

A NEW SUBSPECIES OF THE CRAWFISH *ORCONECTES*
LEPTOGONOPODUS FROM THE OUACHITA RIVER
DRAINAGE IN ARKANSAS

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ABSTRACT

A new subspecies of the crawfish *Orconectes leptogonopodus* Hobbs, *O. l. acares*, is described from the Ouachita River drainage in Arkansas. The new race is distinguished from the typical subspecies by shorter terminal elements of the first pleopod, a shorter pleopod, and other minor differences. *Orconectes leptogonopodus leptogonopodus* is recorded from Oklahoma.

An excellent series of *Orconectes leptogonopodus* Hobbs (1948) was found among Tulane University lots of Ozark-Ouachita crawfishes sent to me for identification by Dr. George H. Penn shortly before his death. About the same time Dr. Horton H. Hobbs, Jr., of the United States National Museum sent an "interesting" series of the species collected by Dr. A. P. Blair from the Caddo River drainage. Examination of this large series revealed that Ouachita River populations of *O. leptogonopodus* are morphologically distinct from the topotypic population of *O. leptogonopodus* and from other populations located in tributaries of the Red River. Accordingly, the Ouachita populations are recognized as subspecifically different from the Red River populations of *O. leptogonopodus* and a new subspecies is described.

In addition to the persons mentioned above, the writer is indebted to Dr. Alfred E. Smalley of Tulane University who has

permitted the selection of type material to be distributed as noted below.

The name of this new subspecies is taken from the Greek, *acares*, short; it is so named because a prominent characteristic is the short, in comparison with *l. leptogonopodus*, terminal elements of the first pleopod.

ORCONECTES LEPTOGONOPODUS
ACARES, *subsp. nov.*

Synonymy.

Orconectes leptogonopodus Williams, 1954
(*in partim*).

Diagnosis: Pigmented; eyes normal. Rostrum with marginal tubercles or spines, median carina present, margins subparallel or slightly converging cephalad, not thickened; length of areola 29.1 to 33.7 (mean 31.8) per cent of total length of carapace, 5.5 to 7.0 times longer than broad, three to five punctations in narrowest part. Post-orbital ridges strong, terminating cephalad in strong, divergent, corneous spines or tubercles; sides of carapace lacking lateral spines. First pleopod of first form male reaching caudal margin of coxopodite of first pereopod with abdomen flexed; central projection with strong cephalic shoulder near base; central projection straight, longer than mesial process [ratio of central projection length to mesial process length 1.25 to 1.54 (mean 1.34)], slender, with tip curving caudadistally; mesial process straight, setiform, slender, delicate; tips of first pleopod divergent (Figs. A, E). Annulus ven-

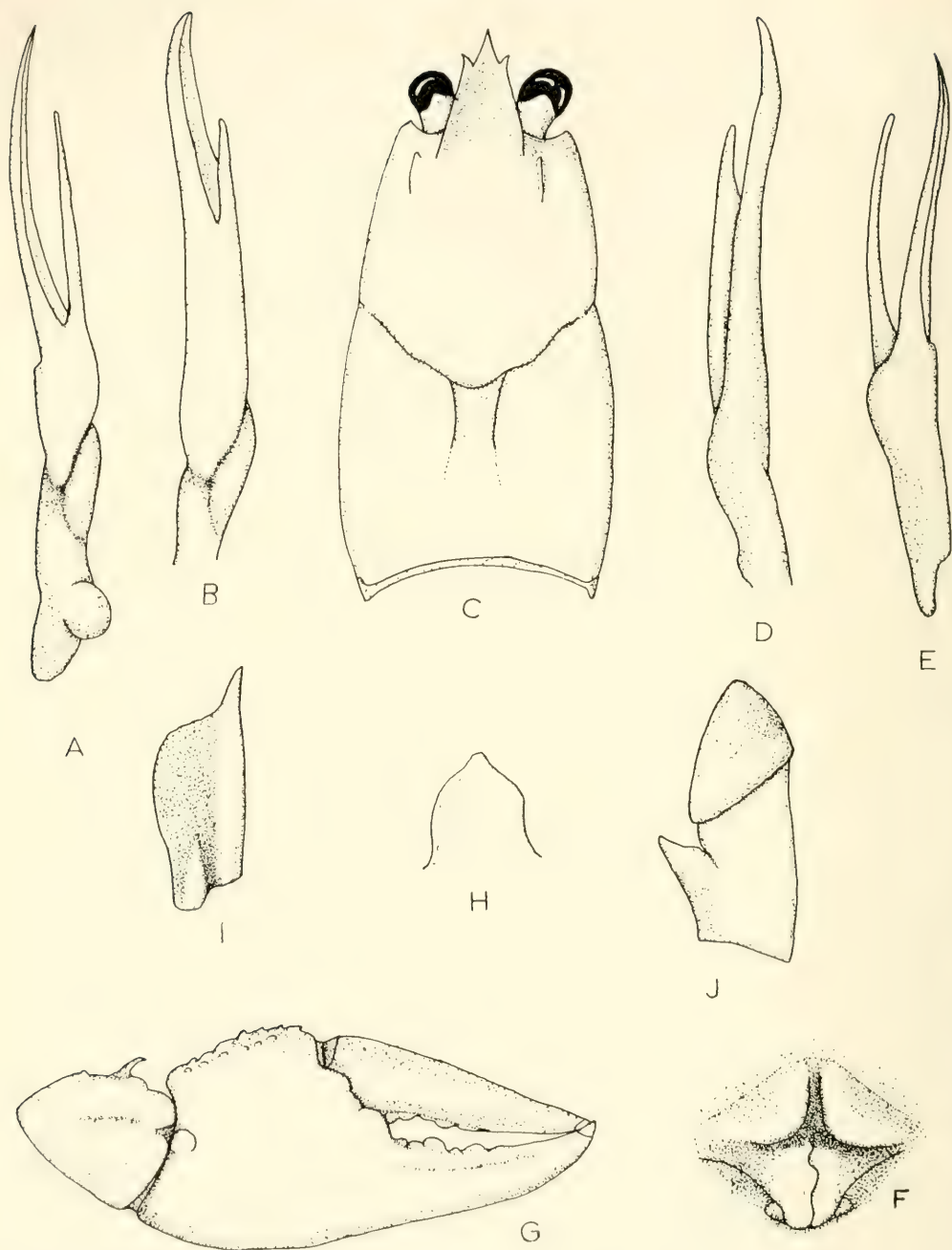
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Figures A-J. *Orconectes leptogonopodus acares*.

Legend. **A**. Mesial view of first pleopod of holotype; **B**. Mesial view of first pleopod of morphotype; **C**. Dorsal view of carapace of holotype; **D**. Lateral view of first pleopod of morphotype; **E**. Lateral view of first pleopod of holotype; **F**. Annulus ventralis of allotype; **G**. Right chela of holotype, upper view; **H**. Epistoma of holotype; **I**. Antennal scale of holotype; **J**. Basipodite and ischiopodite of third pereiopod showing hook. (Mesial process of holotype slightly warped in preservation; in life, it is less divergent and is straight.)

tralis immovable, subrhomboid in outline, with prominent tongue-like caudal projection, deep transverse trough in anterior half; sinus originating in trough, winding sinuously either sinistrally or dextrally, disappearing in caudal margin (Fig. F).

Holotypic male, Form 1: Body subcylindrical, slightly depressed. Abdomen narrower than cephalothorax (8.5, 8.7 mm in widest parts, respectively). Width of carapace greater than depth in region of caudo-dorsal margin of cervical groove (8.7, 6.9 mm).

Areola moderately broad (6.8 times longer than wide) with two or three punctations across narrowest part. Cephalic section of carapace about 1.9 times as long as areola. Length of areola 34.3 per cent of entire length of carapace. Dorsal features of carapace illustrated in Figure C.

Rostrum with slightly converging margins; margins not distinctly thickened, but terminating cephalically in strong spines; upper surface deeply concave, bearing setiferous punctations, and with a moderately developed median carina. Acumen short, broad; extending to distal end of peduncle of antennule; tip not upturned. Subrostral ridges evident in dorsal aspect for a short distance at bases.

Postorbital ridges strong, grooved dorso-laterally, projecting cephalad in strong divergent spines. Suborbital angle acute. Branchiostegal spines acute. Carapace with a weakly developed tubercle on each lateral surface at level of branchiocervical groove. Entire carapace studded with setiferous punctations except extreme cephalolateral ventral portions which bear setiferous granulations.

Abdomen shorter than carapace (17.2, 17.8 mm). Cephalic section of telson with two spines in each caudolateral corner.

Epistome (Fig. H) subcircular in outline with cephalomedian tubercle.

Antennules of usual form with prominent spine on ventral surface of basal segment. Antennae broken, but appear to have extended to posterior region of abdomen. Antennal scale (Fig. I) about 2.2 times longer than broad, mesial margin of lamellar portion evenly rounded, widest distal to mid-length.

Chela (Fig. G) depressed, palm inflated; all surfaces bearing setiferous punctations. Tubercle present on lower surface of palm

at base of dactyl. Inner margin of palm with two irregular rows of tubercles, lower row of seven and upper row of six. Fingers with slight gap at base. Upper surface of immovable finger with broad, rounded, submedian, longitudinal ridge flanked by setiferous punctations; another ridge along proximal three-fourths of finger immediately mesial to aforementioned ridge. Outer margin of immovable finger with well-defined keel extending proximally two-thirds length of palm; opposable margin of finger with row of two small, one large, and three small tubercles (proximal to distal) extending along basal two-thirds and crowded minute denticles along distal one-third; submedian longitudinal ridge on lower surface of finger. Dactyl similar to immovable finger above and below; mesial margin with double row of tubercles along proximal one-third, lower row of three but upper row with only one well-defined tubercle; opposable margin with five small tubercles along basal two-thirds and crowded minute denticles in distal one-third.

Carpus of cheliped longer than broad and with broad shallow longitudinal furrow above; setiferous punctations over entire surface and few small tubercles on upper surface mesial to furrow; mesial surface with prominent tubercle on upper proximal one-third, strong acute spine on lower middle one-third, and tubercle on upper mesiodistal margin; lower submedian distal margin and lower laterodistal margin each with strong spine. Upper and lower surfaces of merus with scattered setiferous punctations; lateral surfaces generally smooth; three spines in line on upper distal surface; lower mesial surface with row of nine tubercles increasing in size distally, terminating in strong acute distal spine; single acute distal spine on lower laterodistal margin and row of one spine and nine tubercles proximal to distal spine. Lower surface of ischiopodite with small rounded tubercle. Hooks on ischiopodites of third pereopods only (Fig. J); hooks simple.

First pleopod extending cephalad to caudal margin of coxa of first pereopod with abdomen flexed. Tip terminating in two distinct parts, both slender and setiform; rami separated for considerable distance from tips and moderately divergent (Figs. A, E). Central projection corneous, straight, but with tip curved caudodistally. Mesial process not

extending so far distad as central projection, non-corneous, and quite delicate. (Delicate nature of mesial process results in preservation artifacts; so noted in figure of holotype.) Pleopods symmetrical (*sensu* Hobbs, 1962).

Morphotypic male, Form II: Differs from holotype in following respects: lateral tubercles of cephalothorax lacking. Carpus of cheliped with upper mesiodistal spine. Palm less inflated and proportionately smaller than holotype. Hooks on ischipodites of third pereopods much reduced. Both elements of pleopod (Figs. B, D) non-corneous, blunter and in close apposition along basal three-fourths.

Allotypic female: Differs from holotype in following respects: palm proportionately smaller and less inflated than holotype. First pleopod biramous and weakly developed.

Annulus ventralis immovable, subrhomboid in outline with prominent tongue-like projection of caudal margin, fused cephalically with sternum but with two prominent lateral tubercles raised (ventrally) in cephalic half. Deep transverse trough in cephalic half, with aforementioned tubercles overhanging cephalolateral portions. Sinus originating in trough, curving gently caudo-sinistrally, then caudally following sinuous path to caudal margin of annulus (Fig. F).

Type locality: Stream tributary to Ouachita River, 6 mi. northwest of Mt. Ida, Montgomery County, Arkansas.

Disposition of the types: The holotypic male, Form I; the allotypic female; and the morphotypic male, Form II, are in the collections of the United States National Museum (nos. 115517, 115518, and 115519, respectively). Paratypes are deposited in the

U. S. National Museum (nos. 114821 and 114822), the Museum of Comparative Zoology, Harvard University (no. 12637), Tulane University (parts of Lots 2500, 2956, 3081, 3082, 3083, 3150, 3346, 3364, 3443, 3444, 3450, and 3451), and in personal collections of the author. The paratype series is a total of 218 specimens representing both forms of the male, females, and juveniles of both sexes. The specimens at MCZ and in collections of the author are among specimens designated topoparatypes.

Range: This subspecies is confined to tributaries of the Ouachita River and has been collected from the following counties in Arkansas: Garland, Hot Springs, Montgomery, Perry, Pike, Polk, and Saline.

Variations: There are relatively few variations in the specimens examined. In some there are less pronounced cephalomedian projections of the epistome, and in a few specimens the projection is lacking. In some specimens the terminal elements of the pleopod are longer than usual, resulting in a greater central projection: mesial process ratio. Lateral tubercles of the carapace are lacking in many specimens.

Relationships: *Orconectes leptogonopodus acares* has its closest affinities with *O. l. leptogonopodus* Hobbs. Although there are no evidences of intergrade populations among the specimens examined, Jones Creek and Caddo River specimens show definite tendencies toward typical *leptogonopodus* morphology, and specimens of *O. leptogonopodus leptogonopodus* from McCurtain County, Oklahoma, show definite tendencies toward morphological features of *O. leptogonopodus acares*. *O. l. leptogonopodus* appears to be restricted to tributaries of the

TABLE I.
Measurements of type specimens of Orconectes leptogonopodus acares.
(All measurements in mm)

	Holotype	Allotype	Morphotype
Carapace—height	6.9	10.4	7.5
width	8.7	8.7	8.7
length	17.8	25.3	18.0
Areola—length	6.1	8.6	5.9
width	0.9	1.2	1.1
Rostrum—length	4.9	5.9	5.0
width	2.8	3.4	3.0
Chela—length of inner margin of palm	5.0	7.0	4.8
width of palm	6.5	8.5	6.3
length of outer margin of palm	14.1	19.1	12.9
length of dactyl	8.5	10.7	7.7

Red River in Arkansas and eastern Oklahoma, while *O. l. acares*, is confined to tributaries of the Ouachita River, from the Caddo River upstream. *O. l. acares* may be distinguished from *O. l. leptogonopodus* by a shorter pleopod, a shorter central projection, and a smaller central projection: mesial process ratio (mean value for **acares**: 1.34; for *leptogonopodus*: 1.43). In *O. l. acares* there is a greater tendency toward development of a cephalomedian projection of the epistome, and there are slight differences between the two subspecies in outline of the cephalic margin of the annuli ventrales.

Remarks: *Orconectes leptogonopodus* has never been reported from outside the state of Arkansas, but two collections in the USNM are from Oklahoma: (1) 8 Oct.

1955, McCurtain Co. (?), Eagle Creek, trib. to Mountain Fork Riv., nw of Smithville, coll. A. P. Blair (?) (Hobbs Collections); and (2) 28 Nov. 1963, McCurtain Co., Broken Bow, 6 NNE, coll. A. P. Blair, and both of these contained specimens which I identified as *O. l. leptogonopodus*.

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