segments from tip, in latter more or less uniformly cylindrical throughout. Antennal basal article laterally

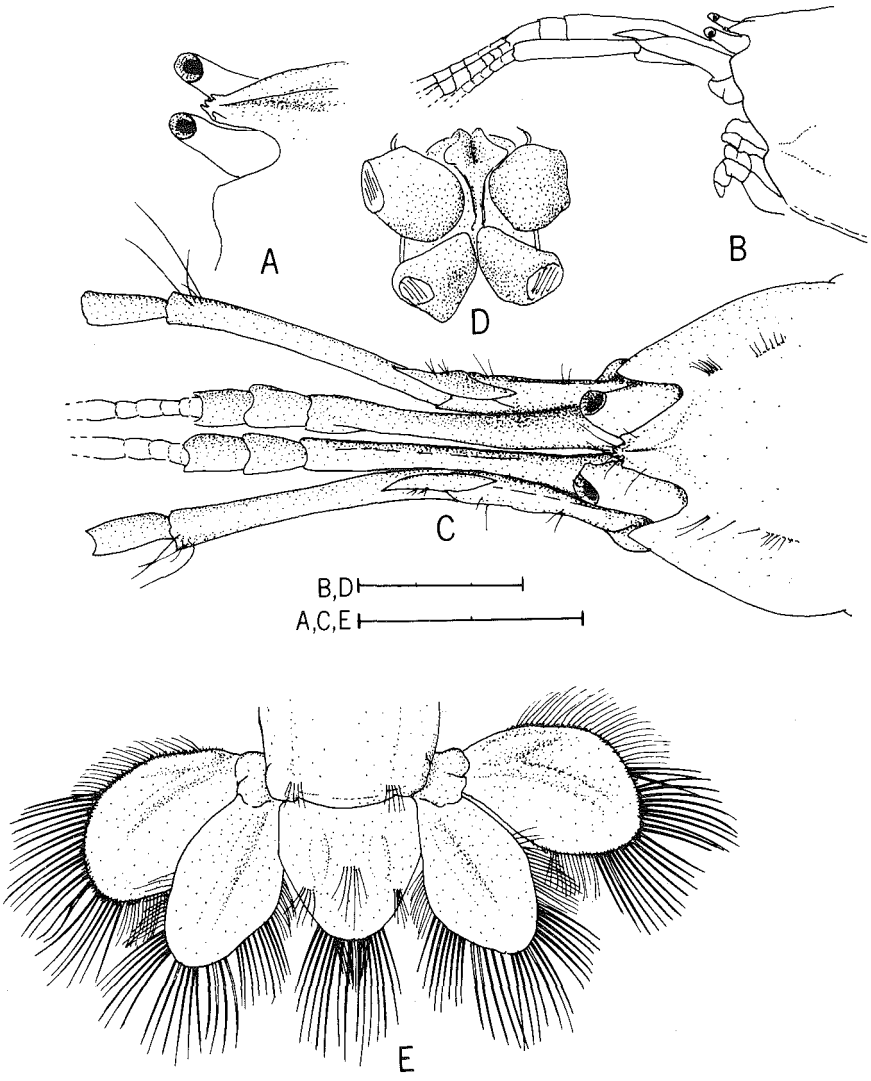

Fig. 2. *Callianidea vandoverae* sp. nov. Holotype male. A, carapace anterior region, dorsolateral view; B, carapace and sensory appendages, lateral view; C, same, dorsal view; D, sternal region at pereopods 3 and 4, ventral view; E, tail fan, dorsal view [setae representative]. Scale lines in mm.

compressed, reaching about 0.6 length of antennular article 1; scaphocerite drawn into sharp spine dorsally, reaching about 0.75 length of antennular article 1; third article about half again as long as antennular article 1, together with fourth article distinctly overreaching antennule; flagellum elongate, thin, about twice carapace length (figs. 1, 2C).

Maxilliped 3 (figs. 1, 3A, B) pediform, overreaching antenna by nearly all of propodus and dactyl; exopod falling short of distal margin of merus; epipod short, spatulate; ischium shorter than merus, latter armed distally with large obliquely directed ventral spine; carpus about equal to merus, propodus shorter, dactyl shortest; ratios of all progressing distally 0.8:1:1:0.7:0.4; all articles bearing elongate fine setae on ventral margins, as illustrated.

Left cheliped missing; right cheliped (fig. 3C) large, robust, smooth, elongate, extending by about half the propodal length beyond tip of maxilliped 3; a small epipod. Ischium with small, blunt distoventral tooth; merus about

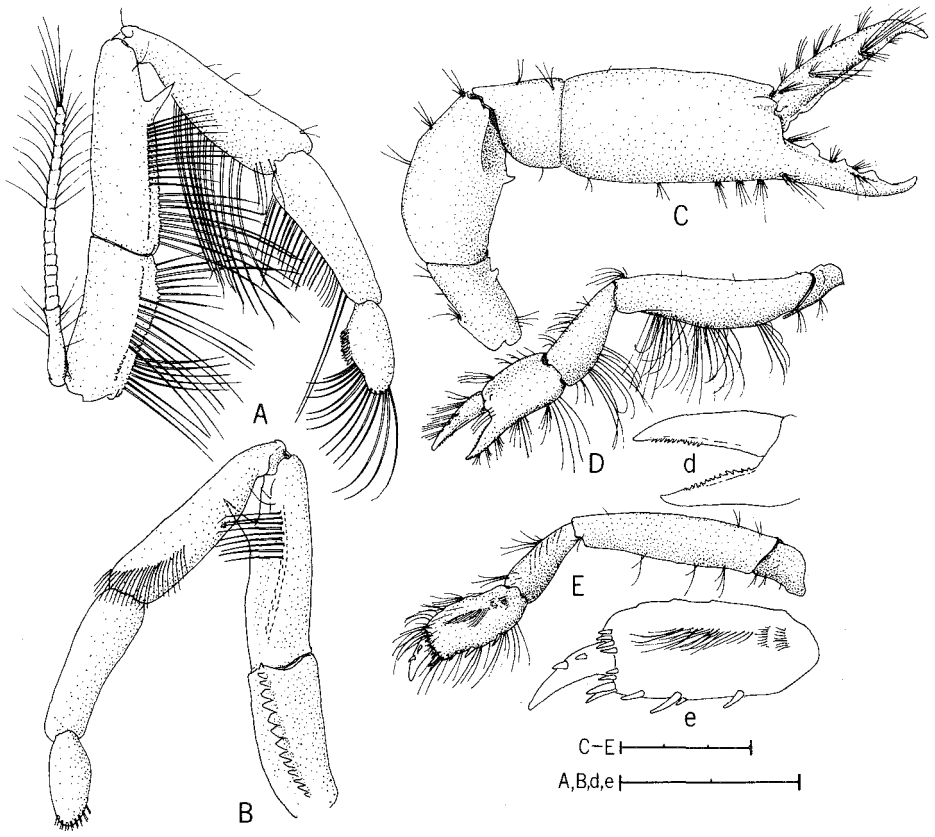

Fig. 3. *Callianidea vandoverae* sp. nov. Holotype male. A, right maxilliped 3, lateral view; B, same, mesial view; C, right cheliped, lateral view; D, left pereopod 2, lateral view; d, same, detail of gape; E, left pereopod 3, lateral view; e, same, detail of propodus and dactyl. Scale lines in mm.

0.3 times again as long as ischium, dorsally convex, mesial surface flattened, a prominent ventral tooth beyond midpoint; carpus unarmed, about one half meral length, inflated distally, constricted proximally by large mesial concavity; propodus unarmed, inflated, subcylindrically compressed, palm 1.5 times length of fixed finger; latter tapering, with three large teeth on cutting edge; dactyl about 1.2 times longer than propodal finger, cutting edge thin, sinuate, tip curved inward over that of fixed finger; manus with sprays of long thin golden setae as illustrated. Pereopod 2 (fig. 3D, d) chelate, smooth, about equal in length to maxilliped 3, unarmed; a small epipod; ratios progressing distally from ischium to manus (I = 1.0): 1:2.8:1.5:2.2; cutting edges of fingers with row of serrated teeth; ventral and dorsal setae in rows and tufts as illustrated. Pereopod 3 and 4 as illustrated, each with small epipod; propodus

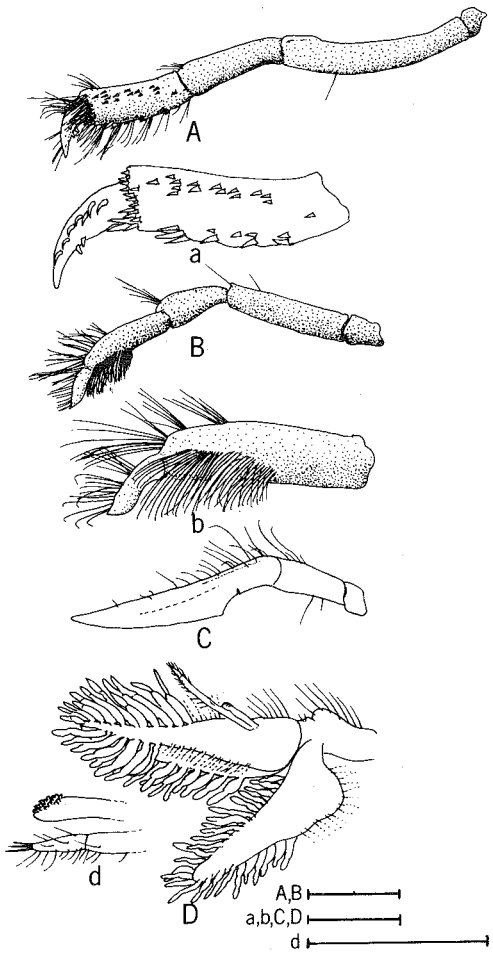

Fig. 4. *Callianidea vandoverae* sp. nov. Holotype male. A, left pereopod 4, lateral view; a, same, detail of propodus and dactyl; B, left pereopod 5, lateral view; b, same, detail of propodus and dactyl; C, right pleopod 1, lateral view; D, right pleopod 2, and appendix masculina; d, detail of appendix masculina tip. Scale lines in mm.

spinulate or dentate on ventral and distal margins and exterior surfaces; setae as shown (figs. 3E, e; 4A, a). Pereopod 5 (fig. 4B, b) without epipod or spinules, a large dense brush of short setae on outer distal surface.

Sternal region of pereopods 3 and 4 (fig. 2D) with thelycal-like structure just posterior to pereopod 4, extending by elongate raised process to base of pereopod 3; deeply cleft, smoothly rounded, raised from sternal substratum.

Abdomen (fig. 1) elongate, dorsoventrally depressed, about 2.5 times carapace length, smooth, shining, unarmed; somite 1 shortest, dorsally bifurcate with horns meeting posterior margin of carapace; a posteromedial dorsal tubercle; somite 2 longest, smooth; somites 3-6 decreasing gradually in length toward tailfan, all bearing tufts of dorsal or dorsolateral setae as shown.

Pleopod 1 (fig. 4C) simple, two-segmented, endopod wanting, distal article (exopod) resembling cleaver or knife blade; pleopods 2-5 biramous; exopod longer, cleaver-like, endopod shorter, foliose, and with a small palp-like appendix interna; both exopod and endopod with numerous, fondlike two-segmented filaments. Appendix masculina on pleopod 2 biramous, a simple elongate two-segmented tube bearing setae at tip, plus short stout obscurely two-segmented basal process armed with series of blunt projections distally (fig. 4D, d).

Telson (fig. 2E) 1.06 times longer than wide, unarmed; anterolateral margin diverging slightly, posterolateral margin converging to rounded posterior margin; dorsal surface with two elongate longitudinal low rounded ridges submedially; representative setae as shown. Uropodal endopod narrower (0.8 ×), shorter (0.9 ×) than exopods, dorsal surface of each with single low, rounded submedian ridge; exopods broadly paddlelike, nearly as wide (0.95 ×) as telson, dorsal surface with two low rounded ridges, outermost shorter, reaching about midpoint of lateral margin, innermost medially placed, extending length of appendage; a series of short thick spines around margin, extending anterolaterally from terminus of outer ridge to inner distal margin, visible under higher magnification (25 ×); representative setae as illustrated.

Remarks. — *Callianidea vandoverae* exhibits a very close morphological relationship with *C. leura* Poore & Griffin, 1979 from the Queensland coast of Australia. In fact the similarities are such that the two species could have conceivably been considered analogues were they separated by only a regional barrier rather than two oceans. The chief differences include the features delineated in the diagnosis, which indicate specific designation. These include the carinate rostrum in *C. vandoverae* (non-carinate in *C. leura*), the different relative lengths of antennular article 1 (shorter in *C. leura*), the two-segmented filaments on pleopods 2 to 5 (one-segmented in *C. leura*), the longer than wide telson in *C. vandoverae* (wider than long in *C. leura*), and the spinulate margin of the uropodal exopod (unarmed in *C. leura*). Possible additional differences may also exist in the propodi of pereopods 3 and 4 which are noticeably

TABLE I

Comparison of morphological characters in three species of *Callianidea*

Character	*C. vandoverae*	*C. leura*	*C. laevicauda*
Chelipeds	Only one cheliped known	Equal	Unequal
Merus	Armed; 1 ventral spine	Armed; 1 ventral spine	Tridenticulate distally
Ischium	Armed; 1 small distal spine	Armed; 1 small distal spine	Unarmed
Maxilliped 3	Pediform	Pediform	Pediform
Merus	Armed; 1 distoventral spine	Armed; 1 distoventral spine	Armed; 1 distoventral spine
Carapace	Smooth, shining, compressed ca. 2.5 × abdomen length	Smooth, shining, compressed; no other data	Smooth, compressed; about 2.7 × abdomen length*)
Cervical groove	Shallow	Shallow	Very deep
Posterior margin	Prominent lobe	Prominent lobe	Prominent lobe
Rostrum	Roundly triangular; armed with 4 teeth; carinate	Bluntly rounded; unarmed; non-carinate	Equilaterally triangular; unarmed; non-carinate
Antennule	Article 1 4-5 × longer than last two articles	Article 1 3 × longer than last two articles	Article 1 slightly longer than last two articles
Antenna	Scaphocerite produced into spine	Scaphocerite produced into spine	No data
	Penultimate joint about 4 × length of preceding article	Penultimate joint ca. 3 × length of preceding article	Penultimate joint longest No other data available
Pereopods 3 and 4	Propodi spinulate distally and on outer surfaces	Propodi unarmed? *)	Propodi unarmed? *)
Pleopods	Filaments foliose; two-segmented	Filaments radiating; one-segmented	Filaments foliose; three-segmented
Telson	Longer than wide Carinae on uropodal endopod unarmed; no marginal tooth	Wider than long Carinae on uropodal endopod unarmed; a minute marginal tooth	No meristic data available Carinae on uropodal endopod with 1 medial, 1 distal spinule; no other data
	Uropodal exopod with series of small marginal spines	Uropodal exopod unarmed	No data on marginal armature

*) No description; data interpolated from illustration.

spinulate in *C. vandoverae*. Although Poore & Griffin illustrate these appendages they show no spinulation, and no mention is made of this feature in the short description of *C. leura*. These features are compared with those of *C. laevicauda* in table I.

Discussion. — Poore & Griffin (1979) suggested that several features seen in *C. leura* were sufficiently different from those of other *Callianidea* to warrant possible generic status. These included the simple branchial filaments on the pleopods, the equal first chelipeds, and the extremely elongate article 1 of the antennule. As seen in the foregoing description, *C. vandoverae* is intermediate between *C. leura* and other *Callianidea* species in possessing two-segmented branchial filaments (instead of one-, three-, or multisegmented). The length of the antennular first article is similar to that of *C. leura*, and as in that species differs from all other known *Callianidea*. Because the left first cheliped is missing in *C. vandoverae* it is impossible to determine whether both chelipeds are equal (as they are in *C. leura* but not in other *Callianidea*).

In this last respect, Poore & Griffin modified St. Laurent's (1973) diagnosis of the genus *Callianidea* by expanding the definition so that the first pereopods might either be equal (*C. leura*) or unequal (all other *Callianidea*). By the same token, the generic diagnosis may be further expanded to include the possibility of a carinate rostrum in species that may be described in the future (as seen in *C. vandoverae*). The expanded diagnosis would read as follows: Carapace smooth, laterally compressed, cervical groove poorly marked, rostrum variable, with or without carina. Eyestalks contiguous, corneae subdistal. Maxilliped 3 with an exopod, endopod pediform, epipod short. Pereopods 1 equal or unequal, carpus much wider than merus, pereopods 2-4 typically with epipods. Pleopods 2-5 bordered by uni- or multi-segmented branchial filaments. Exopods of uropods without a suture. (After St. Laurent 1973, 1979; Poore & Griffin, 1979).

The existence of two species, so morphologically similar yet so widely separated is certainly remarkable. With so little material available for either *C. leura* (2 specimens) or *C. vandoverae* (unique holotype) biogeographical speculation would be meaningless. However, it does suggest that other closely related or intermediate forms may exist, particularly in the eastern Pacific or eastern Atlantic, or along the eastern coast of Africa and the western Indian Ocean. Both areas support extensive coral reef or limestone rocky habitats. Careful collecting in these difficult to sample areas may produce additional material in the genus *Callianidea*.

Ecology. — The holotype male was collected from a sandy shell-hash substratum in 58 m of water. Other members of the genus are noted associates of stony or coralline habitats.

Distribution. — Known at present only from the type locality, the central eastern Florida coast off St. Lucie Inlet, a subtropical zoogeographical transition zone between the warm-temperate Carolinian, and tropical Antillean provinces.

Etymology. — The specific name honors Cindy Lee Van Dover, friend, colleague and ex-research assistant, in recognizance of her material and spiritual aid over the last five years.

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