A New Crayfish of the Genus Orconectes from Illinois (Decapoda, Astacidae)

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A New Crayfish of the Genus Orconectes From Illinois (Decapoda, Astacidae)[1]

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The crayfish described here was discovered while the author was carrying out an investigation on the biology of the crayfishes of central and southeastern Illinois.[2] According to the collection data compiled during this investigation, this crayfish is limited in distribution to the southern part of Illinois and was not found in the collections which were made in the eastern and central parts of the state.

Orconectes illinoiensis sp. nov.

Diagnosis.—Eyes and carapace pigmented; rostrum usually bearing prominent lateral spines, concave above, sides concave with concavity varying from slight to medium; areola of medium width, 4-5 times as long as broad with three to four punctations in narrowest part. Branchiostegal spine present; ischiopodites of third pereiopods of males bearing hooks. First pleopod of male reaching to coxopodite of second pereiopod when abdomen is flexed; terminal elements subequal in length in most specimens, central projection slightly longer in others. Annulus prominently bi-tuberculate with tubercles widely separated (fig. 6).

Holotypic Male, Form I.—Body subovate, decidedly depressed; abdomen narrower than thorax; width of carapace (fig. 3) greater than depth in region of caudodorsal margin of cervical groove (15-11.5 mm).

Areola of medium breadth (4.2 times longer than wide) with three to four punctations at narrowest part; cephalic portion of carapace about 2.2 times as long as areola; areola about 28% of length of entire carapace.

Rostrum bearing thickened concave margins which terminate cephalad in prominent, slightly raised spines; upper surface concave and bearing setae. Acumen long with upturned tip. Subrostral ridges not prominent and visible only for a short distance in the dorsal aspect. A row of setiferous punctations located mesially along either marginal ridge.

Postorbital ridges prominent, shallow groove dorsolaterally and terminating in heavy pointed tubercles. Suborbital angle absent. Branchiostegal spine acute. Surface of carapace granulate laterally and with setiferous punctuations laterally.

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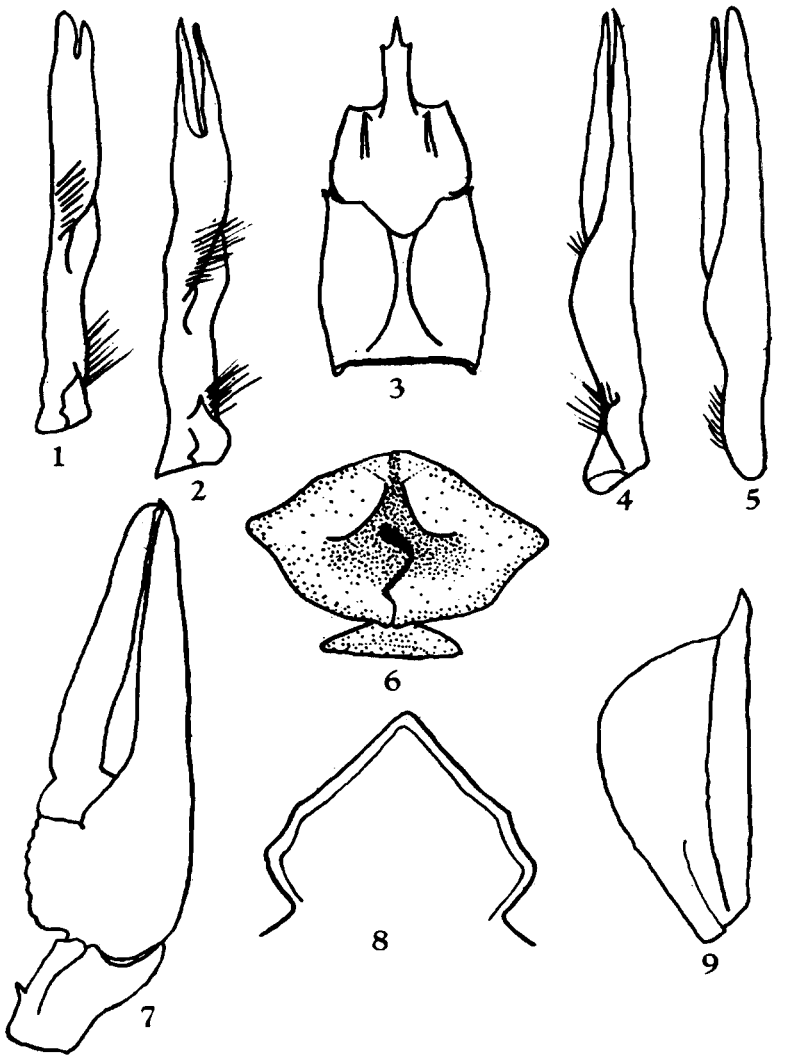
[2] This represents a part of the dissertation which was submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Zoology at the University of Illinois.



Figs. 1-9.—1. Mesial view of first pleopod of morphotypic male, form II; 2. Mesial view of first pleopod of holotype; 3. Dorsal view of carapace of holotype; 4. Lateral view of first pleopod of holotype; 5. Lateral view of first pleopod of morphotypic male, form II; 6. Annulus ventralis of allotype; 7. Upper surface of chela of holotype; 8. Epistome of holotype; 9. Antennal scale of holotype.

Cephalic section of telson bispinose in each caudolateral corner.

Epistome bell-shaped and bearing no cephalomedian projection (fig. 8).

Antennules of usual form.

One antenna of holotype broken; unbroken one about equal in length to the total length of the crayfish. Antennal scales extending about to tip of rostrum; rather long and bearing a strong acute spine distally (fig. 9); mesial margin of lamellar portion semisquare.

Chelae slightly depressed distally and inflated proximally; setiferous punctations covering all surfaces (fig. 7). Both fingers terminating in short incurved corneous tips; tip of immovable finger overhanging that of movable finger; inner margin of palm with two rows of tubercles. Fingers slightly gaping throughout their entire length, the gap somewhat wider at the base. Outer margin of immovable finger bearing a keel. Opposable margins of fingers bearing heavy tubercles with those of the immovable finger being larger.

Hooks on ischiopodites of third pereiopods only.

First pleopod extending to middle of coxopodite of second pereiopod when abdomen is flexed (figs. 2, 4). Tip terminating in two distinct, subequal rami which are separated for a short distance; central projection slightly longer; rami divergent (central projection directed cephalodistad and mesial process caudodistad). Central projection corneous, almost straight and tapering sharply distally. Mesial process non-corneous and turning laterad.

Morphotypic Male, Form II.—Similar to the holotype male except for the following: Chelae proportionately smaller and less inflated; hooks on ischiopodites of third pereiopods considerably smaller; first plepods lacking corneous tips on rami, both mesial and central processes blunter and thicker (figs. 1, 5).

Allotypic Female.—Differs from the holotypic male in that the tuberculation of the chelae is more pronounced. The dorsolateral surface of the postorbital ridge is more deeply grooved. Epistome bearing a small cephalomedian spine and somewhat subquadrate.

Measurements (in millimeters).

	Holotype	Allotype	Morphotype
Carapace			
height	11.7	13.6	16.3
width	14.2	16.4	19.9
length	28.3	34.3	41.9
Areola			
length	8.0	9.2	12.8
width	1.7	1.8	2.2
Rostrum			
length	7.6	8.5	10.6
width	3.9	4.6	5.6
Abdomen			
length	30.5	32.3	39.3
Right chela			
length of inner margin of palm	6.3	5.5	9.3
width of palm	9.1	6.7	11.9
length of outer margin of hand	24.1	21.2	32.8
length of dactyl	14.9	13.5	20.6

Annulus ventralis longest in the transverse axis; prominently bi-tuberculate with the tubercles widely separated. Sinus originates mediodextrad, traverses sinistrad across the median line; here it turns caudodextrad to the median line and follows sinuously to the caudomedian margin of the annulus.

Type Locality.—The holotype and the allotypic female were collected from Cypress Creek, 3¼ mi. south of Mt. Pleasant, Union County, Illinois. These specimens were collected with a minnow seine Sept. 30, 1954. The temperature of the air was 22°C. The water was turbid; the stream had a rocky bottom and it varied in depth from 2-3½ feet; it was about 18 feet wide at this location. The chemical condition of the water was as follows: pH 7.2, CO_2 16 ppm, oxygen 4.64 ppm, and methyl orange alkalinity 153 ppm. The morphotypic male was collected by seine July 13, 1954 from the Cache River, 1¼ mi. NW Mt. Pleasant, Union County, Illinois. The air temperature was 33°C., while the temperature of the water was 24°C. The stream was about twenty feet wide at this locality and the water ranged from 1½-3 feet in depth. The bottom of the stream was rocky and some crayfish were observed hiding under the rocks. The pH was 7.4, dissolved carbon dioxide 10 ppm, dissolved oxygen 5.27 ppm, and the total alkalinity 155 ppm.

Specimens Examined.—One hundred twelve specimens of this species were collected during the previously mentioned investigation. These specimens were collected from fifteen stations in the following counties in southern Illinois. ALEXANDER Co.: Sandy Creek, ½ mi. NW Diswood; GALLATIN Co.: Cypress Ditch, ½ mi. NW Junction; HARDIN Co.: Hick's Branch, 4 mi. NE Eichorn; a branch of Harris Creek, 5½ mi. N Elizabeth; POPE Co.: Bay Creek, 1½ mi. W Homberg; Gibbons Creek, 1 mi. NW Herod; a branch of Robnett Creek, ½ mi. W Rose Bud; Hobb's Creek, 4¼ mi. SE Hartsville; Hunting Branch, 4¼ mi. NW Eddyville; Hayes Creek, 1 mi. E Glendale; UNION Co.: Cache River, 1¼ mi. NW Mt. Pleasant; Lick Creek, 2¼ mi. NW Lick Creek; Big Creek 3¼ mi. E Balcom; Cypress Creek, 3¼ mi. S Mt. Pleasant.

Disposition of Types.—The holotypic male, form I, and the allotypic female (USNM nos. 97997 and 97998 respectively) and the morphotypic male, form II (USNM no. 91661) are deposited in the United States National Museum. Three paratypes (1 form I male, 1 form II male, and 1 female) are in the personal collection of Dr. Max R. Matteson of the University of Illinois. Likewise, paratypes consisting of the same three forms are in the personal collections of both Dr. Horton H. Hobbs, Jr. of the University of Virginia at Charlottesville, Virginia and Dr. Troy C. Dorris of Quincy College, Quincy, Illinois. The remainder of the specimens are in the research collections which are at present retained by the writer for the University of Illinois.

Relationships—*Orconectes illinoiensis* probably has its closest affinities with *O. p. propinquus* (Girard, 1852) and *O. propinquus jeffersonii* (Rhoades, 1944). The annuli ventrali of the females and the copulatory appendages of the males reflect this similarity to a marked degree. *Orconectes illinoiensis* is readily distinguishable from *O. p. propinquus* by the lack of a median carina, the more setiform and divergent gonopods, the narrower areola, and the rostrum with concave sides. The annulus ventralis of *Orconectes p. propinquus* is bi-tuberculate with the tubercles depressed and narrowly separated, while the tubercles of the annulus ventralis of *O. illinoiensis* are raised and widely separated. *Orconectes illinoiensis* differs from *O. p. jeffersonii* in that it has a narrower

rostrum which has concave sides, and the tubercles of the annulus ventralis are less prominent. This species exhibits a distant relationship with *Orconectes virginiensis* (Hobbs, 1951).

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