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A NEW CRAYFISH OF THE GENUS CAMBARELLUS FROM TEXAS (DECAPODA, ASTACIDAE)

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For many years the genus *Cambarellus* in the United States has been almost totally neglected, and subsequent to 1884, except for the repetition of "Louisiana" locality records and two new state records[2] for *Cambarellus shufeldtii* (Faxon 1884:134), practically nothing appeared in the literature until 1942. Penn (1942:644-647) published notes on the biology of *C. shufeldtii*, and in commenting on its range in Louisiana stated that it "has been found only east of the Mississippi and Atchafalaya Rivers." Hobbs and Marchand (1943:18) added three Tennessee records, all of which were in the vicinity of Reelfoot Lake, Obion County. In 1942 I described *Cambarellus schmitti* (Hobbs 1942:149), which extended the known range of the genus from Louisiana eastward to Alachua Co., Florida. In 1945 two additional species were described: *C. diminutus* (Hobbs 1945:467) from Liberty Co., Texas, and *C. puer* (Hobbs 1945:469) from Mobile Co., Alabama.

Prior to the discovery of *schmitti, puer* and *diminutus*, it was generally considered that the genus *Cambarellus* was principally a Mexican one and largely confined to the Mexican Plateau. With the discovery of the aforementioned species it became evident that the genus was much more widely dispersed than was originally supposed. Actual locality records are still few, and these are widely scattered, thus indicating that additional collecting is badly needed from the Mexican Plateau eastward to Florida and in the interior in Texas, southern Oklahoma, Arkansas, Mississippi, Louisiana, Alabama, and perhaps Georgia.

My first specimens of the species described below were sent to me by Mr. Joel W. Hedgpeth from the Aransas Refuge, Aransas County, Texas. Later Mr. Robert P. Allen kindly made several additional collections. I wish to express my appreciation to both of them for sending me the specimens on which the following description is based.

Cambarellus ninae, sp. nov.[3]

Diagnosis.—Areola broad, never more than three times as long as wide, with five or six punctations in narrowest part; first form male with hooks on second and third pereiopods strong and recurved, those on

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[2]Illinois (Faxon 1914:371) and Mississippi (Lyle 1938:76).
[3]I name this species in honor of my daughter, Nina Thompson Hobbs.

third bituberculate; palm of chela smooth; postorbital ridges terminating cephalad in spines; lateral surface of carapace devoid of spines. First pleopod of first form male extending to coxopodite of third pereiopod and terminating in three distinct parts all of which are bent caudad at angles less than, equal to, or greater than a right angle, and central projection exceeding the other terminal elements in length. First pleopod of second form male with terminal elements directed at about a 45-50 degree angle to the main shaft of the appendage and with the central projection markedly longer than either of the other terminal elements. Annulus ventralis semiovate with sinus only slightly to the left (or to the right) of middle.

Holotypic Male, Form I.—Body in cross section subovate, compressed laterally. Width of abdomen less than that of carapace. Width of carapace in region of caudodorsal margin of cervical groove slightly less than depth. Greatest width of carapace caudad to caudodorsal margin of cervical groove.

Areola about three times as long as wide and approximately 33.7% of entire length of carapace; five or six punctations in narrowest part.

Rostrum broad at base with margins converging to base of acumen; lateral spines acute and setting off an acute acumen which reaches almost to distal end of penultimate segment of peduncle of antennule. Surface of rostrum with setiferous punctations. Postorbital ridges terminate cephalad in small acute tubercles. Subrostral ridges visible in dorsal aspect along most of length of rostrum.

Surface of carapace punctate. No spine present on lateral surface. Suborbital angle acute and prominent. Branchiostegal spine absent.

Abdomen longer than thorax. Cephalic section of telson with two spines in the left and one in the right caudolateral corner.

Epistome as seen in fig. 2.

Antennules of the usual form. A moderate spine present on the ventromesial margin of basal segment.

Antennae extending caudad to telson. Antennal scale broad; broadest portion near midlength; spine on outer margin moderately strong, extending cephalad to middle of distal segment of peduncle of antennule.

First pereiopod with propus subovate, long, slightly inflated, with setiferous punctations. Opposable margins of both fingers with minute denticles and hairs. Neither finger bearing ridges.

Carpus longer than broad with setiferous punctations. A single large acute tubercle present on lower distolateral margin.

Upper surface of merus with a small tubercle on distal third and an additional one on distolateral margin, otherwise with setiferous punctations.

Ischiopodites of second and third pereiopods with hooks; both hooks strongly recurved and that on third bituberculate.

Coxopodite of fourth pereiopod with a conspicuous ventrally projecting prominence; that of fifth pereiopod with a much smaller, more compressed one.

First pleopod reaching coxopodite of third pereiopod. Tip terminating in three distinct parts. Mesial process slender, non-corneous, and directed caudad with the tip decidedly recurved. Cephalic process absent. Central projection corneous, longer than the other two terminals, directed caudad, and lying subparallel to the mesial process. Caudal process,

the slenderest of the three terminals, arises from the caudolateral margin, is non-corneous, more acute than mesial process, and while directed subparallel to the other two terminals does not extend so far caudad.

Allotypic Female.—The allotypic female differs from the holotype in only a few minor points; however, in addition to the usual dimorphic condition of the chelae of the two sexes, in the allotype they are distinctly more setose; both fingers with submedian longitudinal ridge above; opposable margin of immovable finger with a single tubercle and two on opposable margin of dactyl (see fig. 12); spine on upper distal surface of merus strong. Annulus ventralis movable; compressed in the longitudinal axis of the body, subtriangular in caudal aspect with the sinuate sinus to the right of the apex of the triangle. Sternal plate immediately caudad to annulus acute.

Morphotypic Male, Form II.—Differs only slightly from the holotype: chela more setiform than those in holotype; hooks on ischiopodites of second and third pereiopods much reduced. The three terminal elements of first pleopod all present; however, none is corneous; central projection markedly larger and longer than either of the other terminals.

Measurements.—In millimeters.

		Holotype	Allotype	Morphotype
Carapace —				
	height	4.4	5.9	4.0
	width	4.1	5.7	4.3
	length	8.3	11.9	7.9
Areola —				
	length	2.8	3.8	2.6
	width	1.1	1.6	0.9
Rostrum —				
	length	2.0	3.5	2.1
	width	1.4	1.9	1.1
Right Chela —				
	length, inner margin of palm	2.4	3.3	2.5
	width of palm	1.6	2.2	1.7
	length, outer margin of hand	5.6	6.4	5.8
	length of dactyl	2.8	3.3	2.7

Type Locality.—Borrow ditches in the Aransas Refuge (along East Shore Road), Aransas Co., Texas.

Disposition of Types.—The holotypic first form male, the morphotypic male, form II, and the allotypic female are deposited in the United States National Museum, Nos. 89768, 89769, and 89770. From the paratypic series, one male, form I, one male, form II, and a female are deposited in the Museum of Comparative Zoology, and similar series are at the University of Michigan Museum of Zoology and in the collection of George H. Penn, Jr. at Tulane University (No. 1351). Five first form males, seven second form males, and eleven females are retained in my personal collection at the University of Virginia.

Specimens Examined.—The following specimens were collected in the Aransas Refuge, Aransas County, Texas by Messrs. Joel W. Hedgpeth and Robert P. Allen: April 24, 1946—1 ♂ I, 1 ♂ II, 1 ♀ (J.W.H.);

February 22, 1948—1 ♂ II, 1 ♂ (R.P.A.); March 2, 1948—9 ♂♂ I, 11 ♂♂ II, 15 ♀♀ (R.P.A.); March 2, 1948—1 ♀ with eggs (R.P.A.); March 30, 1948—1 ♂ II, 1 ♀ with eggs (R.P.A.); March 30, 1948—7 ♂♂ II, 11 ♀♀ (R.P.A.); April 3, 1948—2 ♂♂ I, 2 ♂♂ II, 4 ♀♀ 2 ♂♂ imm., 3 ♀♀ imm. (R.P.A.); January 8, 1949—1 ♂ I, 4 ♀♀ (R.P.A.).

Relationships.—With little doubt this species has its closest affinities with *Cambarellus puer* Hobbs, and may prove to be a subspecies of the latter. Since there is some indication that there may be intergradation between *puer* and *schmitti*, until a thorough study of this complex is made it seems advisable to accord all three of these specific status. Dr. George H. Penn, Jr. is now engaged in conducting a survey of this genus in the United States.

Variations.—The most significant variations are illustrated in the figures; however, there are marked differences in the development of the postorbital ridges—in some specimens they terminate cephalad in long spines which extend cephalad to the cephalolateral margins of carapace. Recently molted specimens are distinctly more setose.

Key to the species of the genus *Cambarellus* occurring in the United States (Based on the First Form Male)

1 Terminal elements of first pleopod straight ..... *C. shufeldtii* (Faxon 1884: 134)

1′ Terminal elements of first pleopod directed caudad or caudodistad 2

2(1′) Central projection of first pleopod extending farther caudad than other terminal elements ..... *C. ninae* (*supra*)

2′ Central projection of first pleopod never extending farther caudad than other terminals 3

3(2′) Lateral spines on carapace small or absent. Areola five to six times longer than broad. Mesial process of first pleopod bent at approximately an 80° angle to the main shaft of the appendage ..... *C. puer* (Hobbs 1945: 469)

3′ Lateral spines present on sides of carapace. Areola two to four times longer than broad. Mesial process of first pleopod of first form male bent at less than an 80° angle to the main shaft of the appendage 4

4(3′) First form male with bituberculate hooks on ischiopodites of second and third pereiopods; caudal process of first pleopod subspiculiform; central projection scythe-like. Areola about three times as long as broad ..... *C. schmitti* Hobbs (1942: 149)

4′ First form male with bituberculate hooks on ischiopodites of third pereiopods only, those on second simple; caudal process of first pleopod acute but definitely not spiculiform; central projection subtriangular. Areola about twice as long as broad. Annulus ventralis subequal in breadth and depth *C. diminutus* Hobbs (1945: 467)

Literature Cited

Faxon, Walter 1884. Descriptions of new species of *Cambarus;* to which is added a synonymical list of the known species of *Cambarus* and *Astacus. Proc. Amer. Acad. Arts and Sci.,* 20: 107-158.

——— 1914. Notes on the crayfishes in the United States National Museum and the Museum of Comparative Zoology with descriptions of new species and subspecies to which is appended a catalogue of the known species and subspecies. *Mem. Mus. Comp. Zool., Harvard Coll.,* 40 (8): 347-427, 11 pls.

Hobbs, Horton H., Jr. 1942. The crayfishes of Florida. *Univ. of Florida Pub., Biol. Sci. Series,* 3 (2): 1-179, 3 text figs., 11 maps, 24 pls.

——— 1945. Two new species of crayfishes of the genus Cambarellus from the Gulf Coastal States, with a key to the species of the genus (Decapoda, Astacidae). *Amer. Midl. Nat.,* 34 (2): 466-474, 26 figs.

——— and L. J. Marchand 1943. A contribution toward a knowledge of the crayfishes of the Reelfoot Lake Area. *Journ. Tenn. Acad. Sci.,* 18 (1): 6-35, 3 pls., 1 map.

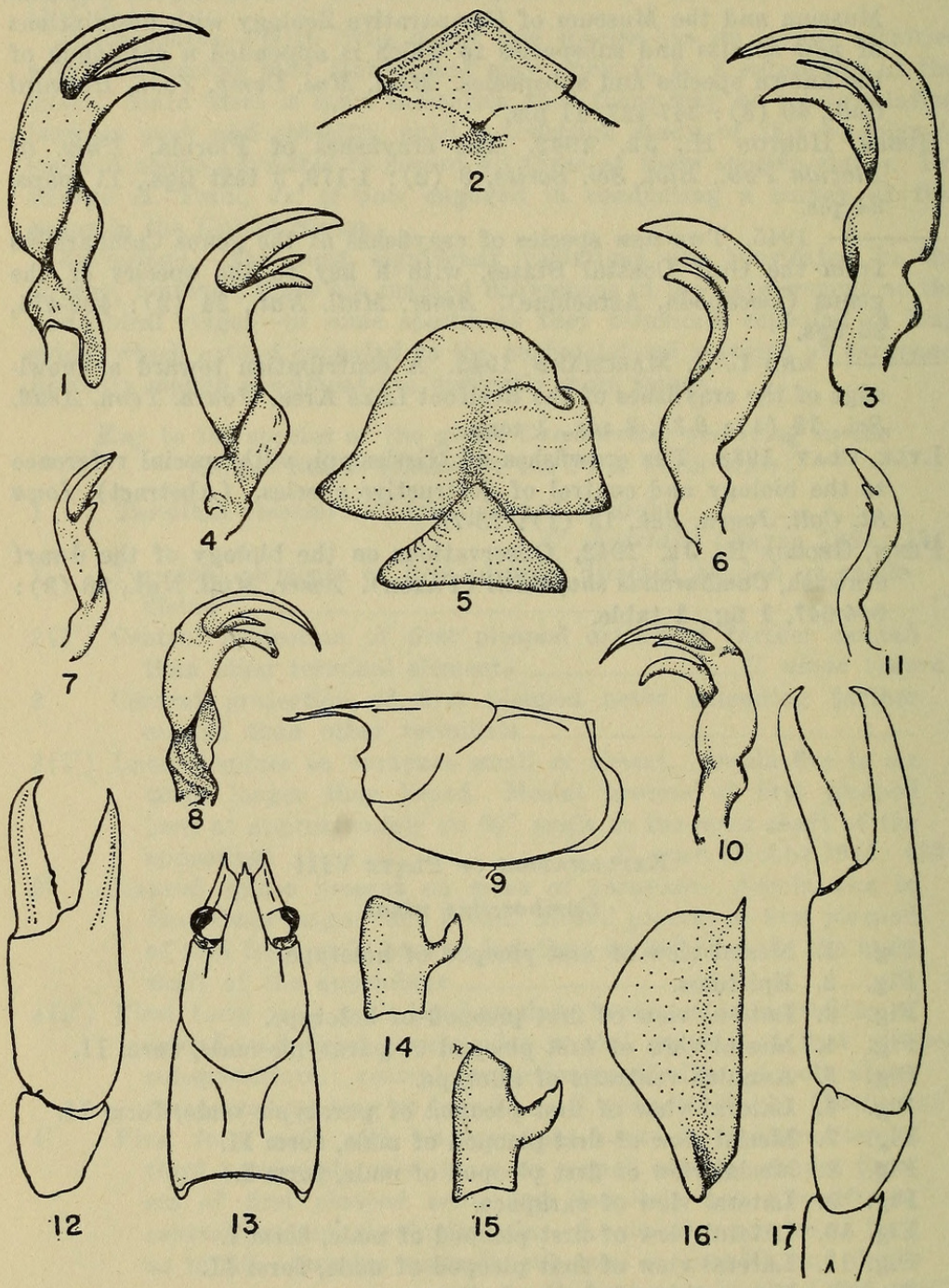
Lyle, Clay 1938. The crawfishes of Mississippi, with special reference to the biology and control of destructive species. (Abstract) *Iowa St. Coll. Journ. Sci.,* 13 (1): 75-77.

Penn, George H., Jr. 1942. Observations on the biology of the dwarf crawfish, *Cambarellus shufeldtii* (Faxon). *Amer. Midl. Nat.,* 28 (3): 644-647, 1 fig., 1 table.

Explanation of Plate VIII

Cambarellus ninae

Fig. 1. Mesial view of first pleopod of holotype.
Fig. 2. Epistome.
Fig. 3. Lateral view of first pleopod of holotype.
Fig. 4. Mesial view of first pleopod of paratypic male, form II.
Fig. 5. Annulus ventralis of allotype.
Fig. 6. Lateral view of first pleopod of paratypic male, form II.
Fig. 7. Mesial view of first pleopod of male, form II.
Fig. 8. Mesial view of first pleopod of male, form I.
Fig. 9. Lateral view of carapace.
Fig. 10. Lateral view of first pleopod of male, form I.
Fig. 11. Lateral view of first pleopod of male, form II.
Fig. 12. Upper view of chela of allotype.
Fig. 13. Dorsal view of carapace.
Fig. 14. Ischiopodite of second pereiopod of male, form I.
Fig. 15. Ischiopodite of third pereiopod of male, form I.
Fig. 16. Antennal scale.
Fig. 17. Upper view of chela of holotype.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