

## Description of *Coutieralpheus setirostris*, new genus, new species, an infaunal alpheid shrimp (Crustacea: Decapoda) from Florida, U.S.A.

Arthur Anker\* and Darryl L. Felder\*\*

**Abstract.**— *Coutieralpheus*, new genus, is established for *C. setirostris*, new species, on the basis of two specimens, a complete male and an incomplete female, collected from burrows on the tidal flats bordering Fort Pierce Inlet on the Atlantic coast of Florida, U.S.A. The new genus belongs to a large group of alpheid genera characterized by the presence of a posteroventral articulated plate on the sixth abdominal pleuron. The holotype male bears robust, subsymmetrical and equal-sized chelipeds. The mesial side of the cheliped carpus bears several rows of short setae, which are present in only three other, non-related alpheid genera. The two thickened terminal setae on the rostrum are also diagnostic. *Coutieralpheus* appears to combine primitive and highly evolved features and is presumably related to the monotypic genus *Deioneus* Dworschak, Anker & Abed-Navandi from the Eastern Atlantic. However, in some characters the new genus also resembles the genera *Salmoneus* Holthuis, *Alpheopsis* Coutière and *Parabetaeus* Coutière. The host of *C. setirostris* remains unknown, although both the holotype and paratype were collected from substrates richly burrowed by thalassinidean shrimp, stomatopods, and large polychaetes.

### Introduction

Infaunal alpheid shrimps have been

objects of numerous taxonomic and ecological studies that reveal their surprisingly high morphological and phylogenetic diversity. Twelve alpheid genera (*Leptalpheus* Williams, 1965 (s. l.), *Fenneralpheus* Felder & Manning, 1986, *Amphibetaeus* Coutière, 1896, *Salmoneus* Holthuis, 1955, *Deioneus* Dworschak, Anker & Abed-Navandi, 2000, *Orygmalpheus* De Grave & Anker, 2000, *Betaeus* Dana, 1852, *Athanas* Leach, 1814, *Athanopsis* Coutière, 1897, *Stenalpheops* Miya, 1997 (= *Chelomalpheus* Kim, 1998, = *Cavipelta* Hayashi, 1998), *Automate* de Man, 1888 and *Alpheus* Fabricius, 1798) include about 20 species reported as obligate or facultative associates of burrowing animals such as thalassinidean mudshrimps, larger burrowing alpheids, crabs, stomatopods, echiurans, acorn worms, mud gobies and mudskippers (e.g., Coutière, 1899; Schmitt, 1926; Hart, 1964; Williams, 1965; Dawson, 1967; Saloman, 1971; Chace & Abbott, 1980; Miya, 1980, 1984; Felder & Manning, 1986; Berggren, 1991; Branch *et al.*, 1994; Felder *et al.*, 1995, 2003; De Grave & Wilkins, 1997; Felder & Manning, 1997; Froggia & Atkinson, 1998; Hayashi, 1998, 2002; Dworschak & Coelho, 1999; Dworschak *et al.*, 2000; De Grave & Anker, 2000; Nomura, 2000; Anker *et al.*, 2001; Anker, 2003a; Silliman *et al.*, 2003; Itani, pers. comm.; Anker, pers. obs.).

Shallow marine waters of southern Florida harbor a rich assemblage of infaunal alpheids, with three described species, *Leptalpheus forceps* Williams, 1965, *Fenneralpheus chacei* Felder & Manning, 1986 and *Salmoneus cavicolus* Felder &

Manning, 1986 (Saloman, 1971, Felder & Manning, 1986; Felder *et al.*, 2003) and at least five more known but as yet undescribed species, three putatively assignable or very closely related to *Leptalpheus* and two assignable to *Salmoneus* aff. *cavicolus* (Felder & Manning, 1997; Felder *et al.*, 2003; Felder, pers. obs.; Anker, pers. obs.). In addition to the aforementioned undescribed forms is also a very peculiar undescribed alpheid collected from burrows of an unknown host on intertidal sand flats bordering Fort Pierce Inlet on the Atlantic coast of Florida. Because of the unique combination of morphological features this new species could not be assigned to any presently known genus of the family Alpheidae. This species is herewith described and placed in a new genus.

#### Materials and Methods

Specimens were collected by sieving sediments extracted with a bait suction pump, also termed a "yabby pump" (see Manning, 1975), that was applied to burrow openings on an tidal mudflat of the Indian River Lagoon near the Fort Pierce Inlet, St. Lucie County, Florida. Specimens were initially fixed in 10% buffered formalin solution and subsequently preserved in 70% ethanol. Drawings were made with the aid of a camera lucida, and most were based on moulted exuvia of the holotype specimen (thus avoiding the dissection of the appendages and the resulting unavoidable damage of the unique complete specimen). An alcohol based solution of Chlorazole Black E stain (Sigma Chemical Company®) was used to enhance visibility of fine sutures and articulations in the integument prior to illustration. Carapace length (CL) and the total length (TL) were measured in  $\pm 0.1$ mm with a calibrated ocular micrometer. Measurements were made along the dorsomedial line from the rostral tip to the posterior margin of the carapace (CL), or to the posterior margin of the telson (TL). The type specimens were deposited in the collections of the National

Museum of Natural History, Smithsonian Institution, Washington D.C., U.S.A. (USNM).

#### Taxonomy

Alpheidae Rafinesque, 1815

*Coutieralpheus*, new genus

Diagnosis.—Carapace glabrous, with very finely marked anterolateral suture; branchiostegial margin of carapace without pronounced ventral lip; frontal region with rostrum bearing 2 thickened setae, orbital teeth absent; pterygostomial angle produced anteriorly, rounded; eyes completely concealed in dorsal view, partly visible in lateral and frontal view, eyestalk without anteromesial process or tubercle; antennular peduncle robust, first segment with ventromesial tooth; stylocerite short, robust, not appressed; second segment not elongated; outer antennular flagellum biramous; mandible typical for family, with incisor process bearing triangular distal teeth, molar process bearing a row of lamellae and setae, and with short 2-segmented palp; first maxilliped with caridean lobe expanded; second maxilliped with epipod elongate; third maxilliped pediform, lateral plate conspicuously elongate, subacute, terminal segment with rows of long, distally thickened setae, tip armed with 1 small subdistal spine; first pereopods (chelipeds) enlarged, equal in size and shape, robust, carried extended; major cheliped with ischium bearing 1 spine on ventrolateral margin; merus robust, ventrally not depressed or excavated; carpus short, robust, cup-shaped, mesially with rows of setae; chela subcylindrical; palm smooth, linea impressa absent; cutting edges of fingers armed with irregular teeth, snapping mechanism absent; adhesive discs absent; second pereopod with 5-segmented carpus; third pereopod ischium and merus armed with spines on ventral margin, carpus unarmed; propodus armed with small spines on ventral margin, dactylus simple; fifth pereopod with ischium and merus unarmed, propodus with well developed

brush of setae; sixth abdominal segment with articulated plate at posterolateral angle; second male pleopod with appendix interna and appendix masculina; uropod with exopod bearing lateral spine and diaeresis, latter without particular modifications; telson with 2 pairs of dorsal spines and 2 pairs of posterolateral spines, posterior margin rounded, anal tubercles absent; gill formula typical for family: 5 pleurobranchs (P1-5), 1 arthrobranch (Mxp3), 0 podobranch, 2 lobed epipods (Mxp1-2), 5 strap-like epipods = mastigobranchs (Mxp3, P1-4), 5 sets of setobranchs (P1-5), 3 exopods (Mxp1-3).

Type species.—*Coutieralpheus setirostris*, new species.

Gender.—Masculine.

**Etymology.**—This new genus is dedicated to Professor Henri Coutière (1869-1952), an eminent French carcinologist, for numerous contributions to the knowledge of alpheid shrimps that included a major monograph of the family Alpheidae (Coutière, 1899). Coutière was the first author to report the association of an alpheid shrimp with calianassid ghost shrimp and other burrowing animals in Djibouti.

**Relationships.**—See remarks under *Coutieralpheus setirostris*, new species.

***Coutieralpheus setirostris***, new species  
(Figs. 1-6)

**Material examined.**—Holotype: South margin of Fort Pierce Inlet channel, beside U.S. Highway A1A South Causeway, sparsely vegetated intertidal sand flat, Indian River Lagoon, St. Lucie County, Florida, 27° 27.7'N, 80° 18.7'W, 11 August 1986, collected by R. B. Manning, D. L. Felder and W. Lee, 1 male, CL 8.6 mm, TL 21.8 mm, USNM 1072201. Paratype: Same location, date, and collectors, 1 female, CL 4.0mm, TL 9.1mm, USNM 1072202.

**Description.**—Body relatively stout, slightly elongated (Fig. 1), not particularly compressed laterally, carapace and abdomen glabrous. Carapace with distinct suture proximal to base of antenna (Figs. 1, 2a). Rostrum triangular, broad at base, longer than wide, rostral carina very slight, terminus bearing 2 thick anteriorly directed setae (Fig. 2a). Orbital teeth absent (Fig. 2a, b). Pterygostomial angle protruding anteriorly, rounded (Fig. 2b). Branchiostegial margin with scant setae (Fig. 2g). Cardiac notch well developed (Fig. 2g). Eyes completely covered by carapace, not visible in dorsal view, exposed in lateral and anterior view, without anteromesial process or tubercle, cornea well developed (Fig. 2a, b). Ocellar beak not conspicuous. Epistomial sclerite with low, subacute process, without pronounced acute tooth.

Antennular peduncle stout (Fig. 2a, d), second article not much longer than first or third; stylocerite almost reaching distal margin of first article, distally acute or subacute (Fig. 2a); ventromesial carina with blade-like tooth as illustrated (Fig. 2d); lateral flagellum biramous, with shorter ramus well developed, situated at 4th segment (Fig. 2d). Antenna with basicerite bearing strong ventrolateral tooth (Fig. 2b); scaphocerite broadly oval, anterior margin of blade convex, slightly protruding beyond distolateral spine (Fig. 2a, e, f); carpocerite robust, not reaching distal margin of scaphocerite (Fig. 2b, e).

Mouthparts not especially modified, typical for family. Mandible with incisor process bearing 6 teeth, third dorsal largest (Fig. 3a). Maxillule with palp bilobed, dorsal lobe with a few slender setae, ventral lobe with 1 robust seta (Fig. 3b). Maxilla with scaphognathite expanded (Fig. 3c), palp (endopod) small, not segmented. First maxilliped with caridean lobe on exopod expanded (Fig. 3d); palp (endopod) segmented. Second maxilliped with epipod elongated; propodus with fine transverse suture on mesial side (Fig. 3e). Third maxilliped relatively slender (Fig. 3g); lateral plate elongated, distally subacute

(Fig. 3h, j); antepenultimate segment somewhat flattened, subtriangular in cross-section; terminal segment with tip subacute and armed with 1 subdistal spine (Fig. 3i); arthrobranch well developed (Fig. 3j).

First pereopods (chelipeds) equal in size and similar (subsymmetrical) in shape, robust and carried extended (Fig. 1); ischium short, robust, ventrolateral margin with 1 spine (Fig. 4a); merus short, stout, slightly widening distally, margins unarmed (Fig. 4a); carpus stout, cup-shaped, with 2 blunt processes distally (Fig. 4a, c), with 3 rows of setae mesially (Fig. 4c, d); chela subcylindrical, smooth, palm about twice length of fingers; palm with shallow ventroproximal depression (Fig. 3a, c); linea impressa and adhesive discs absent; fingers not gaping when closed (Fig. 4b), tips strongly curved distally, crossing (Fig. 4b); cutting edges of pollex and dactylus armed with irregular teeth and bearing numerous setae, as illustrated (Fig. 4e, f); dactylus armed on only proximal 3/5 length of cutting edge, pollex armed on cutting edge except for most distal part; armature on left cheliped differing little from that on right cheliped (cf. Fig. 4e and f); cutting edges of fingers with numerous, conspicuous, regularly spaced setae along almost entire length (Fig. 4f).

Second pereopod slender; ischium more than 1/2 length of merus; carpus with 5 segments having ratio of 3 : 1 : 1 : 1.2 : 1.5 (Fig. 5a); chela simple, fingers distinctly longer than palm (Fig. 5a). Third pereopod relatively slender; ischium bearing 2 spines on ventrolateral margin (Fig. 5b); merus about twice length of ischium and 1.8 times length of carpus, armed with 1 spine on ventrolateral margin; carpus unarmed, with small distoventral seta; propodus 1.5 times longer than carpus, ventrally with 4-5 small spines + 1 distoventral spine proximal to dactylus (Fig. 5b, c); dactylus simple, conical, slender, curved, about 0.4 length of propodus (Fig. 5b, c). Fourth pereopod similar to third; merus armed with 1 or 2 spines (Fig. 5d, e). Fifth pereopod slightly more slender than third and fourth pereopods (Fig. 5f);

ischium unarmed; merus less than twice length of ischium and 1.3 times length of carpus, unarmed or armed with 1 spine on ventrolateral margin (Fig. 5f, h); carpus unarmed; propodus about 1.8 length of carpus, ventrally with few small spines and at least 8 rows of setae (Fig. 5g); dactylus only 0.3 times length of propodus, otherwise similar to that of third and fourth pereopod.

Abdominal segments I-V with posterolateral angles of pleura rounded to weakly angular (Figs. 1, 2k); segment VI posteriorly with acute midlateral projection above articulated posterolateral plate (Fig. 2k); preanal plate posteriorly rounded (Fig. 2l). Male first pleopod with endopod less than half length of exopod (Fig. 2h). Male second pleopod with both appendix masculina and appendix interna; appendix masculina slender, twice length of appendix interna, reaching 3/4 length of endopod, distally bearing slender spines (Fig. 2i, j). Female second pleopod with appendix interna only. Telson relatively slender, slightly tapering, proximal width about 3 times median length; dorsal surface with 2 pairs of spines positioned well dorsal to lateral margin, anterior pair just posterior to mid-length and posterior pair in distal 1/4 of telson length (Fig. 2o); posterior margin rounded, with 2 pairs of robust posterolateral spines, lateral shorter than mesial (Fig. 2o); anal tubercles absent. Uropods distinctly exceeding telson (Fig. 1); lateral lobe of sympodite distally forming single acute tooth (Fig. 2m); endopod subequal to exopod in length (Fig. 2m); exopod with diaeresis forming relatively straight suture between mesial margin and triangular lateral tooth (Fig. 2n); lateral spine stout, short (Fig. 2n). Gill formula as given for genus.

Size.—For the two known specimens, CL ranges from 4.0 mm in what is likely an immature female paratype to 8.6 mm in the apparently mature male holotype specimen; TL in these specimens ranges from 9.1 mm to 21.8 mm, respectively.

Colour.—Overall whitish translucent, with faint patterning of reddish pink to pale rose orange color (Fig. 6). Colour most obvi-

ous on abdominal somites 2-5 in posterior half of each tergite, creating faintly banded appearance on abdomen. Similar colour weakly in evidence on antennular peduncles where closely set spots produce a weakly banded appearance proximally but are more diffuse distally.

**Habitat.**—Specimens are known from only the type locality, which is a sandy intertidal flat immediately north of the Highway A1A South Causeway between the town of Fort Pierce and Fort Pierce Beach on the Atlantic shoreline. The habitat borders the southern margin of the Fort Pierce Inlet channel and is separated from the north shoreline of the causeway by a shallow (1 m deep) channel. Upper reaches of the flat are exposed at low tide and bear a sparse cover of short sea grass, though this cover becomes denser and longer where the flat slopes to greater depths. Sediments and burrow waters were extracted from a variety of burrow openings in the course of sampling at this site, but no identifiable host was noted to have been found in the specific sample or samples from which these alpheid specimens were collected. While samples were taken during low tide, it also is uncertain as to whether the extracted sediments were taken on the crest of the flat or along the flooded margins, which were typically sampled to water depths of about 0.3 m. Although the host of *Coutieralpheus setirostris* remains unknown, the flat is richly burrowed by thalassinidean shrimp, stomatopods, large polychaetes, nemertean, bivalves and sipunculans. The single male and single small female of this new genus and species were collected on the same date from same site, and may well have occurred together in the same sample taken from the same host burrow. Only years later, after sorting and separate archival, was it recognized that they represented the same undescribed form. It is remarkable that, despite over twenty years of recurrent, concerted collecting there by one of us (DLF) and the late Raymond B. Manning, no additional specimens have been found.

**Distribution.**—Presently known from only intertidal substrates of the type locality near Fort Pierce Inlet on the Atlantic coast of Florida, U.S.A.

**Etymology.**—Specific name derived from the presence of two very characteristic, thickened terminal setae on the rostrum.

**Remarks.**—The paratype female, which is much smaller than the male holotype, was somewhat damaged during collection and lacks its first pereopods. While it appears to rather closely match the holotype male in those characters that can be examined, nothing is known of possible sexual dimorphism in the chelipeds. The fine anterolateral suture of the carapace is extremely difficult to see in this specimen, but is also difficult to visualize in the holotype male without staining (though it is readily evident in the exuvia of this specimen).

The phylogenetic relationships of *Coutieralpheus setirostris* and the genus *Coutieralpheus* are not clear. Several features considered to be plesiomorphic within the family Alpheidae (Anker, pers. obs.), such as symmetrical chelipeds, a complete set of epipods on coxae of pereopods, and the presence of a row of setae on the mesial side of the cheliped carpus, suggest that *Coutieralpheus* is a relatively basal alpheid genus. The new genus appears to be most closely related to the monotypic genus *Deioneus*. The type species of *Deioneus*, *D. sandizelli* Dworschak, Anker & Abed-Navandi, 2000, is known from only two females collected from burrows of the callinassid mudshrimps *Corallianassa intesi* (de Saint-Laurent & Le Loeuff, 1979) and *Neocallichirus pachydactylus* (A. Milne-Edwards, 1870) in the Cape Verde Islands (Dworschak *et al.*, 2000; Abed-Navandi, 2000). Both genera are characterized by the following features: (1) sixth abdominal pleuron with an articulated plate; (2) broadly triangular rostrum; (3) carapace with anterolateral suture; (4) well developed arthrobranch and elongated lateral plate on the coxa of the third maxilliped; (5) complete set of strap-like epipods (mastigobranchs); (6) chelipeds

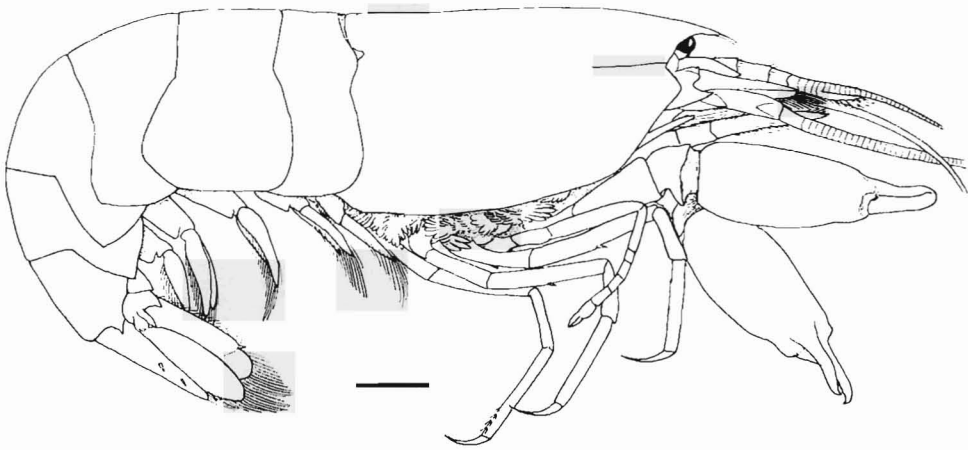


Fig. 1. *Coutieralpheus setirostris*, n. gen., n. sp., holotype male (USNM 1072201): habitus. Scale: 1 mm.

subequal or equal in size; and (7) expanded caridean lobe and elongated epipod on the first and second maxillipeds, respectively. However, *Coutieralpheus* differs from *Deioneus* in many respects, including the following: (1) ischium and merus of the third and fourth pereopods armed with spines (as compared to unarmed in *D. sandizelli*); (2) frontal margin lacking orbital teeth (vs. with small extra-corneal teeth in *D. sandizelli*); (3) chelipeds much more stout and carried extended (vs. more slender and carried folded in *D. sandizelli*); (5) merus of the chelipeds ventrally not particularly depressed (vs. ventrally excavated in *D. sandizelli*); (6) chelae of the chelipeds symmetrical on the two sides of the body, differing insignificantly in teeth armature (vs. very asymmetrical and differently armed in *D. sandizelli*); (7) carpus of the cheliped mesially bearing rows of setae (absent in *D. sandizelli*); (8) posterior margin of the telson broadly rounded (vs. small and truncate in *D. sandizelli*); (9) stylocerite short, barely reaching to the distal margin of the first article of the antennular peduncle (vs. longer, reaching to the middle of the second article in *D. sandizelli*); (10) rostrum bearing two thickened setae (absent in *D. sandizelli*) and (11) ischium of the cheliped bearing small ventrolateral spine (absent in *D. sandizelli*).

*Deioneus* is possibly also allied to *Salmoneus* Holthuis, 1955, at least to a small group of species with an enlarged minor cheliped (Dworschak *et al.*, 2000). However, *Coutieralpheus* can be separated from all species of *Salmoneus* by many features. Among these, its sixth abdominal segment bears an articulated posterolateral plate (lacking in *Salmoneus*) and the merus on its third and fourth pereopods is typically armed with one or two spines (unarmed in *Salmoneus*). It is also separated from *Salmoneus* by several of the same above-listed features that separate it from *Deioneus* (2), (3), (6), (7), (8, truncate or with median incision in *Salmoneus*), (9) and (10). Furthermore, the second pleopod of the female paratype does not have an appendix masculina, whereas specimens of *Salmoneus*, including ovigerous females, always have a well-developed appendix masculina (Carvacho, 1989; Anker, 2003b; Anker, pers. obs.). The differences between *Deioneus* and *Leptalpheus* were discussed in detail by Dworschak *et al.* (2000).

The new genus also shows some affinities to the genera *Alpheopsis* Coutière, 1896 and *Parabetaeus* Coutière, 1896. *Alpheopsis*, as presently defined (e.g., Banner & Banner, 1973; Chace, 1988), is morphologically very heterogeneous and possibly not a mono-

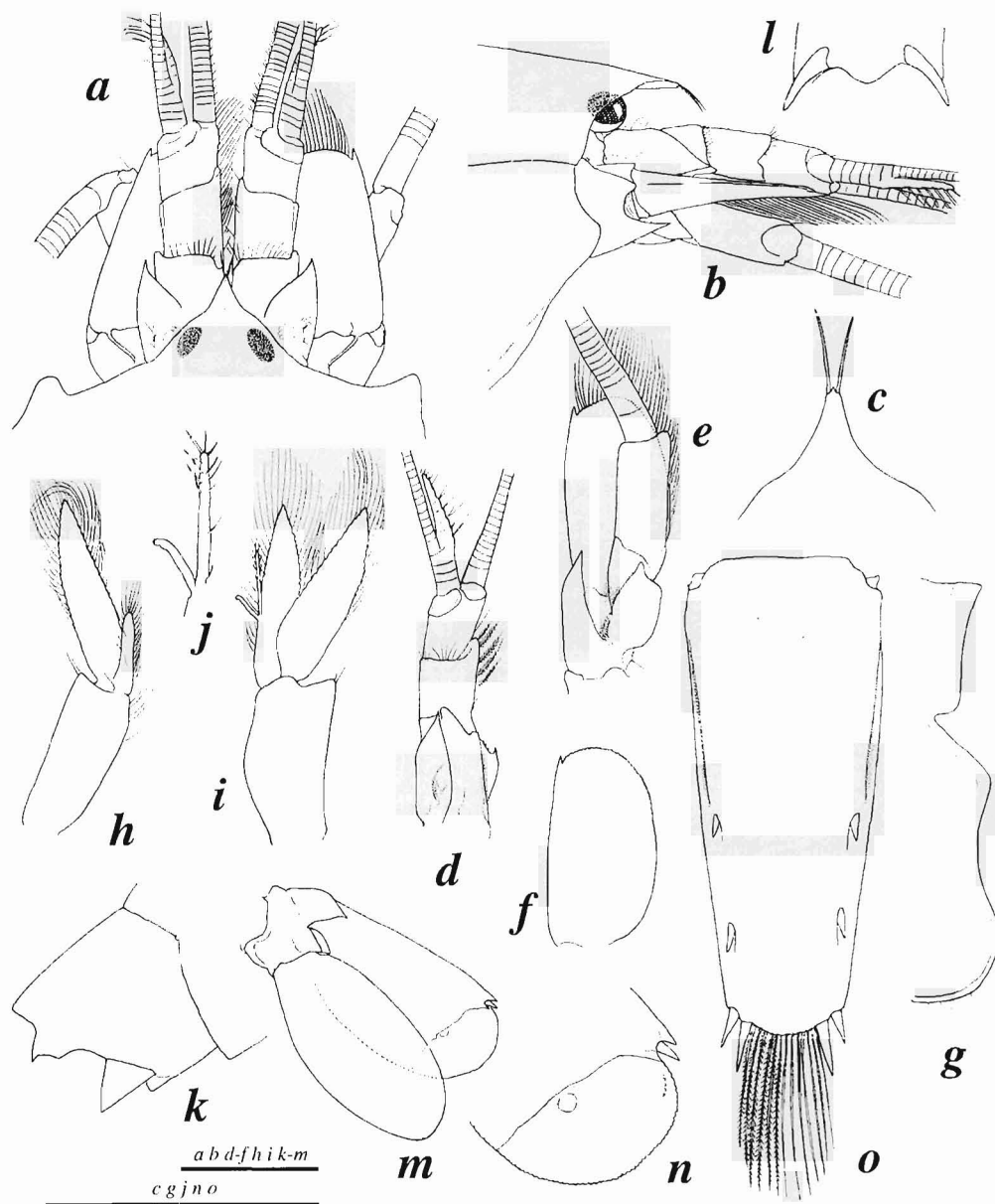


Fig. 2. *Coutieralpheus setirostris*, n. gen., n. sp., holotype male (USNM 1072201): a, frontal region, dorsal view; b, same, lateral view; c, rostrum, dorsal view; d, antennule, lateral view; e, antenna, ventral view; f, same, scaphocerite, dorsal view; g, posterior margin of carapace; h, first pleopod; i, second pleopod; j, same, detail of appendix masculina and appendix interna; k, sixth abdominal segment, lateral view; l, same, preanal plate, ventral view; m, uropod; n, same, distal portion of exopod; o, telson, dorsal view. Scales: 1 mm.

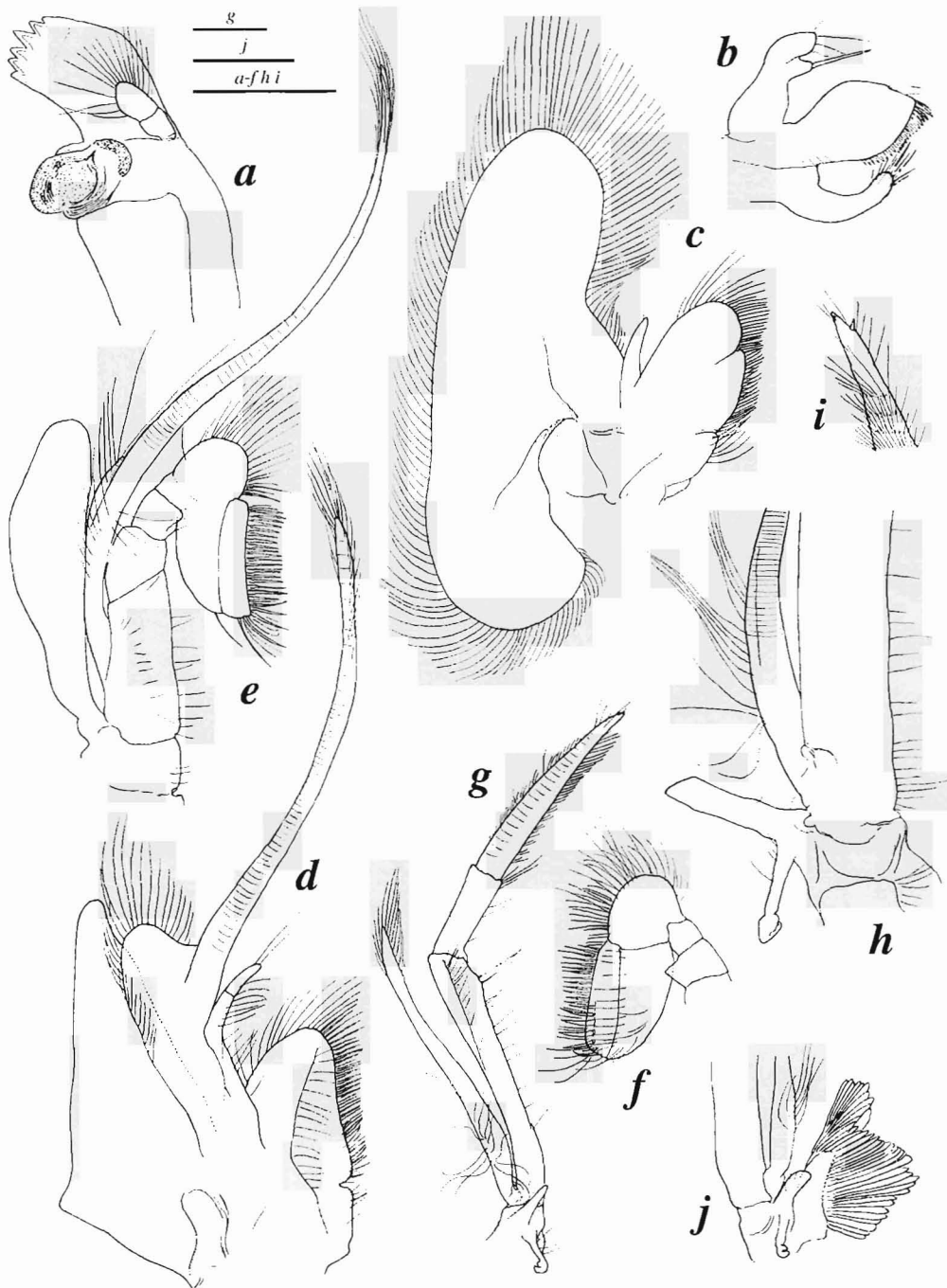


Fig. 3. *Coutieralpheus setirostris*, n. gen., n. sp., holotype male (USNM 1072201): a, mandible; b, maxillule; c, maxilla; d, first maxilliped; e, second maxilliped; f, same, distal portion of endopod, mesial view; g, third maxilliped (arthrobranch not drawn); h, same, basal portion (arthrobranch not drawn); i, same, distal portion; j, same, detail of arthrobranch. Scales: 1 mm.



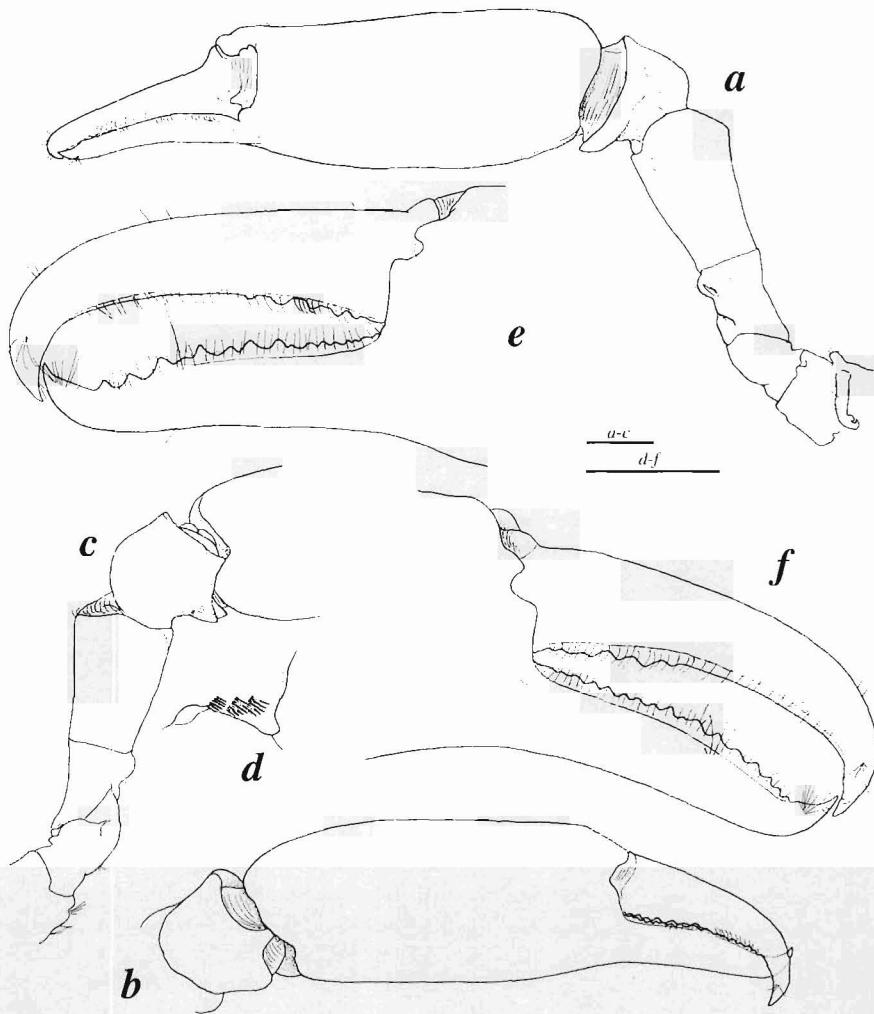


Fig. 4. *Coutieralpheus setirostris*, n. gen., n. sp., holotype male (USNM 1072201): a, left cheliped, lateral view; b, same, carpus and chela, mesial view; c, same, ischium, merus and carpus, mesial view; d, detail of setal rows on carpus; e, same, fingers of chela; f, right cheliped, fingers of chela. Scales: 1 mm.

phyletic genus (Anker, pers. obs.). *Parabetaeus*, as redefined by Nomura & Anker (2000), appears to be closely related to some species within *Alpheopsis* (s. lat.). *Coutieralpheus* differs from both *Alpheopsis* (s. lat.) and from *Parabetaeus* in the following characteristics: (1) elongate lateral plate on the coxa of the third maxilliped (not elongate in *Alpheopsis* and *Parabetaeus*); (2) carapace with a distinct anterolateral suture (absent in *Alpheopsis* and *Parabetaeus*); (3) rostrum bearing distally two thickened setae

(absent in *Alpheopsis* and *Parabetaeus*); (4) carpus of the chelipeds bearing mesial rows of setae (lacking in *Alpheopsis* and *Parabetaeus*); (5) short and stout stylocerite, barely reaching the distal margin of the first article of the antennular peduncle (vs. much longer, reaching at least to the middle of the second article or to the third article in *Alpheopsis* and *Parabetaeus*); (6) expanded caridean lobe and elongate epipod on the first and second maxillipeds, respectively (caridean lobe not expanded, epipod not

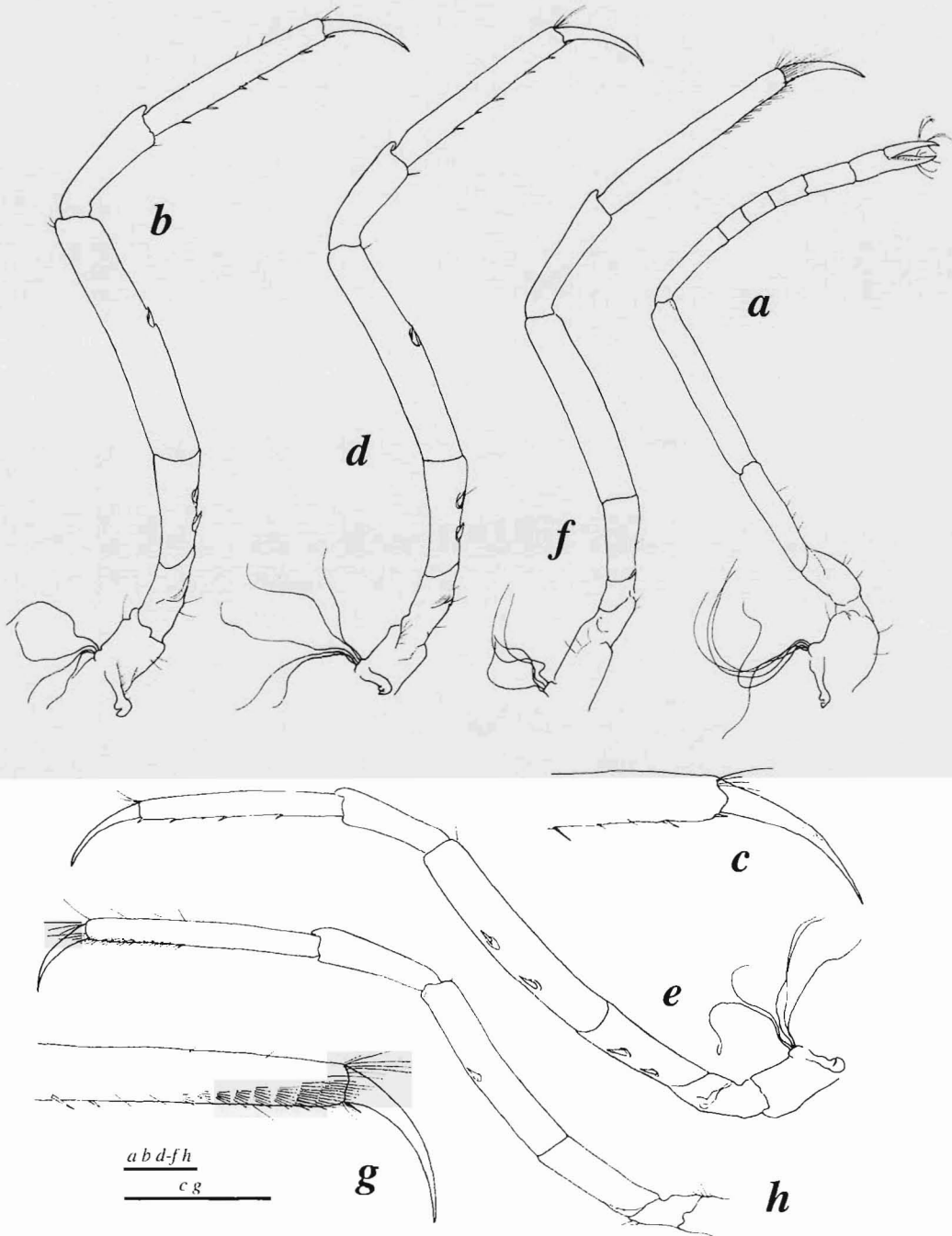


Fig. 5. *Coutieralpheus setirostris*, n. gen., n. sp., holotype male (USNM 1072201): a, right second pereopod; b, right third pereopod; c, same, distal propodus and dactylus; d, right fourth pereopod; e, left fourth pereopod; f, right fifth pereopod; g, same, distal propodus and dactylus; h, left fifth pereopod. Scales: 1 mm.

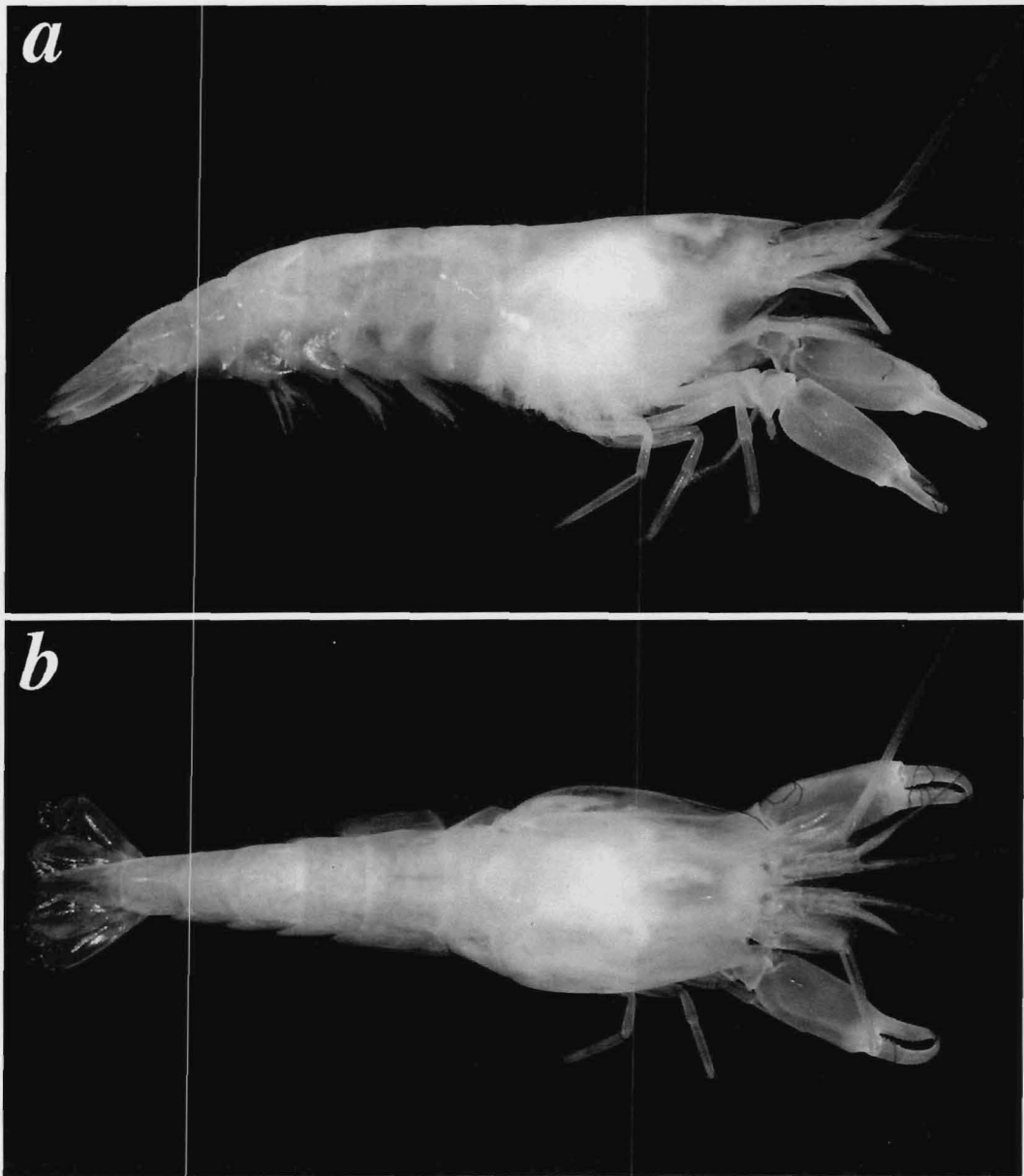


Fig. 6. *Coutieralpheus setirostris*, n. gen., n. sp., post-moult holotype male prior to preservation (USNM 1072201): a, lateral view; b, dorsal view (photographs by DLF).

elongate in *Alpheopsis* and *Parabetaeus*); and (7) ischium of the cheliped bearing small ventrolateral spine (absent in *Alpheopsis* and *Parabetaeus*). The new genus can be separated from *Parabetaeus* by at least three further features: (1) rounded posterior margin of the telson (vs. with median triangular protru-

sion in *Parabetaeus*); (2) frontal margin bearing broadly triangular rostrum and lacking orbital teeth (vs. without or with small blunt rostrum, and with more or less developed extra-corneal teeth in *Parabetaeus*); and (3) chelipeds stout and carried extended (vs. more slender and capable of flexion due to

the ventral flattening or depression of the merus in *Parabetaeus*). The chelipeds of *Coutieralpheus setirostris* are superficially similar to the chelipeds of several species of *Alpheopsis*. However, all species of *Alpheopsis* with non-sculptured chelipeds have spines on the dorsal margin of the ischium of the chelipeds; these spines are lacking in *Coutieralpheus setirostris*. From the preceding morphological comparisons, it appears that *Coutieralpheus* is not closely related to any other alpheid genus, with the possible exception of *Deioneus*.

#### Acknowledgements

We owe a tremendous debt to the late Raymond B. Manning of the National Museum of Natural History, Smithsonian Institution, for his leadership in studies of the Indian River Lagoon infaunal decapods. As in the present paper, the materials that he collected, independently and in collaboration with one of us (DLF), will continue to advance our understanding of decapod diversity in this region for many years to come. We are also grateful to Mary E. Rice and Valerie Paul (former and present station directors, respectively) for their continued support of research efforts by DLF based at the Smithsonian Marine Laboratory, Fort Pierce, both through small grants and provision of access to facilities. Additional support for this study was provided under US National Science Foundation grant no. DEB-0315995 to DLF. We are also indebted to A. Richard Palmer (Department of Biological Sciences, University of Alberta, Edmonton) for the financial support from his NSERC operating grant (A7245), enabling AA to travel to Lafayette in November 2003. This is contribution number 611 from the Smithsonian Marine Station, Fort Pierce, and contribution number 105 from the University of Louisiana Laboratory for Crustacean Research.

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Addresses: (AA) Smithsonian Tropical Research Institute, Naos Unit 0948 APO AA 34002, U.S.A.; (DLF) Department of Biology, University of Louisiana, Lafayette, LA, 70504-2451, U.S.A.

Emails: (AA) anker@si.edu; (DLF) dlfd4517@louisiana.edu