

A NEW CRAYFISH OF THE GENUS *CAMBARUS* FROM ALABAMA (DECAPODA: ASTACIDAE)

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Ten years ago six specimens of this new crayfish were collected by Mr. C. L. Traywick from a fish trap in the Black Warrior River; subsequent collections, however, in tributaries of this stream have failed to reveal the presence of additional specimens. Thus it seems possible that this crayfish is confined to the deeper waters of the river itself and perhaps to its larger tributaries.

The presence of lateral spines on the rostrum of this crayfish would support an assumption of its affinities with the members of the Extraneus Section of the genus; however, recent work on *Cambarus latimanus* and *C. jordani* suggests that the criterion, the presence or absence of marginal spines on the rostrum, is not always reliable in indicating close kinship. It is believed that the new species is more closely allied to *C. striatus* than to any other described species.

Genus *Cambarus* Erichson, 1846

*Cambarus obstipus*¹, sp. nov.

Diagnosis. — Rostrum with or without marginal spines or tubercles, but if absent, base of acumen delimited by conspicuous angles; areola 9.3 to 12.0 times longer than broad and constituting 37.9 to 41.0 percent of entire length of carapace. Lateral spines or tubercles present on carapace immediately caudal to cervical groove. First pleopod of first form male with central projection directed at a ninety degree angle to main shaft of appendage and having a distinct emargination or concave margin near apex; apex never extends farther caudad than mesial process.

Holotypic Male, Form I. — Body subcircular, slightly depressed. Abdomen narrower than thorax (22.8 and 28.4 mm. in widest parts respectively). Greatest width of carapace greater than depth in region of caudodorsal margin of cervical groove (28.4 and 20.4 mm.). Areola (Fig. 6) moderately narrow (11.2 times longer than wide), with few punctations, only two across narrowest portion. Cephalic section of carapace 1.7 times as long as areola (length of areola 38.1 per cent of entire length of carapace). Rostrum deeply excavate above with convergent raised margins; acumen distinctly set off from rostrum by angular margins; apex with up-turned, corneous tubercle; marginal spines or tubercles absent. Punctations on upper surface densely distributed. Subrostral ridges well developed and visible in dorsal aspect to acumen.

Postorbital ridges moderately well developed, with shallow lateral grooves bearing sparsely distributed setae and terminating cephalically in blunt tubercles. Suborbital angle obtuse. Branchiostegal spine blunt and small. No spines or prominent tubercles on the side of carapace immediately caudad of cervical groove. Carapace punctate dorsad and granulate laterad, especially in area caudal to cervical groove. Abdomen shorter than cara-

¹*obstipus*: L., inclined to one side; referring to the asymmetrically steeply inclined caudal margin of the annulus ventralis.

pace (44.6 and 53.0 mm.). Cephalic section telson with two spines in each caudolateral corner.

Epistome (Fig. 2) spear-shaped with caudolateral margin of cephalic portion inflated and raised ventrally; caudal portion of epistome with a median longitudinal furrow. Antennules of the usual form with a small spine on lower surface of basal segment. Antennae broken. Antennal scale (Fig. 8) broadest in middle third of its length; lamellar portion approximately 1.5 times as wide as outer heavier portion, the latter terminating in a blunt spine.

Right chela (Fig. 9) strongly depressed, but with palm inflated. Distal five-sixths of outer margin of hand costate. Upper surface of palmar area with squamous tubercles mesially and punctations laterally. Inner margin of hand with two rows of tubercles, the more medial one consisting of eight and the more lateral one of five. Lower surface of palmar area similar to upper surface but with fewer tubercles, three small ones and one large one at base of dactylopodite and a row of four slightly proximad of the row mentioned above. Fingers gaping; upper and lower surfaces of both with well defined longitudinal ridges and with setiferous punctations between. Opposable margin of immovable finger with sixteen tubercles, the fifth the largest. Opposable margin of dactylopodite with sixteen tubercles, the first the largest. Distal one-third of opposable margins of both fingers with a row of minute denticles interrupted by the more distal tubercles mentioned above. Mesial margin of dactylopodite with a row of eleven tubercles that are progressively more squamous distally; proximal portion of row flanked by other tubercles. Distal portion of mesial margin of dactylopodite with several setiferous punctations.

Carpopodite of right cheliped distinctly longer than broad, and with a distinct longitudinal furrow above; except for mesial surface, entire podomere punctate, but few punctations on mesioventral surface. Mesial surface with one prominent distally curved spine distal to the base of which are two small tubercles. Another smaller spine present proximad of prominent spine. Two inconspicuous tubercles present on mesioventral surface opposite the large spine of mesial surface mentioned above; midmesioventral surface with one conspicuous spine lateral to which is the usual articular tubercle

Meropodite of right cheliped punctate only on upper lateral margin (distal extremity) and one row of punctations lateral to lower lateral row of spines. Upper surface with two prominent tubercles near distal margin distad of which are two inconspicuous tubercles. Lower lateral margin with a row of five spiniform tubercles and lower inner margin with a row of eight, the most distal one being spike-like. Lower margin of ischiopodite with a row of four tubercles.

Hooks (Fig. 7) on ischiopodites of third pereopods only; hooks strong, simple and not opposed by a tubercle on basipodite. Coxopodite of fourth pereopod with a prominent caudomesial protuberance.

Sternum between bases of fourth and fifth pereopods bearing a brush.

First pleopods (Figs. 1, 4) symmetrically arranged and reaching region of coxopodite of third pereopods when abdomen is flexed; distal portions terminating in two distinct parts. Central projection corneous, short, directed at a right angle to the main shaft of the appendage; a small emargination on proximal side of central projection just proximal of tip; tip not reaching so far caudad as mesial process. Mesial process non-corneous, bulbiform, terminating in two spinous tips, and directed at an angle of about ninety degrees to main longitudinal axis of appendage.

Allotypic Female.—The allotype differs from the holotype in the following characteristics: the antennae extend caudad to cephalic margin of telson. Acute spine present on cephalic tip of antennal scale. Inner margin of palm with a row of seven prominent tubercles, the more lateral row also with seven tubercles. Opposable margin of immovable finger with thirteen

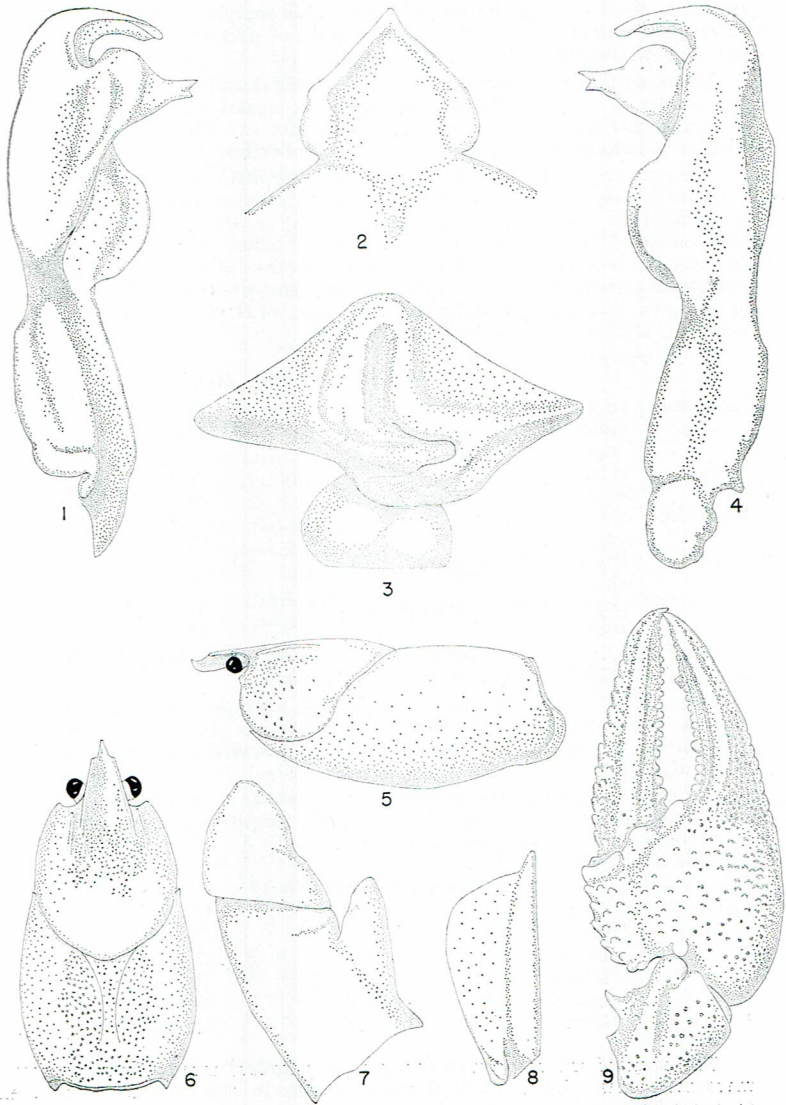


PLATE I

1. Mesial view of first pleopod of male, form I.
2. Epistome of male, form I.
3. Annulus ventralis.
4. Lateral view of first pleopod of male, form I.
5. Lateral view of carapace of male, form I.
6. Dorsal view of carapace of male, form I.
7. Basipodite and ischiopodite of third pereopod of male, form I.
8. Antennal scale of male, form I.
9. Distal podomeres of cheliped of male, form I.

tubercles, the first four the largest. Opposable margin of dactylopodite with fifteen, the fourth the largest. Mesial margin of dactylopodite with tubercles not in a well-defined linear arrangement.

Entire carpopodite punctate except for mesial and mesioventral surfaces. No smaller spine proximad of large spine on mesial surface. Upper surface of meropodite with three prominent spines and two blunt tubercles. Lower surface of ischiopodite with a row of three tubercles.

Annulus ventralis (Fig. 3) not movable. Cephalic two-thirds of annulus with an L-shaped trough slightly dextral to median line. Sinus originates near cephalic extremity of horizontal arm of the "L", extends gently caudosinistrad and makes a hairpin turn before turning caudodextrad crossing the median line, and terminating on the inflated caudal wall. The horizontal sinistrally directed tongue is long and prominent. Caudal margin of annulus ventralis markedly asymmetrical; dextral portion with a pronounced, almost angular, declivity.

Measurements.—In millimeters.

		Holotype	Allotype
Carapace:	height	21.5	26.5
	width	28.2	32.7
	length	53.0	63.3
Aerola:	width	1.8	2.7
	length	20.2	25.3
Rostrum:	width	7.4	7.7
	length	9.9	10.8
Chela:	length of inner margin of palm	13.2	13.6
	width of palm	21.2	20.9
	length of outer margin of hand	43.0	43.8
	length of dactyl	28.0	28.6

Type Locality.—Black Warrior River at Underwood's Ferry, 8 miles downstream from Cordova, Walker County, Alabama.

Disposition of Types.—The holotype and allotype are deposited in the United States National Museum. The paratypes (1 male, form I, and 3 females) are deposited in the collection of Mr. Horton H. Hobbs, Jr. at the University of Virginia.

Variations.—The figures given below demonstrate a relative uniformity within the collection for the ratio of areola length to carapace length (1), and length to width of the areola (2).

Collection 12-2848-1:

	Sex	Carapace length (mm.)	(1)	(2)
1.	male	43.5	40.7%	12.0
2.	male	53.0	38.1%	11.2
3.	female	46.7	37.9%	9.3
4.	female	49.4	38.2%	11.4
5.	female	63.3	40.5%	9.4
6.	female	56.4	41.0%	11.2

The apex of the rostrum is consistently angular; three specimens possess marginal spines. The suborbital angle is weak in one specimen and absent in the others. Inner margin of carpopodite may possess one or two spines, the usual condition being two. The mesial process of the first pleopod of the first pleopod of the first form male may end in a simple or bifurcate tip.

Relationships. — Without doubt this species has its closest affinities with *C. striatus*, *C. floridanus*, *C. reduncus*, and *C. latimanus*. It may be distinguished from the several species of the Latimanus Complex by the central projection of the first pleopod of the first form male which is directed at a ninety degree angle to the main shaft of the appendage, whereas in the

other species it is more strongly recurved. Of the species of the Latimanus Complex, *C. obstipus* is most closely related to *C. striatus* Hay, but can be distinguished from it by its possessing an angular or spinous rostrum.

Specimens Examined. — 2 males, form I, and 4 females collected by C. L. Traywick on December 28, 1948.

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NEWS OF TENNESSEE SCIENCE

The Laboratory Experiments subcommittee of the Education Committee of the American Physiological Society has just completed the preparation of a list of about 35 experiments for use in the laboratory of General Physiology at the junior-senior level. The list gives the title of the individual experiments along with a short abstract describing the contents, and is being circulated widely among college departments of Biology by Dr. Ray Daggs, secretary of the APS. The experiments have been tested in the laboratory, revised, and in many cases completely rewritten by the subcommittee under the chairmanship of Samuel R. Tipton. The detailed procedures will be made available shortly at a nominal cost and may be obtained from Dr. Daggs on request by title accompanied by appropriate funds to cover the cost. Further inquiries should be directed to Dr. Ray Daggs, Executive Secretary, The American Physiological Society, 9650 Wisconsin Ave., Washington 14, D. C.

A new \$1,150,000 Animal Science Building on the Agricultural Campus at the University of Tennessee, Knoxville, was dedicated July 9, with Governor Buford Ellington and President O. S. Willham of Oklahoma State University as principal speakers.

Dr. Kathleen D. Wyant has left the University of Tennessee where she has been Research Associate in Parasitology to accept a position as Assistant Professor of Biology at the Florence center of the University of South Carolina.

Dr. Samuel R. Tipton, Professor of Zoology at the University of Tennessee, has received a NSF grant of \$15,000 to continue studies on the influence of thyroid hormones on mitochondria. The role played by mitochondria in the regeneration of rat liver after surgical resection is being studied.