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A NEW CRAWFISH OF THE GENUS *CAMBARUS* FROM  
SOUTHWEST LOUISIANA (DECAPODA; ASTACIDAE)

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The species herein described first came to my attention when I noticed an unidentified crawfish in the McNeese invertebrate collection bearing an aberrant right chela, the immovable finger of which was inflated into a palm with five fingers. Other specimens were later added from the Lake Charles and Carlyss, Louisiana areas.

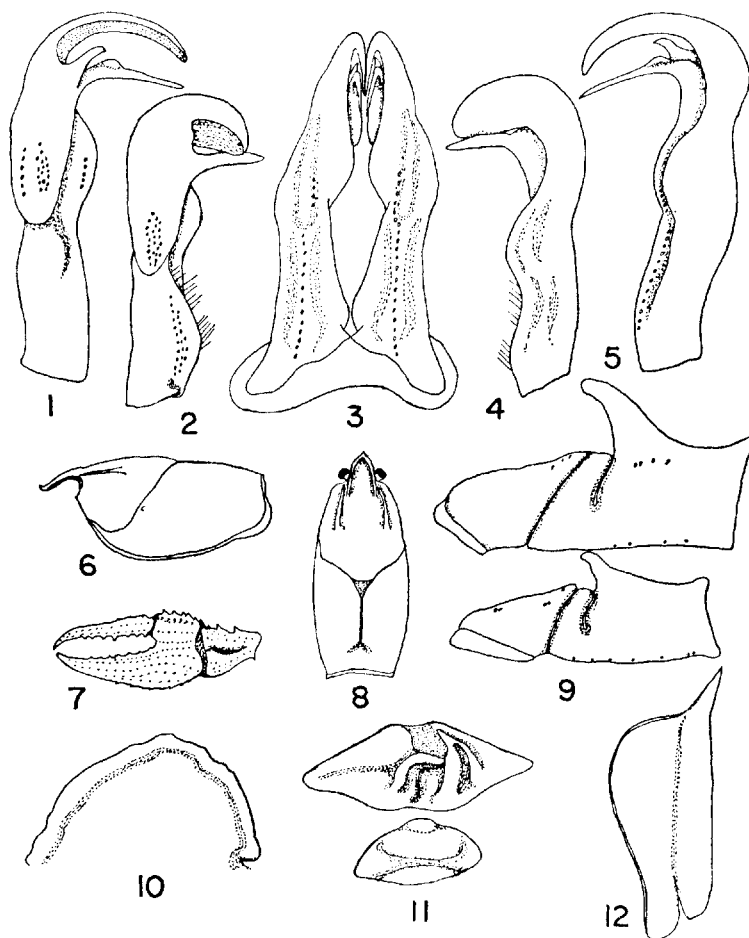
To my knowledge, this is the third species of *Cambarus* to be described in which the first form males bear three distinct elements on the terminal end of the first pleopod, rather than the usual two. Both of the previous descriptions are recent: *C. pristinus* Hobbs (1965) and *C. strawni* Reimer (1966).

This crawfish is also unusual in that the ischiopodites of both the third and fourth pereopods of first form males bear hooks. Males of other known species of *Cambarus*, with the exception of *C. dissitus* Penn (1955), bear hooks on the third pereopod only.

I wish to thank Dr. Horton H. Hobbs, Jr., United States National Museum for his constructive criticism of the manuscript. I also wish to thank Mr. Jerry Walls, my wife, Marilyn and daughter, Ruth Anne for help with the collections. Most helpful were several collections given to me by Mr. L. R. Ford, biology teacher at Sulphur High School.

***Cambarus macneesei* new species**

*Diagnosis:* Body pigmented; eyes well developed and pigmented; rostrum without marginal spines; antennal scale extending slightly beyond tip of rostrum. Rostrum directed cephaloventrad; upper surface deeply excavate; margins converging slightly from base and turning



FIGS. 1-12. *Cambarus macneesei* new species. 1, mesial view of first pleopod of holotype; 2, mesial view of first pleopod of morphotype; 3, caudal view of first pleopods of holotype; 4, lateral view of first pleopod of morphotype; 5, lateral view of first pleopod of holotype; 6, lateral view of carapace of holotype; 7, chela and carpus of holotype; 8, dorsal view of carapace of holotype; 9, basipodite and ischiopodite of third and fourth pereiopods of holotype; 10, epistome of holotype; 11, annulus ventralis of holotype; 12, antennal scale of holotype.

mesiad abruptly toward tip, giving practically no acumen. Arcola obliterated or very narrow in middle. Chela depressed apically, palm inflated; hooks on ischiopodites of third and fourth pereiopods. First pleopod of first form male reaching base of third pereiopod, when

abdomen is flexed, and terminating in three parts: mesial process (Figs. 1, 5) inflated near base, non-corneous and directed caudoproximad at slightly more than right angle to main shaft of appendage; central projection (Figs. 1, 5) bladeliike, corneous, with entire tip, and recurved caudomesiad so that right and left central projections are in contact *in situ* (Fig. 3); cephalic process (Fig. 1) short, corneous and directed caudomesiad at about 75 degree angle to main shaft. Annulus ventralis as figured (Fig. 11).

*Holotype male, form I:* Pigmented, eyes normal; body ovate; abdomen narrower than cephalothorax. Carapace (Figs. 6, 8) deeper than wide (12.5 and 12.3 mm) in region of caudodorsal margin of cervical groove; carapace widest slightly caudal of caudodorsal margin of cervical groove.

Areola (Fig. 8) obliterated in middle; cephalic section of cephalothorax 1.6 times longer than areola; length of areola 38.3 percent of entire length of carapace. Rostrum with thickened, elevated, convergent margins; short acumen, not distinctly delimited at base, terminating apically in upturned tubercle. Upper surface of rostrum strongly excavate, with row of setiferous punctations mesial to elevated margins. Postorbital ridges low and terminating anteriorly without spines. Branchiostegal spines minute. Surface of carapace sparsely punctate dorsally and slightly granulate laterally. Carapace slightly longer than abdomen (26.6 and 25.5 mm).

Cephalic section of telson with two spines in each caudolateral corner. Epistome (Fig. 10) wider than long with no cephalomedian projection; ventrolateral margin slightly crenulated. Antennules of usual form with spine on ventral surface of basal segment. Antennae extending caudad to middle of second abdominal segment. Antennal scale (Fig. 12) short, reaching only slightly beyond tip of rostrum, 3.0 times longer than broad with greatest width slightly distal to midlength. Lateral margin terminating in strong spine.

Left chela (right missing) depressed; palm inflated; thickness of palm about 60 percent of its width. (16.2 and 7.3 mm); fingers and palm and adjacent upper surface with row of six tubercles and a few scattered tubercles distally (Fig. 7). Opposable margins of both dactyl and immovable finger with row of seven larger tubercles with numerous smaller tubercles distally, third tubercle from base larger on immovable finger, fourth tubercle from base larger on dactyl. Carpus (Fig. 7) longer than wide, slightly longer than mesial margin of palm, with a well-defined longitudinal furrow above. Mesial margin with two major tubercles, distal one larger. Upper surface punctate; lower surface sparsely punctate with two prominent distal tubercles.

Hooks (Fig. 9) on ischiopodites of third and fourth pereopods. Hooks simple; length of hook on third pereopod about 60 percent of greatest width of ischiopodite; length of hook on fourth pereopod about one half greatest width of ischiopodite.

Coxopodite of fourth pereopod with prominent, flattened, ventro-

caudally projecting prominence abutting cephalic margin of coxopodite of fifth pereopod.

First pleopods (Figs. 1, 3, 5) symmetrical. See diagnosis for description.

*Allotypic female*: Excluding sexual dimorphism, differing from holotype in following respects; crenulation of ventrolateral margin of epistome more pronounced; chela slightly reduced but with similar sculpture. Annulus ventralis (Fig. 11) immovable, about 2.4 times wider than long; cephalomedian trough flanked by longitudinal ridges, narrowing near midlength with cephalic curve of trough directed caudosinistrally and caudal portion of trough directed caudodextrally; sinus originating sinistral to midventral line slightly caudal to midlength, extending dextrally across median line before curving caudally to end on caudal wall of annulus. Sternal sclerite immediately caudal to annulus rounded ventrally and about twice as broad as long. The sternite of fourth thoracic segment smooth and not encroaching on annulus.

*Morphotypic male, form II*: Differs from holotype in following respects: areola depressed forming shallow trough; antennal scale reaching only to tip of rostrum; chela proportionately narrower and less thick; hooks on ischiopodites of third and fourth pereopods reduced, although still easily discernable; prominence on coxopodite of fourth pereopod only slightly less developed than in holotype. First pleopods (Figs. 2, 4) reaching to caudal margin of coxopodites of third pereopods when abdomen is flexed; all processes reduced and non-corneous; cephalic process appearing only as slight elevation to central projection.

*Measurements*: see Table 1.

*Type-locality*: Roadside ditches along East McNeese Road, 1.8 miles west of intersection of East McNeese Road and Louisiana Highway 14, Lake Charles, Calcasieu Parish, Louisiana. The ditches are adjacent to pastures and drain into Calcasieu River, which is some four miles to the west. All specimens were taken from flooded ditches following heavy rains. The ditches are dry at other times and it is assumed that the crawfishes burrow. Several simple burrows with low chimneys were noted, but it was not determined whether these burrows were occupied by *C. macneesei* or by other species. *C. macneesei* shares these ditches with *C. hedgpethi* Hobbs, *C. diogenes ludovicianus* Faxon and *Procambarus blandingi acutus* (Girard).

*Disposition of types*: The holotypic male, form I, allotypic female, and morphotypic male, form II are deposited in the United States National Museum (nos. 117681, 117682 and 117683, respectively). Paratypic series consisting of one male, form I, one female and one male form II are deposited in the invertebrate collections of Mississippi State University, Tulane University and the Museum of Comparative Zoology. The remaining paratypes are in my personal collection.

*Geographic distribution*: The type series of *Cambarus macneesei* were collected from four localities in southwest Louisiana. All known localities are within the drainage of the Calcasieu River, Calcasieu

TABLE 1. Measurements (in mm) of *Cambarus macneesei*.

		Holotype	Allotype	Morpho- type
Carapace	Length	26.6	26.0	24.8
	Width (greatest)	12.3	11.5	11.4
	Depth (greatest)	12.5	11.3	11.2
Rostrum	Length	5.0	5.0	4.5
	Width (at base)	4.0	4.0	3.5
Antennal scale	Length	3.6	broken	3.3
	Width (greatest)	1.2	1.2	1.2
Epistome	Width (at base)	2.2	2.3	2.2
	Length	1.1	1.1	1.1
Length of abdomen		24.0	24.1	23.0
Arcola	Length	10.2	10.4	10.1
	Width (least)	0.0	0.0	0.0
Chela	Length (outer margin)	16.2	14.4	15.7
	Length of dactyl	9.5	8.6	9.3
	Width of palm	7.3	6.4	6.8
	Thickness of palm	4.4	4.0	4.2

Parish, Louisiana. These records are as follows: one male, form I, Maplewood, collector unknown (JBB 88); four males, form I, two males, form II, type locality, J. Black and J. Walls (JBB 99); one male, form I, four males, form II, two females, three juvenile males and four juvenile females, backyard of residence, 4422 Sarver Street, Lake Charles, J. and R. A. Black (JBB 117); three males, form I, one male, form II, one female, Carlyss, L. R. Ford (JBB 193); one male, form I, one male, form II, three females, type locality, J., M. and R. A. Black (JBB 196); four males, form I, one female, Carlyss, L. R. Ford (JBB 204); one male, form I, Carlyss, L. R. Ford (JBB 212).

*Ecological and life history notes:* All collections have come from pools and roadside ditches which are wet only following rains. The soil is poorly drained, heavy alluvial clay. Form I males and mature females were collected in January, July and August. Young juveniles were taken in late January, following a heavy rain which flooded the burrows, suggesting a winter reproductive season. Very likely eggs were laid while the females were in burrows. One female had a few juveniles still attached to her swimmerets.

*Color notes:* Primary background color for the carapace and dorsal aspect of the pereopods is olive green. Dorsal surface of abdomen is olive brown. Ventral surfaces of cephalothorax, including pereopods and first pleopods of males are cream colored. Articulating surfaces between palm and carpus and between carpus and merus of first

pereiopod are red. Prominent tubercles on first pereiopod are tipped with cream. About 60 percent of specimens examined showed a prominent, cream-colored, mid-dorsal stripe commencing just caudal to the base of the rostrum and terminating at the caudal end of the last abdominal segment. This stripe does not appear to be a sexual dimorphic character. Both males and females were observed with and without the stripe. Width of the stripe is variable on the carapace but is of uniform width (one mm) on the abdomen.

*Variation:* Body ratios, tubercles and processes show little variation. The mesial process of several of the preserved form I males is collapsed so that the process is oriented parallel with the main shaft of the pleopod. This is a tendency which could cause confusion in identification in the future.

*Relationships:* *Cambarus macneesei* appears to be closely related to *C. dissitus* Penn (1955), thus placing it in the Diogenes Section as defined by Ortmann (1931:146). Both have hooks on the ischiopodites of both the third and fourth pereiopods. The appearance of the first pleopod, with the exception of the unusual cephalic process in *C. macneesei*, is very similar. Penn (*op. cit.*) discussed the superficial similarity of the first pleopod of *C. dissitus* to that of *Procambarus tenuis* Hobbs (1950:194). The resemblance is more striking in the case of *C. macneesei* because of the similarity of the cephalic processes of the males and annuli ventrales of the females.

*C. macneesei* shares its cephalic process with only one other known species of *Cambarus*, *C. strawni* Reimer (1966:12). It is distinguished from this species by the presence of hooks on the ischiopodite of the fourth pereiopod of males, also by differences in the epistome, annulus ventralis, antennal scale and mesial process.

*Etymology:* I take pleasure in naming this species in honor of John McNeese (1844–1914) pioneer teacher, Federal soldier, Calcasieu Parish Superintendent of Education, and often referred to as “Father of Public Education in Southwest Louisiana.”

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