

been found. This latter record represented a considerable extension of its southward range along the coast of South America, the previous one being from southeast of Punta do Boi, São Sebastião, Brazil, at 24°25'S, 44°40'W (Mistakidis and Neiva, 1966). Burukovskii and Romenskii considered *Parapenaeus americanus* a "rare shrimp," probably because the works of Springer and Bullis, and Bullis and Thompson were not available to them. I should like to point out that in the extensive collections of penaeoids made by various research vessels (other than those obtained by the *Gosnold*) along the western Atlantic, I have found no specimens of *P. americanus* north of Ponte Vedra, Florida. This shrimp was very abundantly represented, however, in the collections from the Caribbean Sea, and a number of lots were present in those taken off the coast of South America, as far south as Rio Grande do Sul. The occurrence of the species in the latter area was recently reported by Iwai (1973). The contribution by Burukovskii and Romenskii not only added to our knowledge of the range of the species, but also of its external morphology, presenting clear drawings of the entire animal, various appendages, and external genitalia.

Acknowledgments

I wish to thank R. L. Haedrich, G. T. Rowe and P. T. Polloni, of the Woods Hole Oceanographic Institution, for donating a large collection of shrimps to the National Museum of Natural History, among which were the three specimens on which the new records are based. The collections were made under National Science Foundation contract 31235X.

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NEW ENTOCYTHERID OSTRACODS OF THE
GENUS *DACTYLOCYTHERE*

Horton H. Hobbs, Jr., and Margaret Walton

The four entocytherids described herein were collected by Raymond W. Bouchard during the course of his study of the crayfishes of Tennessee and neighboring states. All of them occur in the Cumberland and/or Tennessee River basins in Tennessee, and one is also present in the Coosa River basin in Alabama.

Most of the ostracods were obtained from collections containing two or more crayfish species that might have served as their hosts, and all of them are included in the paragraphs devoted to "Hosts." Obviously, only in collections containing a single species of crayfish can a definite correlation be made between the ostracod and its host, and these crayfishes are indicated by an asterisk.

We are grateful to Dr. Bouchard for donating the ostracod collections to us, for providing us with identifications of the hosts, and for reviewing the locality data. We also extend our thanks to Margaret A. Daniel, C. W. Hart, Jr., and Raymond B. Manning for their critical readings of the manuscript.

Dactylocythere astraphes, new species

Fig. 1

Dactylocythere sp. Hobbs and Walton, 1975:12.

Male.—Eye pigmented and located about one-fifth shell length from anterior margin. Shell (Fig. 1c) subovate with margins entire and lacking bulges, greatest height about two-thirds length from anterior margin where almost 1.4 times that at level of eye, ventral margin convex. Submarginal setae present except dorsally posterior to level of eye, setae more abundant anteriorly and posteriorly than ventrally. Sternal spine well developed and directed ventrally.

Copulatory complex (Fig. 1a, b) with finger guard long, broad basally, and slender distally, its cephalic margin rather straight but bent caudally near truncate distal extremity, latter sometimes bearing as many as 3 minute acute prominences, caudal margin sinuous and caudodistal extremity subacute. Dorsal and ventral fingers comparatively slender and with simple tips; ventral finger gently curved along distal three-fourths and apex directed cephalically. Peniferum robust, truncate ventrally with apical part directed anteroventrally and anteroventral extremity subangular to broadly rounded; width of peniferal groove one-half to three-fourths least

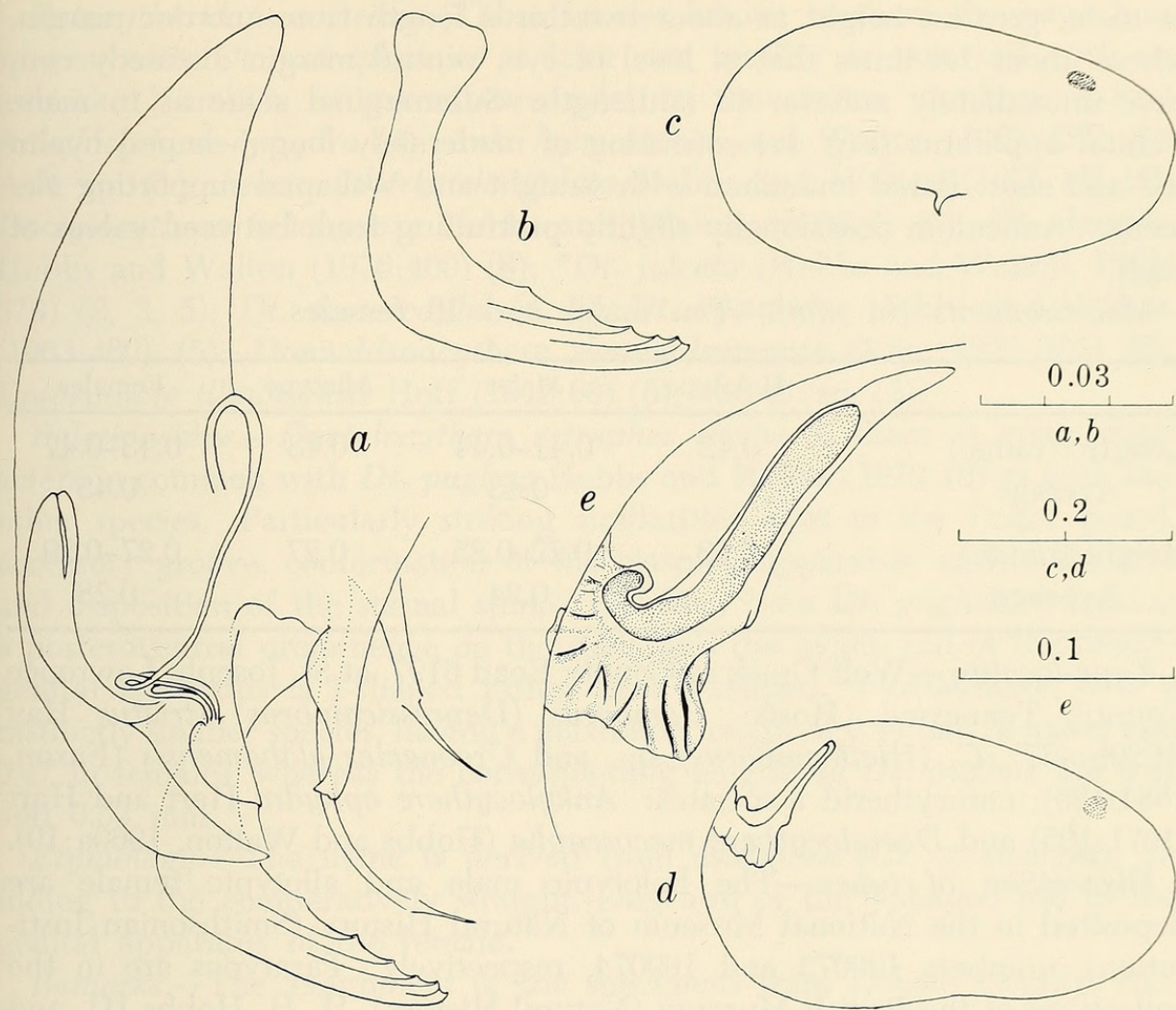


Fig. 1. *Dactylocythere astraphes*: a, Copulatory complex of male; b, Clasper of male; c, Shell of male; d, Shell of female; e, Genital apparatus of female. (Scales in mm.)

diameter of vertical ramus of clasping apparatus; L-shaped penis with distal ramus shorter than proximal; accessory groove somewhat inflated, tapering dorsally, reaching level of ventral end of spermatic loop, and ventrally forming slender gently curving ductule directed toward proximal ramus of penis. Clasping apparatus L-shaped with swollen base; vertical ramus with pre- and postaxial margins entire; posterior margin of junction of rami usually rounded, occasionally subangular; preaxial border of horizontal ramus with 3 teeth progressively closer together distally, distal 2 marked basally by striae extending proximally across distal two-thirds of ramus; apex of ramus with 3 dorsally situated denticles, hardly, if at all, smaller than adjacent more proximal tooth.

Triunguis female.—Eye situated one-fifth to one-sixth shell length from anterior margin. Shell (Fig. 1d) appearing more strongly vaulted than

in male; greatest height at about two-thirds length from anterior margin, where about 1.4 times that at level of eye; ventral margin distinctly concave immediately anterior to midlength. Submarginal setae as in male. Genital apparatus (Fig. 1e) consisting of moderately long J-shaped hyalin rod and short flared amiculum with straight and V-shaped supporting elements. Amiculum occasionally slightly protruding from between valves of shell.

Measurements (in mm).—Ten males and 10 females.

	Holotype	Males	Allotype	Females
Length (range)	0.42	0.41–0.44	0.43	0.43–0.47
Average		0.43		0.45
Height (range)	0.23	0.22–0.25	0.27	0.27–0.29
Average		0.24		0.28

Type-locality.—Wolf Creek at County Road 6197, at St. Joseph, Lawrence County, Tennessee. Hosts: *Cambarus* (*Depressicambarus*) *striatus* Hay (1920b:437), *C.* (*Hiaticambarus*) sp., and *Orconectes alabamensis* (Faxon, 1884:125); entocytherid associates: *Ankylocythere ephydra* Hart and Hart (1971:105) and *Dactylocythere mecoscapha* (Hobbs and Walton, 1960a:19).

Disposition of types.—The holotypic male and allotypic female are deposited in the National Museum of Natural History (Smithsonian Institution), numbers 169073 and 169074, respectively. Paratypes are in the collections of the British Museum (Natural History), H. H. Hobbs III, and the Smithsonian Institution.

Range and specimens examined.—Males and females from each of the following localities in the basins of the Coosa River, Caney Fork of the Cumberland River, and in the Tennessee River downstream from Walden Ridge: ALABAMA: *Dekalb County*—(1) Wolf Creek on Co Rd 176, 4 mi W of jct of St Rte 35 and Co Rd 176 (T. 7S, R. 9E, Sec. 2). TENNESSEE: *Bledsoe County*—(2) Sequatchie River at Co Rd 4263, S of Cumberland Co line. *Cumberland County*—(3) Sequatchie River off Co Rd 4263, SW of Burke. *Lawrence County*—(4) Type-locality; (5) Shoal Creek at U.S. Hwy 64 E of Lawrenceburg. *White County*—(6) Polebridge Branch (tributary to Big Lost Creek) at Co Rd 4385, S of De Rossett.

Hosts.—Retrieved from crayfish collections including one or more of the following species (Numbers in parentheses refer to the station numbers above.): *Cambarus* (*Depressicambarus*) *graysoni* Faxon (1914:393) (5); *C.* (*D.*) *sphenoides* Hobbs (1968:262) (6); *C.* (*D.*) *striatus* (1, 3, 4, 5); **C.* (*Hiaticambarus*) *girardianus* Faxon (1884:117) (2, 3, 5); *C.* (*H.*) sp. (4, 5); *C.* (*Jugicambarus*) *parvovulus* Hobbs and Shoup (1947:142) (6); *C.* (*J.*) *unestami* Hobbs and Hall (1969:287) (1); *Orconectes alabamensis* (4); *O. spinosus* (Bundy, 1877:173) (5).

Entocytherid associates.—(Those species known to share the same host species with *Dt. astraphes* in at least one locality are marked with an asterisk. Numbers in parentheses refer to the station numbers above.) *Ankylocythere ephydra* (4); *Ank. hyba* Hobbs and Walton (1963:457) (5); *Ank. sp.* (1); *Ascetocythere triangulata* Hobbs and Walton (1975:11) (6); *Dactylocythere brachystrix* Hobbs and Walton (1966:2) (6); *Dt. demissa* Hobbs and Walton (1976:400) (6); **Dt. falcata* (Hobbs and Walton, 1961:379) (2, 3, 5); *Dt. mecoscapa* (4, 5); *Dt. xystroides* Hobbs and Walton (1963:460) (5); *Donnaldsoncythere donnaldsonensis* (Klie, 1931:334) (6); *Entocythere illinoisensis* Hoff (1942:66) (5); and *E. sp.* (3).

Relationships.—*Dactylocythere astraphes* seems to share as many characters in common with *Dt. pughae* Hobbs and Hobbs (1970:10) as with any other species. Particularly striking similarities exist in the finger guard, accessory groove, conformation of the clasping apparatus, and in the size and disposition of the sternal spine. It differs from *Dt. pughae* in lacking a posteroventral prominence on the shell, and the hyalin rod of the female genital apparatus is J-shaped rather than S-shaped. Furthermore, it is a distinctly smaller species, having a maximum length of 0.44 mm in males and 0.47 in females, whereas the corresponding lengths in *Dt. pughae* are 0.47 and 0.53 mm.

Etymology.—The name is derived from *astraphes* (Gr. = straight), alluding to the comparatively straight, long arm of the J-shaped rod in the genital apparatus of the female.

Remarks.—The assignment of the specimens from Dekalb County, Alabama, to this species should be considered as tentative. They are atypical in that the angle formed by the rami of the clasping apparatus of the male is distinctly thickened, and the J-shaped rod of the female genital apparatus is conspicuously bowed posteroventrally.

Dactylocythere corvus, new species

Fig. 2

Male.—Eye pigmented and situated about one-fifth to one-sixth shell length from anterior margin. Shell (Fig. 2c) obovate with distinct posteroventral subacute to rounded prominence; greatest height distinctly posterior to midlength, 1.5 to 1.6 times that at level of eye; ventral margin convex. Submarginal setae closer together anteriorly and posteriorly than ventrally, apparently absent dorsally posterior to level of eye. Sternal spine strong and directed posteroventrally.

Copulatory complex (Fig. 2a, b) with finger guard rather long, moderately slender, broadly excavate posteriorly, and subtruncate ventrally. Dorsal and ventral fingers comparatively slender, latter about twice length of former and with gentle bend slightly proximal to midlength; dorsal finger with bifid tip. Peniferum robust, ventral part resembling head of

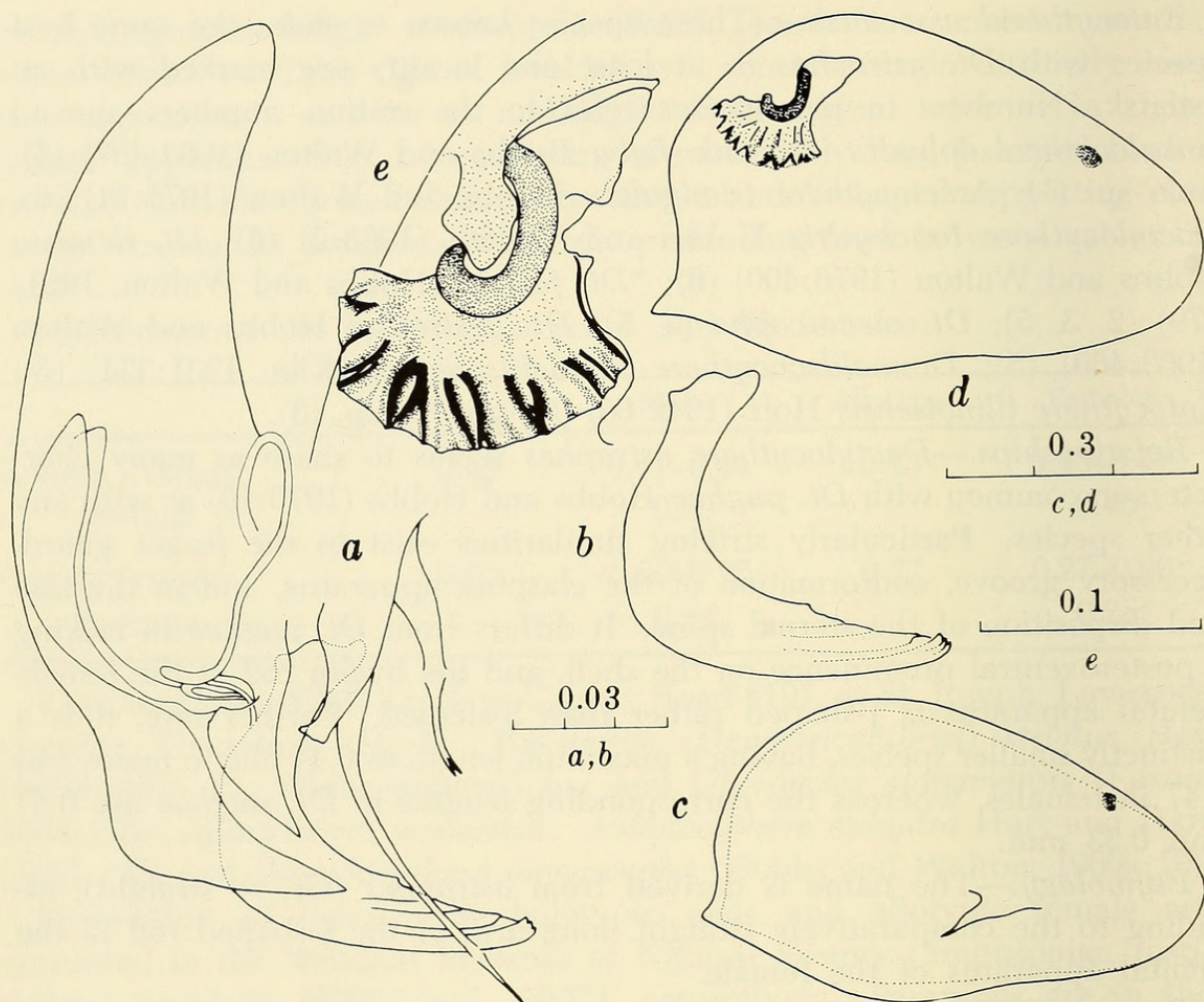


Fig. 2. *Dactylocythere corvus*: a, Copulatory complex of male; b, Clasper; c, Shell of male; d, Shell of female; e, Genital apparatus of female. (Scales in mm.)

crow, with rounded posteroventral bulge and produced anteroventrally in beaklike corneous projection; peniferous groove moderately broad, sometimes approaching half least diameter of vertical ramus of clasping apparatus; penis L-shaped with distal ramus shorter than proximal; accessory groove bipartite, at least dorsally, and reaching level of dorsal extremity of spermathecal loop. Clasping apparatus more L- than C-shaped, with pre- and postaxial margins of vertical ramus entire, proximal half of latter situated at angle to distal half (clearly evident on postaxial margin); pre-axial margin of ventral ramus with single distinct tooth or sharp excision near midlength, followed distally by 2 or 3 low elevations marked basally by oblique striae; ramus with 3 upturned apical denticles.

Triunguis female.—Eye as in male. Shell (Fig. 2d) more highly vaulted than in latter; greatest height about two-thirds length from anterior end where, as in male, about 1.5 times height at level of eye. Submarginal setae disposed as in male. Posteroventral margin of shell with distinct acute to

subacute projection. Genital apparatus (Fig. 2e) consisting of J-shaped hyalin rod and flared amiculum, latter with series of submarginal supporting elements and often protruding posteriorly from between valves of shell.

Measurements (in mm).—Thirteen males and 14 females.

	Holotype	Males	Allotype	Females
Length (range)	0.56	0.54–0.60	0.63	0.53–0.63
Average		0.58		0.60
Height (range)	0.35	0.32–0.35	0.40	0.34–0.42
Average		0.34		0.39

Type-locality.—Flat Creek at State Route 85, W of town of Flat Creek, Overton County, Tennessee. Hosts: *Cambarus (Depressicambarus) graysoni*, *Cambarus (Erebicambarus) rusticiformis* Rhoades (1944:133), *Cambarus (E.) tenebrosus* Hay (1902a:232), *Cambarus (Puncticambarus) cumberlandensis* Hobbs and Bouchard (1973:42), and *Orconectes placidus* (Hagen, 1870:65); entocytherid associates: *Donnaldsoncythere donnaldsonensis*, *Uncinocythere simondsi* (Hobbs and Walton, 1960a:17), and *U. zancla* Hobbs and Walton (1963:456).

Disposition of types.—The holotypic male and allotypic female are deposited in the National Museum of Natural History (Smithsonian Institution), numbers 169075 and 169076, respectively. Paratypes are in the collections of the British Museum (Natural History), H. H. Hobbs III, Daniel J. Peters, and the Smithsonian Institution.

Range and specimens examined.—Males and females from each of the following localities in the Cumberland River basin in Tennessee: *Fentress County*—(1) Little Crab Creek at Co Rd 5238 just E of town of Little Crab; (2) South Prong of Clear Fork Creek off Co Rd 4242, NE of Roslin; (3) North Prong of Clear Fork Creek at Co Rd 4242, E of Grimsley; (4) Wolf River off U.S. Hwy 127, SE of town of Wolf River; (5) Crooked Creek at Co Rd 2438, near Morgan Co line SW of Shipley. *Overton County*—(6) Type-locality; (7) Puncheon Camp Creek at St Rte 85 at Allred; (8) Little Indian Creek at Co Rd 4391, NE of Hanging Limb; (9) Nettlecarrier Creek off St Rte 52, NW of Alpine; (10) Big and Little Eagle creeks at Co Rd 4393, NW of Monroe; (11) West Fork of Obey River and Cowan Branch at St Rte 52, E of Alpine. *Pickett County*—(12) Lick Creek at U.S. Hwy 127, NW of Chanute. *Scott County*—(13) Station Camp Creek off Co Rd 2451, NW of town of Indian Creek.

Hosts.—Retrived from crayfish collections including one or more of the following species. (Numbers in parentheses refer to the station numbers above.) *Cambarus (Depressicambarus) graysoni* (1, 4, 6, 9–12); *C. (D.)*

sphenoides (2); *C. (Erebicambarus) tenebrosus* (1, 6, 9, 10); *C. (E.) rustici-formis* (4, 6, 9); **C. (Jugicambarus) crinipes* Bouchard (1973:106) (2, 3, 8); *C. (J.) distans* Rhoades (1944:136) (7, 12, 13); *C. (J.) parvovulus* Hobbs and Shoup (1947:142) (11); **C. (Puncticambarus) cumberlandensis* (1-7, 9-13); *Orconectes placidus* (1, 4, 6, 7, 9-11); *O. sp.* (10, 12).

Entocytherid associates.—(Those species known to share the same host species with *Dt. corvus* in at least one locality are marked with an asterisk. Numbers in parentheses refer to the station numbers above.) *Dactylocythere macroholca* Hobbs and Hobbs (1970:9) (1, 3, 12); **Dt. speira* Hart and Hart (1971:113) (8); *Dt. unguolata* (Hart and Hobbs, 1961:174) (9); *Donnaldsoncythere donnaldsonensis* (1-4, 6, 7, 9-13); *Entocythere sp.* (2-4); *Uncinocythere simondsi* (1, 6, 7, 9, 10); *U. stubbsi* Hobbs and Walton (1966:9) (10, 11); and *U. zancla* (1, 4, 6, 9-10, 12).

Relationships.—*Dactylocythere corvus* has its closest affinities with *Dt. daphnioides* (Hobbs, 1955:325) which occurs in the Big Sandy, Catawba, New, Pee Dee, and Tennessee River basins in North Carolina, Tennessee, Virginia, and West Virginia (see Hobbs and Peters, 1977:28). It may be readily distinguished from *Dt. daphnioides* by the prominent posterior bulge on the ventral part of the peniferum and by the beaklike prominence on the anteroventral extremity of the same structure. Only one other species, *Dt. koloura* Hart and Hart (1971:109), possesses the combination of a posteroventral projection on the shell and an accessory groove extending dorsally in the peniferum to or beyond the dorsal level of the spermatoc loop. Furthermore, it differs from *Dt. corvus* and *Dt. daphnioides* in that a single well defined tooth is present on the preaxial border of the clasping apparatus near midlength, and the junction of the two rami of the latter is not thickened.

Etymology.—The name *Corvus* (L.), the generic name of the crow, was chosen to reflect the resemblance of the ventral part of the peniferum to the head of this bird.

Dactylocythere prominula, new species

Fig. 3

Male.—Eye pigmented and located one-fourth to one-fifth shell length from anterior margin. Shell (Fig. 3c) subovate with ventral half of posterior part slightly bulged but lacking posteroventral prominence; greatest height slightly posterior to midlength where 1.2 to 1.3 times that at level of eye; ventral margin of shell very weakly sinuous, slightly concave anterior to midlength. Submarginal setae very sparse dorsally, more abundant elsewhere, and closer together cephalically than ventrally and posteriorly. Sternal spine absent.

Copulatory complex (Fig. 3a, b) with finger guard very long (subequal in length to dorsal finger in some specimens), slender, its posterior margin

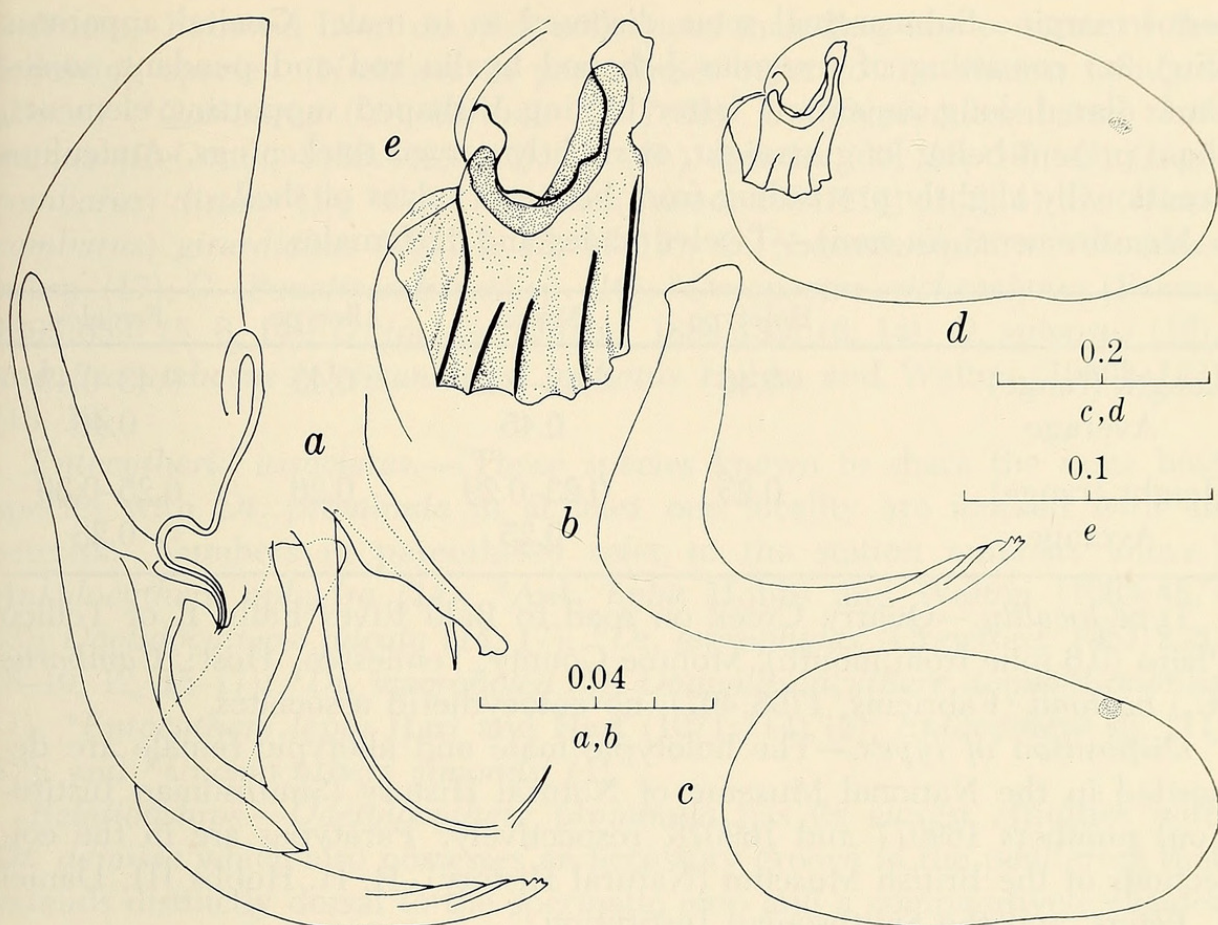


Fig. 3. *Dactylocythere prominula*: a, Copulatory complex of male; b, Clasping apparatus; c, Shell of male; d, Shell of female; e, Genital apparatus of female. (Scales in mm.)

undulating, almost always disposed anteroventrally at distinct angle (sometimes as much as 45 degrees) to axis of peniferum, and weakly bifid distally. Dorsal and ventral fingers very slender with simple tips; ventral finger gently curved anteroventrally along distal three-fifths. Peniferum moderately robust ventrally and terminating in acute tip directed anteroventrally; peniferal groove one-fourth to one-third least diameter of vertical ramus of clasping apparatus; penis L-shaped with distal ramus usually shorter, occasionally longer, than proximal one; accessory groove simple, reaching level distinctly dorsal to dorsal extremity of spermatic loop. Clasping apparatus with angle formed by rami equal to or less than 90 degrees, junction of rami slightly, if at all, thickened; vertical ramus with pre- and postaxial margins entire and lacking distinct angle; horizontal ramus slender without teeth but with scallops marked basally by suboblique striae, distal extremity with 3 apical denticles.

Triunguis female.—Eye as in male. Shell (Fig. 3d) subovate but with distinct concavity ventrally anterior to midlength and well defined emargination posterodorsally. Greatest height about two-thirds length from an-

terior margin. Submarginal setae disposed as in male. Genital apparatus (Fig. 3e) consisting of irregular J-shaped hyalin rod and pendant, sometimes flared, long amiculum, latter lacking V-shaped supporting elements, those present being long, straight, or slightly curved thickenings. Amiculum occasionally slightly protruding from between valves of shell.

Measurements (in mm).—Twelve males and 12 females.

	Holotype	Males	Allotype	Females
Length (range)	0.46	0.42–0.48	0.45	0.43–0.49
Average		0.45		0.46
Height (range)	0.25	0.23–0.29	0.26	0.25–0.30
Average		0.25		0.28

Type-locality.—Quarry Creek on road to Bald River Falls, E of Tellico Plains (0.6 mile from mouth), Monroe County, Tennessee. Host: *Cambarus (C.) bartonii* (Fabricius, 1798:407); no entocytherid associates.

Disposition of types.—The holotypic male and allotypic female are deposited in the National Museum of Natural History (Smithsonian Institution) numbers 169077 and 169078, respectively. Paratypes are in the collections of the British Museum (Natural History), H. H. Hobbs III, Daniel J. Peters, and the Smithsonian Institution.

Range and specimens examined.—Males and females from each of the following localities in the Tennessee River basin above Walden Ridge in Tennessee: *Anderson County*—(1) Mill Branch, tributary to East Fork of Poplar Creek at St Rte 95. *Blount County*—(2) Parson Branch at U.S. Hwy 129, E of Calderwood. *Hawkins County*—(3) Burrows in field at St Rte 94 near Pressmans Lake (Little Poor Valley Creek drainage) at town of Pressmans Home; (4) Burrows along Caney Creek about 0.5 mi N of Striggersville on St Rte 70. *Knox County*—(5) Bull Run Creek off U.S. Hwy 441, NW of Beech Grove. *Lincoln County*—(6) Elk River, 1.0 mi S of U.S. Hwy 64, 3.5 mi E of Fayetteville. *Monroe County*—(7) Type-locality; (8) Dunkin Creek at Co Rd 2510, SE of Citico Beach; (9) Citico Creek at Co Rd 2510, NE of Rafter; (10) Mulberry Creek on road to Chilhowee Dam, SE of Tallassee; (11) Stream on Co Rd 2510, 0.6 mi W of Citico Creek bridge to Chilhowee Dam at Citico Beach; (12) Jake Best Creek at Co Rd 2510, SE of Ballplay; (13) Creek on St Rte 72 and U.S. Hwy 129, 0.5 mi E of junction; (14) Conasauga Creek and Steer Creek off St Rte 68, E of Rural Vale; (15) Lyons Creek at road to Bald River Falls, E of Tellico Plains. *Polk County*—(16) Minnewauga Creek at Co Rd 5781, N of town of Conasauga; (17) Big Lost Creek off St Rte 30 at Cherokee National Forest campgrounds, SE of Reliance; (18) Rock Creek at St Rte 30 at Cherokee National Forest campgrounds, SE of Benton Springs; (19) Cloud Branch at U.S. Hwy 64.

Hosts.—Retrieved from crayfish collections including one or more of the following species. (Numbers in parentheses refer to the station numbers above.) **Cambarus* (C.) *bartonii* (2, 7–19); *C. (Depressicambarus) latimanus* (LeConte, 1856:402) (16); *C. (D.) striatus* (14, 16, 19); *C. (Jugicambarus) distans* (1); **C. (J.) dubius* (Faxon, 1884:114) (1, 3, 4); *C. (Hiaticambarus) girardianus* (10, 14, 15, 17–19); *C. (Lacunicambarus) diogenes* subsp. (17); *C. (Puncticambarus) sp.* (16); **Orconectes erichsonianus* (Faxon, 1898:659) (5, 6, 14); *O. forceps* (Faxon, 1884:133) (6, 14); *O. spinosus* (16); and *Procambarus (Ortmannicus) lophotus* Hobbs and Walton (1960b:123) (18, 19).

Entocytherid associates.—(Those species known to share the same host species with *Dt. prominula* in at least one locality are marked with an asterisk. Numbers in parentheses refer to the station numbers above.) *Ankylocythere ephydra* (14); **Ank. hyba* Hobbs and Walton (1963:457) (3); *Dactylocythere falcata* (14, 17); **Dt. leptophylax* (Crawford, 1961:238) (8–10, 12, 15–17); **Dt. macroholca* (3); *Donnaldsoncythere donnaldsonensis* (1); **Entocythere lepta* Hart and Hart (1971:114) (2); *Entocythere sp.* (11, 12); and **Uncinocythere simondsi* (1).

Relationships.—*Dactylocythere prominula* has its closest affinities with *Dt. demissa* which also possesses an accessory groove in the peniferum that extends distinctly dorsal to the spermatic loop and a comparatively slender clasping apparatus that lacks well defined teeth on the preaxial border of the horizontal ramus. The males of *Dt. prominula* differ conspicuously from this ostracod in having a slender, usually protruding finger guard. The females never have a J-shaped rod with the shaft as much as 3 times the length of the curved basal part, nor is the amiculum as short as that of *Dt. demissa*; furthermore, the posterodorsal part of the shell of the female of the latter is not cleft.

Etymology.—The name is derived from *prominulus* (L., projecting), alluding to the projecting finger guard on the copulatory complex of the male.

Remarks.—The most distinctive combination of features in this ostracod is the absence of a sternal spine in the male, the moderately long accessory groove of the peniferum which reaches a level distinctly dorsal to the spermatic loop, and the long, usually slender, protruding finger guard. In specimens from the Clinch River basin in Hawkins County the latter is more robust than in specimens from elsewhere.

Dactylocythere spinescens, new species

Fig. 4

Male.—Eye pigmented and situated one-fifth shell length from anterior margin. Shell (Fig. 4c) eccentrically obovate, more strongly expanded posteroventrally than posterodorsally, former extremity at least subangular

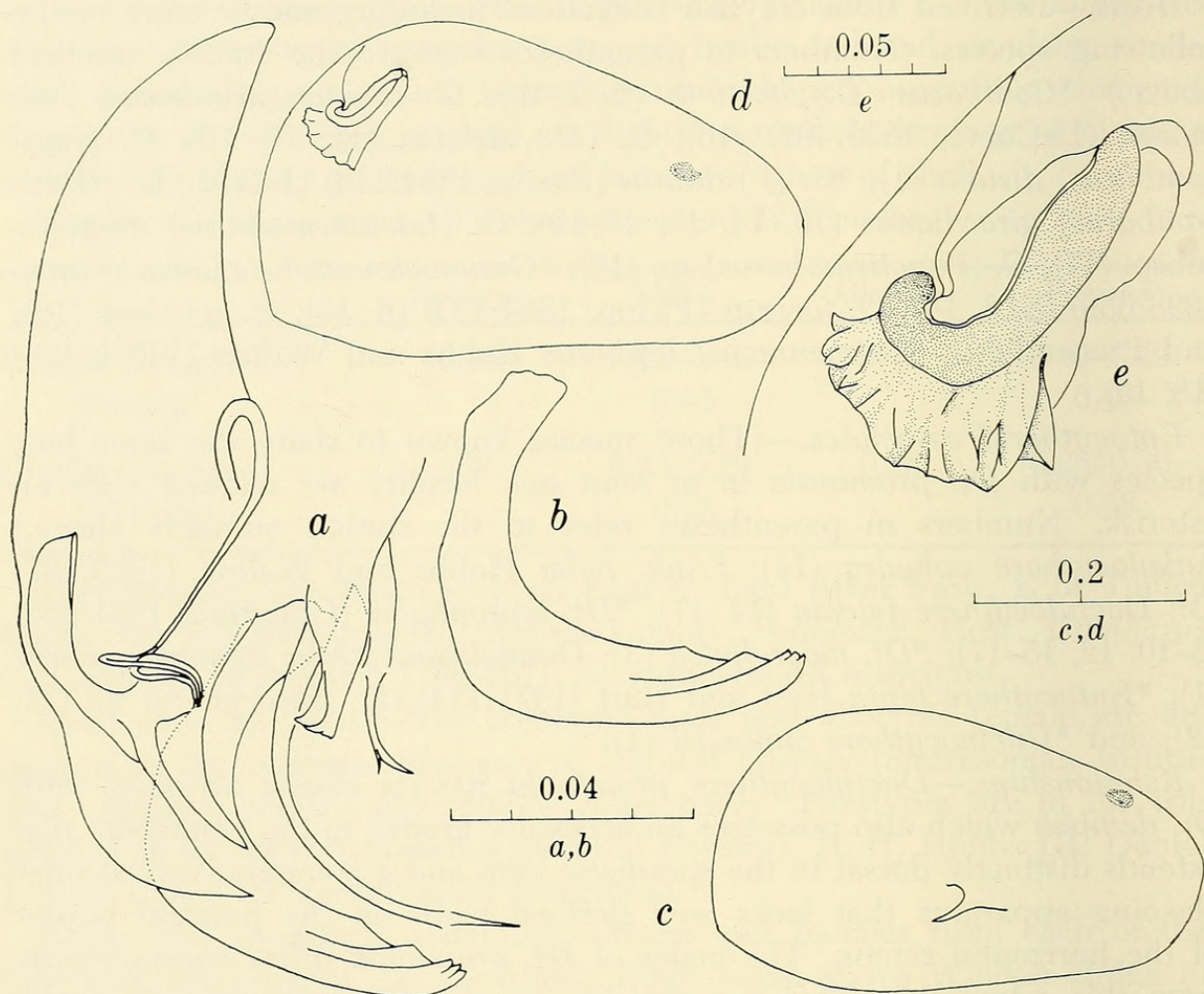


Fig. 4. *Dactylocythere spinescens*: a, Copulatory complex of male; b, Clasping apparatus; c, Shell of male; d, Shell of female; e, Genital apparatus of female. (Scales in mm.)

and sometimes with small subacute prominence; greatest height about one-third length from posterior margin where about 1.5 times that at level of eye; ventral margin lacking distinct concavity. Submarginal setae present around entire shell, only slightly closer together anteriorly and posteriorly than dorsally and ventrally. Sternal spine rather strong and directed posteroventrally.

Copulatory complex (Fig. 4a, b) with finger guard of moderate length, subtruncate distally, often with 2 or 3 low prominences, slightly convex cephalically and concave posteriorly with posterodistal extremity slightly produced in short subacute prominence. Dorsal and ventral fingers slender, former with bifid tip, latter with distal three-fourths gently curved and apex directed anteriorly. Peniferum robust, with ventral part directed anteroventrally and ventral half of posterior surface with bulge; peniferal groove broad, as much as 0.8 width of least diameter of vertical ramus of clasping apparatus. Penis L-shaped with distal ramus shorter than prox-

imal. Accessory groove simple, not nearly reaching ventral part of sper-
matic loop and joined broadly to peniferal groove. Clasp- ing apparatus more
L- than C-shaped but with vertical ramus rather strongly arched; both pre-
and postaxial borders of ramus entire, broad junction of rami thickened;
horizontal ramus with 2 or 3 teeth along distal half, followed by 3 some-
what dorsally directed apical denticles.

Triunguis female.—Eye located about one-fourth shell length from an-
terior margin. Shell (Fig. 4*d*) similar in shape to that of male; greatest
height between one-fourth and one-third of shell length from posterior
margin where about 1.5 times that at level of eye, ventral margin very
faintly concave between level of eye and maximum height of shell. Sub-
marginal setae surrounding shell, slightly closer together anterodorsally and
posteriorly than elsewhere. Genital apparatus (Fig. 4*e*) consisting of J-
shaped hyalin rod and short flared amiculum; strengthening elements of
latter poorly developed.

Measurements (in mm).—Twelve males and 12 females.

	Holotype	Males	Allotype	Females
Length (range)	0.48	0.46–0.51	0.54	0.52–0.55
Average		0.49		0.54
Height (range)	0.27	0.27–0.29	0.33	0.30–0.34
Average		0.28		0.32

Type-locality.—Big Barren Creek at State Route 33, SW of Sandlick,
Claiborne County, Tennessee. Host: *Cambarus* (*Cambarus*) sp; entocy-
therid associates: *Dactylocythere falcata* and *Donnaldsoncythere donnald-*
sonensis.

Disposition of types.—The holotypic male and allotypic female are de-
posited in the National Museum of Natural History (Smithsonian Institu-
tion) numbers 169079 and 169080, respectively. Paratypes are in the
collections of the British Museum (Natural History), H. H. Hobbs III,
Daniel J. Peters, and the Smithsonian Institution.

Range and specimens examined.—Males and females from each of the
following localities in the Clinch and Powell River systems (Tennessee
River basin): *Claiborne County*—(1) Type-locality. *Grainger County*—(2)
Puncheon Camp Creek at Co Rd 2478 at Coffman Camp; (3) Williams
Creek at Co Rd 2478, SW of Liberty Hill. *Union County*—(4) Fall Creek
at Co Rd 2347; (5) Crooked Creek at Co Rd 2347, E of Hickory Star Land-
ing; (6) Flat Creek at St Rte 131, NE of Chesney; (7) Dodson Creek at Co
Rd 2347, NE of Rose Hill.

Hosts.—Retrived from crayfish collections including one or more of
the following species. (Numbers in parentheses refer to the localities cited

above.) *Cambarus* (C.) *bartonii* (6); *C. (C.) sp. (1-7); C. (*Hiaticambarus*) *girardianus* (2-7); and *Orconectes erichsonianus* (6).

Entocytherid associates.—(Those species known to share the same host species with *Dt. spinescens* in at least one locality are marked with an asterisk. Numbers in parentheses refer to the station numbers above.) **Dactylocythere falcata* (1-7); **Donnaldsoncythere donnaldsonensis* (1); *Entocythere* sp. (4, 5); and *Uncinocythere simondsi* (6).

Relationships.—*Dactylocythere spinescens* is closely allied to *Dt. corvus* and *Dt. daphnioides*, and its range is situated between that of the two. (See "Relationships" under *Dt. corvus*.) It differs from both in having a less well developed posteroventral projection (frequently reduced to only an angle as in the holotype and allotype). The accessory groove in the peniferum does not reach the level of the dorsal extremity of the spermatic loop, the ventral part of the peniferum is less inflated than in *Dt. corvus*, and the junction of the rami of the clasping apparatus is not so thick as that in *Dt. daphnioides*. The amicula of the three species are quite similar, although the supporting elements of the flared amiculum are less conspicuous in *Dt. spinescens* than in the other two.

Etymology.—The name *spinescens* is derived from *spinesco* (L., to become thorny) in token of the rudimentary spine or angle on the posteroventral angle of the shell.

Remarks.—In the specimens from Grainger County, the posteroventral projection of the shell is more prominent and the accessory groove of the peniferum extends dorsally to the ventral part of the spermatic loop.

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