

THREE NEW CRAYFISHES FROM ALABAMA AND MISSISSIPPI

(DECAPODA: ASTACIDAE)

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The three new species of the genus *Procambarus* described here were collected in a small area in the eastern part of Mississippi and western Alabama. The ranges of none of the three are known, and two of the species have been collected only in the type locality. Ecologically they all appear to be secondary burrowers (Hobbs, 1942: 20), associated with temporary pools and roadside ditches.

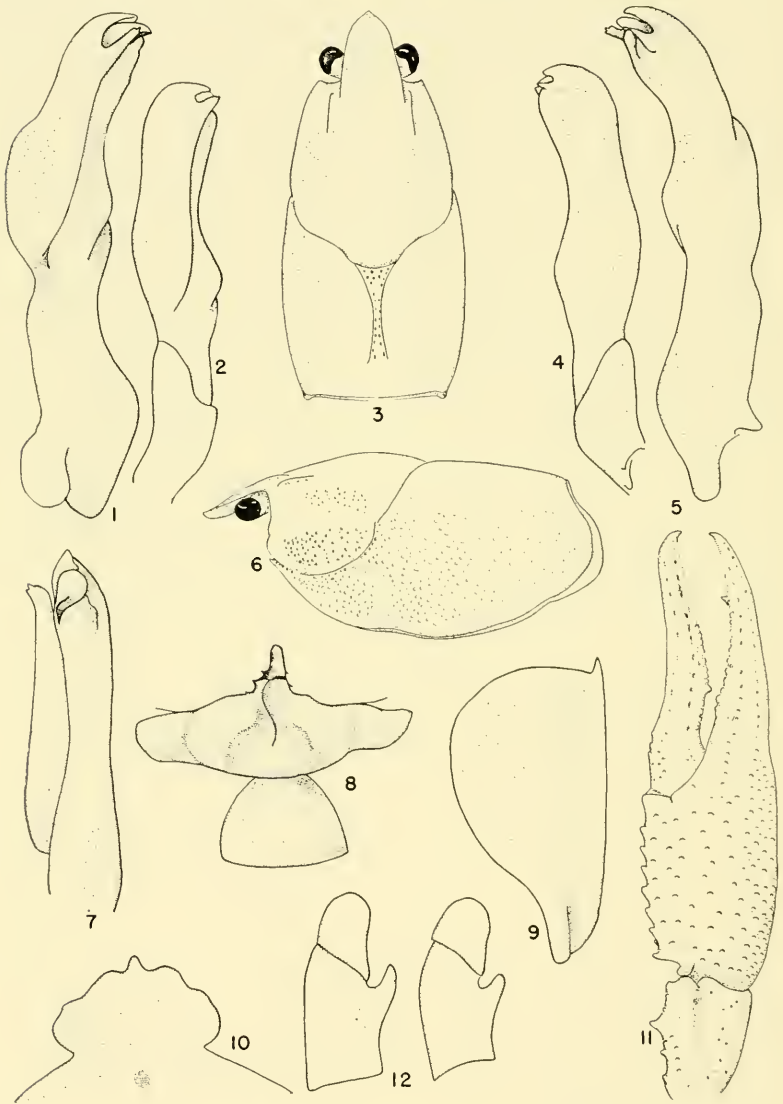
All are members of the *Blandingii* Section of the genus, and appear to belong to the *Blandingii* Group. Two are distinctly related to *Procambarus planirostris* Penn (1953: 71) and are relegated to the *Planirostris* Subgroup; the third, however, possessing certain characteristics of the *Blandingii*, *Clarkii*, and *Planirostris* subgroups is tentatively assigned to the *Clarkii* Subgroup.

PROCAMBARUS HYBUS,¹ sp. nov.

Diagnosis.—Rostrum without marginal spines and with or without a low median carina; postorbital ridges reduced without spines or tubercles; suborbital angle obtuse or obsolete; lateral tubercles on carapace weak; areola 11.8 to 24.0 times longer than broad and constituting 32.7 to 36.9 per cent of entire length of carapace. Simple hooks present on ischiopodites of third and fourth pereopods in male. Palm of chela not bearded but with a row of seven to nine tubercles. First pleopod of first form male with a distinct shoulder on cephalic margin just distad of midlength and distal portion of appendage directed at about a 40° to 50° angle to main shaft of pleopod; mesial process non-corneous, usually toothed distally, and directed caudodistad and somewhat mesiad; cephalic process compressed and somewhat hooding the central projection; central projection corneous and directed caudodistad as is the cephalic process (not caudally as in *P. planirostris*); caudal element partially corneous and subtriangular in caudal aspect. Annulus ventralis with a caudally expanded median longitudinal furrow; sinus forming a sinuous line in furrow and terminating caudally on elevated area near mid-caudal margin.

Holotypic Male, Form I.—Body subcylindrical, only slightly compressed laterally; abdomen a little longer than carapace (34.3 and 33.1 mm). Height and width of carapace in region of caudodorsal margin of cervical groove subequal (see measurements); greatest

¹ *hybus*: G., humpbacked; referring to the humped first pleopod of the first form male.



Figures 1-12. *Procambarus hybus*, sp. nov.: 1, mesial view of first pleopod of first form male; 2, mesial view of first pleopod of second form male; 3, dorsal view of carapace of first form male; 4, lateral view of first pleopod of second form male; 5, lateral view of first pleopod of first form male; 6, lateral view of carapace of first form male; 7, caudal view of first pleopod of first form male; 8, annulus ventralis of female; 9, antennal scale of first form male; 10, epistome of first form male; 11, distal podomeres of cheliped of first form male; 12, basipodites and ischiopodites of third and fourth pereopods of first form male.

width of carapace at level of caudodorsal margin of cervical groove.

Areola narrow, about 24 times longer than wide with two punctations in narrowest part. Cephalic section of carapace about 1.8 times as long as areola (length of areola about 35.3 per cent of entire length of carapace).

Rostrum without lateral spines; widest at base; margins distinctly elevated, slightly thickened, and converging to very small, upturned acumen. Upper surface plane, with few punctations basally, a row mesiad of margins and an irregular row along median line. A short, low carina present on upper surface just posterior to apex.

Postorbital ridges not conspicuous, terminating cephalically without spines or tubercles; a shallow ciliated groove on lateral surface of both ridges. Suborbital angle almost obsolete, obtuse. Branchiostegal spine small. Lateral surface of carapace granulate; granulations immediately caudad of cervical groove subequal in size, the usual lateral spines or tubercles not recognizable. Dorsal surface of carapace punctate.

Cephalic section of telson with two spines in each caudolateral angle.

Epistome (fig. 10) broader than long with cephalolateral margins emarginate and with a small cephalomedian projection.

Antennae extend caudad to second abdominal tergum, and of the usual form. Antennal scale (fig. 9) broad; broadest distad of mid-length; lateral margin inflated, straight, and terminating in a small spine; total length less than half that of areola (5.7-11.8 mm).

Right chela (fig. 11) with palm inflated and with setiferous squamous tubercles present on all surfaces. Inner margin of palm with a row of seven tubercles; above this row is another consisting of seven tubercles, and below it, a similar one. Both fingers with poorly defined longitudinal ridges on upper and lower surfaces. Opposable margin of immovable finger with a row of 13 rounded tubercles along basal three-fourths of finger, the third from base largest, a large corneous tubercle on same margin, at a lower level, between eleventh and twelfth tubercles of above-mentioned row. Opposable margin of dactylopodite convex with basal fourth bearing a single row of eight small rounded tubercles; distad of this row, two rows of tubercles continue to midlength of finger to be replaced in the third quarter by a single less-well defined row. Crowded minute denticles between and distad of tubercles on opposable margins of both fingers. Setiferous punctations covering both fingers except for a few squamous tubercles at base and on longitudinal ridges. Lower surface of palm with a prominent tubercle at base of dactylopodite.

Carpodite of first right pereopod tuberculate mesially and punctate elsewhere. Distal end with four strong tubercles "in a semi-circular arrangement extending medioventrally from dorsal to ventral condyles" (Penn, 1953: 72). Only one other tubercle larger than others on mesial surface.

Meropodite tuberculate above, below, and mesiodistally. The usual two rows on lower surface not so sharply defined as in many species. Lower surface of ischiopodite with a row of six tubercles.

Ischiopodites of third and fourth pereiopods with hooks (fig. 12), both simple and neither opposed by a knob-like process on corresponding basipodite. Coxopodite of fourth pereiopod with a caudomesially projecting knob, and coxa of fifth with a small ventrally directed ridge on mesial angle.

First pleopod extending to coxopodite of third pereiopod when abdomen is flexed. Tip terminating in four distinct sclerotized parts (figs. 1, 5, 7). Distal third of appendage directed at about a 50° angle to basal two-thirds. Cephalic margin with a marked shoulder at base of distal third of appendage. Mesial process, arising from mesial face of appendage, subspiculiform, and directed at about a 45° angle to main shaft of appendage; distal portion distinctly tripartate on left pleopod (entire on right). Cephalic process compressed, broader at base than other terminal elements and somewhat hooding the central projection. Central projection composed of the usual two elements, rounded distally and partially hidden in lateral aspect by the caudal process, its distal extremity directed distad and somewhat caudolaterad. Caudal process subtriangular in caudal aspect and consisting of what appears to be two indistinctly separated parts: a more mesial and broader lamellar portion lying immediately caudal to the central projection and a shorter heavier portion that abuts the former along its proximal caudolateral portion.

Morphotypic Male, Form II.—A young animal which is in all probability juvenile, and differs from the holotype in that the rostral surface is more punctate and the carina is not so well defined. One tubercle on lateral surface of carapace larger than others along caudal margin of cervical groove. Antennae extend caudad to fifth abdominal segment. Inner margin of palm of right chela with a row of eight tubercles. Chela and hooks on ischiopodites of third and fourth pereiopods much reduced in size (see measurements). First pleopod (figs. 2, 4) reaches coxopodites of third pereiopods when abdomen is flexed; all terminal elements represented but considerably reduced in size and non-corneous.

Allotypic Female.—Differs from the holotype in the following respects. No carina present on rostrum, suborbital angle obsolete, antennae extend caudad to third abdominal segment. One tubercle on lateral surface of carapace immediately caudad of cervical groove slightly larger than others nearby. Cephalic section of telson with three spines in each caudolateral angle. Inner margin of palm of chela with a row of nine tubercles. Lower margin of ischiopodite of cheliped with a row of only five tubercles. (See measurements).

Annulus ventralis movable, deeply imbedded in sternum and partially covered cephalically by projection from sternum immediately cephalic to it. Subovate in shape with a median longitudinal furrow that is expanded caudally. Sinus a sinuous line extending in furrow

from near mid-cephalic margin to elevated area near midcaudal margin; fossa present near midlength of annulus (fig. 8).

Measurements.—As follows (in millimeters):

	Holotype	Allotype	Morphotype
Carapace—			
height	16.6	14.7	10.1
width	16.1	16.0	10.1
length	33.1	32.4	21.2
Areola—			
length	11.8	11.4	7.3
width	0.5	0.8	0.3
Rostrum—			
length	7.5	7.0	4.7
width	5.6	5.3	3.8
Right chela—			
length of inner margin			
of palm	12.0	7.3	4.6
width of palm	9.1	7.4	4.4
length of outer margin			
of chela	31.4	20.5	13.5
length of dactyl	17.5	11.8	7.9

Type Locality.—Roadside ditch, 1.7 miles north of Boligee, Greene County, Alabama, on U.S. Highway 11. Here, the ditch, with a clay and muddy bottom, contained clear water which was four to six inches in depth, and the bottom supported a rich growth of grasses, indicating that the water was not permanent. The crayfish were collected with a seine and by hand.

Disposition of types.—The holotypic male, the allotypic female, and the morphotypic male are deposited in the United States National Museum (cat. nos. 99581, 99582, and 99583, respectively). Of the paratypes, one male, form I, one male, form II, and one female are deposited in the collection of Tulane University; three males, form I, 38 males, form II, 32 females, 66 juvenile males, and 63 juvenile females are in the collection of the senior author at the University of Virginia.

Specimens examined.—A total of 238 specimens have been examined from the following localities. ALABAMA—*Greene County*: type locality. MISSISSIPPI—*Kemper County*: 0.2 mi. S. of Noxubee Co. line on Rt. 45; 7.7 mi. N. of Scooba on Rt. 45; 10.5 mi. S. of Scooba on Rt. 45; 1 mi. S. of Scooba on Rt. 45; Scooba Creek, 5.2 mi. S. of Scooba on Rt. 45; *Lowndes County*: 9.1 mi. N. Noxubee Co. line on Rt. 45; *Noxubee County*: 11.3 mi. S. of Macon on Rt. 45. All of these specimens were collected in April of 1951 and 1954 by Jean E. Pugh, Sam R. Telford, and the senior author or by W. R. West and the latter.

Variations.—The following variations from the above descriptions have been noted but none of them appears to be correlated with local populations; rostrum with or without a median carina; seven to nine tubercles along inner margin of palm of chela; suborbital angle weak or obsolete; cephalic section of telson with two to four spines

in each caudolateral angle; slight differences in numbers of tubercles on opposable margins of fingers; mesial process of first pleopod simple or with two or three spines at tip; transverse ridge on annulus ventralis may be rounded or crest-like.

Relationships.—*Procambarus hybus* has its closest affinities with *P. planirostris* Penn (1953) but may be distinguished readily from the latter by the differences in the central projection and caudal element of the first pleopod of the first form males and those between the annuli ventrales of the females.

PROCAMBARUS MANCUS,² sp. nov.

Diagnosis.—Rostrum without marginal spines; postorbital ridges well developed but without spines or tubercles; suborbital angle obtuse or obsolete; lateral tubercles present on carapace; areola 9.8 to 14.6 times longer than broad and constituting 34.2 to 36.8 per cent of entire length of carapace. Simple hooks present on ischiopodites of third and fourth pereopods in male. Palm of chela not bearded but with a row of 8 to 10 tubercles. First pleopod of first form male with a distinct shoulder on cephalic margin just distad of midlength and distal portion of appendage directed at about a 35° to 40° angle to the main shaft of the pleopod; mesial process non-corneous, spiculi-form, and directed caudad; cephalic process vestigial but vestige lying mesiad of central projection; central projection corneous and beak-like, directed caudad; caudal process partially sclerotized and the more conspicuous part leaf-like with the cephalodistal margin approximating the caudal margin of the central projection. Annulus ventralis subspindle-shaped with a caudomedian prominence flanked laterally by a pair of caudally diverging elevations.

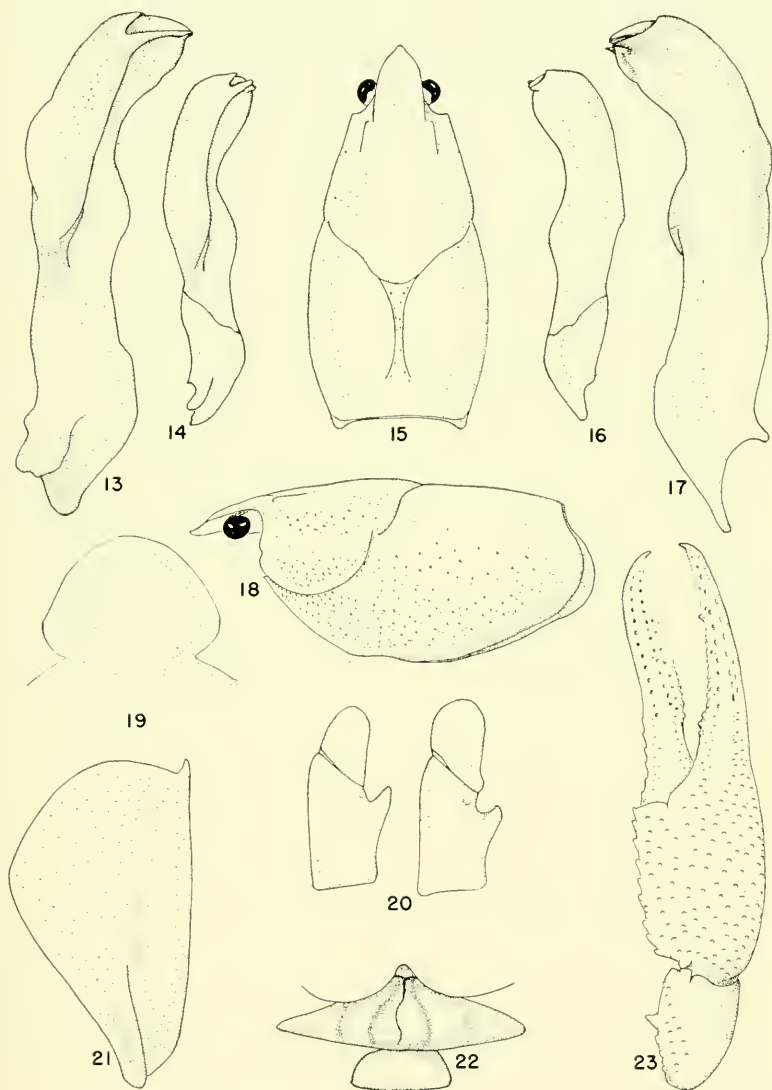
Holotypic Male, Form I.—Body subcylindrical, abdomen longer than carapace (29.1 and 26.5 mm). Carapace broader than high, greatest width of carapace slightly caudal to caudodorsal margin of cervical groove.

Areola narrow (10.4 times longer than wide) with scattered punctations—only two in narrowest portion. Cephalic section of carapace about 1.9 times as long as areola (length of areola 35.1 per cent of entire length of carapace).

Rostrum broadly lanceolate with prominent slightly raised lateral ridges and reaching base of ultimate segment of peduncle of antennule; margins converging to tip, no lateral spines present. Surface of rostrum subplane and with a number of deep punctations; a row of punctations mesiad of margins. Acumen small with upturned corneous tip. Subrostral ridges weak and evident only at base of rostrum.

Postorbital ridges prominent, terminating cephalad without spines or tubercles, and bearing a prominent ciliated groove on lateral surfaces. Suborbital angle weak and obtuse, almost obsolete. Branch-

² *mancus*: L., maimed, defective; signifying the absence of the cephalic process of the first pleopod of the first form male.



Figures 13-23. *Procambarus mancus*, sp. nov.: 13, mesial view of first pleopod of first form male; 14, mesial view of first pleopod of second form male; 15, dorsal view of carapace of first form male; 16, lateral view of first pleopod of second form male; 17, lateral view of first pleopod of first form male; 18, lateral view of carapace of first form male; 19, epistome of first form male; 20, basipodites and ischiopodites of third and fourth pereopods of first form male; 21, antennal scale of first form male; 22, annulus ventralis of female; 23, distal podomeres of cheliped of first form male.

iostegal spines moderately well developed on the dextral side and lacking on the sinistral one. Lateral surface of carapace granulate; one tubercle somewhat larger than those nearby, on lateral surfaces of carapace immediately caudal to cervical groove.

Cephalic section of telson with two spines in each caudolateral angle.

Epistome (fig. 19) broadly ovate, truncate cephalically, and without a cephalomedian projection. Margins somewhat thickened and elevated.

Antennules of the usual form with a small spine on lower surface of basal segment.

Antennae extend caudad to caudal margin of third abdominal tergum and of the usual form. Antennal scale (fig. 21) broad, broadest slightly distad of midlength; lateral portion inflated and terminating in a small spine; total length greater than one-half that of areola (4.9 and 9.4 mm).

Right chela (fig. 23) with palm inflated and with setiferous tubercles present on all surfaces. Inner margin of palm with a row of nine tubercles; one or two rows of tubercles above and below this row. Both fingers with moderately well defined longitudinal ridge on upper and lower surfaces. Opposable margin of immovable finger with a row of 12 tubercles on proximal four-fifths of finger; third from base largest; one tubercle present at base of distal third of finger below this row. Opposable margin of dactylopodite with a row of 18 tubercles; one large tubercle present at distal end of basal third of finger slightly below aforementioned row. Minute denticles crowded between and beyond tubercles on opposable margins of both fingers. Mesial margin of dactylopodite with a row of nine tubercles on proximal half. Except for a few squamous tubercles at bases, both fingers pitted with somewhat regular rows of setiferous punctations. Lower surface of palm with a prominent tubercle at base of dactylopodite.

Carpopodite of first right pereopod tuberculate mesially and otherwise punctate. Semicircular arrangement of four larger tubercles between dorsal and ventral condyles on distal end; other tubercles subequal in size.

Meropodite tuberculate above, below, and mesiodistally; one tubercle on upper distal portion larger than others nearby; mesioventral row of 18 tubercles, the lateral row poorly defined and both rows flanked by other small tubercles. Lower surface of ischiopodite with a row of five tubercles.

Ischiopodites of third and fourth pereopods with simple hooks (fig. 20), neither opposed by a knob-like prominence on corresponding basiopodite. Coxopodite of fourth pereopod with a caudo-mesially projecting knob, and coxa of fifth with a small ventrally directed ridge on mesial angle.

First pleopod extending to coxopodite of third pereopod when abdomen is flexed. Tip terminating in three distinct parts (figs. 13,

17) and a rudiment of a fourth. Distal third of appendage directed at about a 75° to 80° angle to the basal two-thirds. Cephalic margin with a distinct shoulder slightly distad of midlength. Mesial process subspiculiform and directed caudally, evident in lateral aspect only at its tip. Cephalic process vestigial, represented by only a slight prominence on mesial surface above base of mesial process. Central projection a beak-like sclerotized process directed caudally. Caudal process a corneous plate closely applied to the more proximal margin of the central projection, laterally the plate is supported by a small triangular abutment and mesially it is delimited from the basal portion by a low ridge.

Morphotypic Male, Form II.—Differs from the holotype in only a few minor respects; branchiostegal spines are less well developed, the opposable margins of the fingers of the chela bear fewer tubercles, carpus of cheliped with one tubercle proximal to the semicircular row larger than the others nearby. All secondary sexual characters reduced. First pleopod (fig. 14) reaches coxopodite of third pereopod when abdomen is flexed; all terminal elements represented, and except for the cephalic process, reduced in size and non-corneous.

Allotypic Female.—Differs from the holotype chiefly in the reduced size of the cheliped. Annulus ventralis (fig. 22) movable, and only slightly covered cephalically by the projections from the sternum immediately cephalic to it. Subspindle-shaped in outline with a pair of caudally diverging elevations flanking a swollen caudomedian prominence. Sinus in the form of a sinuous line meandering along median longitudinal line of annulus; fossa not evident.

Measurements.—As follows (in millimeters):

	Holotype	Allotype	Morphotype
Carapace—			
height	13.0	11.0	12.0
width	13.7	11.3	12.0
length	26.5	22.7	23.0
Areola—			
length	9.4	7.7	8.2
width	0.9	0.7	0.9
Rostrum—			
length	5.9	5.1	5.2
width	4.7	4.1	4.2
Chela—	Right	Left	Left
length of inner margin			
of palm	8.1	4.2	6.4
width of palm	7.5	4.6	5.9
length of outer margin			
of chela	22.0	12.4	17.0
length of dactyl	12.4	7.4	8.2

Type Locality.—Roadside ditch 5.0 miles south of Meridian, Lauderdale County, Mississippi on U.S. Highway 11. The ditch, some two to three feet wide, contained slightly turbid water about one inch deep that flowed sluggishly over a muddy bottom with a few scattered rocks and a grassy margin. The crayfish were collected with a seine,

and a few of the specimens were dug from simple burrows along the margin.

Disposition of types.—The holotypic male, allotypic female, and morphotypic male are deposited in the United States National Museum (cat. nos. 99578, 99579, and 99580, respectively). A paratypic series consisting of a first form male, a second form male, and a juvenile female are in the collection of Tulane University, and the remaining paratypes, one male, form I, one male, form II, one female, 10 juvenile males, and five juvenile females are in the collection of the senior author at the University of Virginia. The type series constitutes all of the specimens available, and all of these were collected in the type locality on April 18, 1954, by Jean E. Pugh, Sam R. Telford, and the senior author.

Variations.—Except for the usual small variations in proportions and in the number of tubercles on the several podomeres, there is remarkable uniformity among the available specimens.

Relationships.—*Procambarus mancus* appears to have its closest affinities with *P. planirostris* and *P. hybus*, but may be distinguished easily from either of these forms by the vestigial cephalic process of the first pleopod of the first form male; in the latter two the cephalic process is well developed.

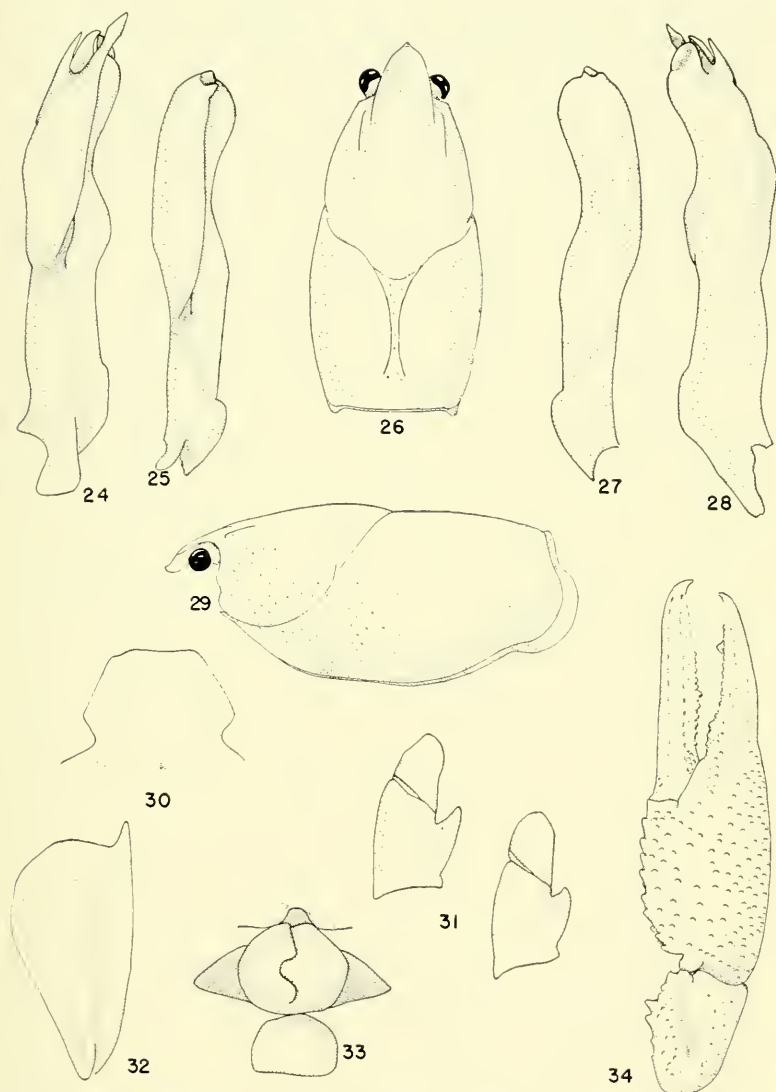
PROCAMBARUS JACULUS,³ sp. nov.

Diagnosis.—Rostrum without marginal spines; postorbital ridges weak and without spines or tubercles; suborbital angle weak or obsolete; lateral surface of carapace without spines or tubercles; areola 9.9 to 12.2 times longer than broad and constituting 31.9 to 36.5 per cent of entire length of carapace. Simple hooks present on ischiopodites of third and fourth pereopods in male. Palm of chela not bearded but with a row of eight tubercles. First pleopod of first form male with a weak shoulder on cephalic margin just distad of midlength and distal portion of appendage directed at about a 20° angle to the main shaft of the pleopod; mesial process only slightly sclerotized with a compressed, acute, spear-like tip and directed at about a 30° angle to the main shaft; cephalic process well developed and lying cephalad and slightly laterad of the central projection; the latter heavily sclerotized, somewhat beak-like, and subparallel to mesial process with tip abruptly directed caudad; caudal element consists of a broad leaf-like outer portion and an inner low ridge, both portions sclerotized. Annulus ventralis subcircular in outline with sinus as illustrated (fig. 33).

Holotypic Male, Form I.—Body subcylindrical, abdomen shorter than carapace (29.4 and 30.1 mm). Carapace broader than high, greatest width of carapace slightly caudad of caudodorsal margin of cervical groove.

Areola narrow (12.2 times longer than wide) sparsely punctate

³ *jaculum*: L., a dart or javelin; denoting the spear-like shape of the mesial process of the first pleopod of the first form male.



Figures 24-34. *Procamburus jaculus*, sp. nov.: 24, mesial view of first pleopod of first form male; 25, mesial view of first pleopod of second form male; 26, dorsal view of carapace of first form male; 27, lateral view of first pleopod of second form male; 28, lateral view of first pleopod of first form male; 29, lateral view of carapace of first form male; 30, epistome of first form male; 31, basipodites and ischiopodites of third and fourth pereopods of first form male; 32, antennal scale of first form male; 33, annulus ventralis of female; 34, distal podomeres of cheliped of first form male.

with only one punctation in narrowest portion. Cephalic section of carapace about 1.7 times as long as areola (length of areola 36.5 per cent of entire length of carapace).

Rostrum broadly ovate, with prominent lateral ridges, and reaching base of ultimate segment of peduncle of antennule; margins converging to tip, no marginal spines present. Surface of rostrum concave and with scattered punctations, a row of them mesial to margins; acumen minute. Subrostral ridges weak and visible for only a short distance at base of rostrum.

Postorbital ridges weak, terminating cephalically without spines or tubercles. A shallow ciliated furrow on lateral surface of each ridge. Suborbital angle extremely weak or obsolete; branchiostegal spines moderately well developed. Lateral surface of carapace granulate with no lateral spine or tubercle present; dorsal surface of carapace punctate.

Cephalic section of telson with three prominent spines in each caudolateral angle.

Epistome (fig. 30) broader than long, angular, and with cephalic margin truncate; margins only slightly elevated.

Antennules of the usual form with a small spine on lower surface of basal segment.

Antennae extend caudad to middle of second abdominal tergum. Antennal scale (fig. 32) broad; broadest distad of midlength; lateral portion slightly inflated and terminating in a small spine; total length about half that of areola (5.1 and 11.0 mm).

Right chela (fig. 34) with palm inflated and with setiferous squamous tubercles present on all surfaces. Inner margin of palm with a row of seven tubercles; rows of tubercles above and below this row somewhat irregular. Both fingers with moderately well defined longitudinal ridges on upper and lower surfaces. Opposable margin of immovable finger with a row of 14 tubercles that extends almost to tip of finger; fourth from base largest; one tubercle present at base of distal fourth of finger below this row. Opposable margin of dactylopodite with a row of 18 tubercles; one large tubercle present at distal end of basal third of finger and slightly below aforementioned row. A single row of minute denticles between and beyond tubercles on opposable margins of both fingers. Except for a few squamous tubercles at bases, both fingers pitted with scattered setiferous punctations. Lower surface of palm with a prominent tubercle at base of dactylopodite.

Carpopodite of first right pereiopod tuberculate mesially and punctate elsewhere. Distal end with four prominent tubercles in a semi-circular row extending mesioventrally from dorsal to ventral condyles; only one other tubercle larger than those nearby on mesial surface.

Meropodite tuberculate above, below and mesiodistally. Lower mesial margin with a row of about 15 tubercles and the usual lateral row poorly defined. Additional tubercles between and to the sides of these two rows. Lower surface of ischiopodite with a row of five tubercles.

Ischiopodites of third and fourth pereiopods with simple hooks (fig. 31); neither opposed by a knob-like process on corresponding basipodites. Coxopodite of fourth pereiopod with a caudomesially projecting knob and coxopodite of fifth with a smaller ventrally directed ridge on mesial angle.

First pleopod extending cephalically to coxopodite of third pereiopod when abdomen is flexed. Tip terminating in four distinct parts (figs. 24, 28), all of which are sclerotized. Distal third of appendage directed at about a 20° angle to the basal two-thirds. Cephalic margin with a slight shoulder at base of distal third of appendage. Mesial process slender, lanceolate and directed at about a 30° angle to the main shaft of the appendage. Cephalic process compressed, acute, lying slightly laterad of central projection, its basal portion somewhat hooding the proximal portion of the latter. Central projection compressed, subacute and partially hidden in lateral aspect by the caudal process, and its distal portion beak-like and directed caudad. Caudal process broadly ovate in lateral aspect; consisting of two parts: a lateral plate-like portion, and a low mesial inflated portion with a ridge-like crest.

Morphotypic Male, Form II.—A small juvenile male in which the secondary sexual characteristics, other than the first pleopod, are only slightly evident. Differs from the holotype in the following respects. Height and width of carapace subequal; subrostral ridges evident in dorsal aspect for half the length of rostrum; cephalic section of telson with only two spines in each caudolateral angle. Other differences occur in tubercle numbers and proportions (see measurements). Hooks on ischiopodites of third and fourth pereiopods only slightly indicated, and knobs and ridges on coxopodites of fourth and fifth pereiopods very small. First pleopod (figs. 25, 27) with all terminal elements evident but all reduced and non-corneous.

Allotypic Female.—Differs from the holotype in the following respects. Areola with two or three punctations in narrowest part; rostrum broadly lanceolate and reaching midlength of ultimate segment of peduncle of antennule; cephalic section of telson with only two spines in the dextral caudolateral angle; truncate cephalic margin of epistome very slightly emarginate; opposable margin of immovable finger with a row of six tubercles, the second from base largest; opposable margin of dactyl with a row of 11 tubercles, the fourth from base largest; mesial row of spines on merus with only 11 tubercles; lateral row on merus with six tubercles; lower surface of ischiopodite with a row of four tubercles.

Annulus ventralis (fig. 33) subcircular in outline and traversed by a shallow longitudinal trough bearing the usual sinus which extends from midcephalic margin almost to caudal margin with a dextral loop just caudal to midlength. Fossa disappears below sinistral wall of broad low, transverse ridge. Cephalolateral margin of annulus partially obscured by overhanging sternum immediately anterior to it.

Measurements.—As follows (in millimeters):

	Holotype	Allotype	Morphotype
Carapace—			
height	13.5	14.0	8.5
width	14.8	15.1	8.4
length	30.1	30.9	18.0
Areola—			
length	11.0	10.7	5.9
width	0.9	0.9	0.6
Rostrum—			
length	6.0	7.0	3.8
width	5.1	5.7	3.1
Right chela—			
length of inner margin			
of palm	9.1	6.2	3.3
width of palm	8.1	6.5	3.4
length of outer margin			
of chela	24.1	17.0	5.5
length of dactyl	14.5	0.4	5.5

Type Locality.—Roadside ditch 1.0 mile west of Scott-Rankin County line on U. S. Highway 80, Rankin County, Mississippi. The crayfish were taken about 9:00 P.M. with the aid of a head light from a ditch some six to 15 feet in width in which the water was from a few inches to a foot in depth. The terrain was swampy.

Disposition of types.—The holotypic male, allotypic female, and a juvenile morphotypic male are deposited in the United States National Museum (cat. nos. 99584, 99585, and 99586, respectively). One female paratype is in the collection of the senior author at the University of Virginia.

Relationships.—*Procambarus jaculus* is here assigned to the Clarkii Subgroup but its affinities with the members of the Planirostris Subgroup should not be overlooked. The slight hump on the cephalic margin of the first pleopod as well as the well developed plate-like caudal process are characteristics of the Planirostris assemblage whereas the disposition of the other terminal elements of the pleopod resembles that of certain members of the Blandingii Subgroup.

REFERENCES CITED

- HOBBS, HORTON H., JR. 1942. The crayfishes of Florida. *Univ. Fla. Publ., Biol. Sci. Ser.*, 3(2): 1-179.
- PENN, GEORGE HENRY 1953. A new burrowing crawfish of the genus *Procambarus* from Louisiana and Mississippi (Decapoda, Astacidae). *Tulane Stud. Zool.*, 1(6): 71-76.

ABSTRACT

Three new crayfishes of the Blandingii Group are described from Alabama and Mississippi. *Procambarus hybus* was collected from eight localities in Green County, Alabama; Kemper, Lowndes, and Noxubee counties, Mississippi. *P. manicus* and *P. jaculus* are known from single localities in Lauderdale and Rankin counties, Mississippi, respectively. All three of these crayfishes appear to be secondary burrowers, associated with temporary pools and roadside ditches.