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Parajulid Studies III. The Genus *Gyniulus* Loomis (Parajulinae: Aniulini)

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ABSTRACT

The parajulid milliped genus *Gyniulus* Loomis, endemic to Florida, comprises four species: *G. bufonius* (Chamberlin), *G. myakkensis* Loomis, and *G. orarius* and *occidentalis*, new species. *Gyniulus lacustrinus* and *domesticus*, both named by Loomis, are placed in synonymy under *G. bufonius* and *myakkensis*, respectively. The genus is characterized by the small size of its species, the ventrally directed sternum on segment 8 in males, and the broad configuration of the anterior gonopod lateral syncoxal process, which extends on both the medial and lateral sides of the telopodite.

In comparison to other southeastern states, Florida has a depauperate fauna of parajulid diplopods. Only three genera are known from the state – *Pseudojulus* Bollman, with one species in Escambia and Santa Rosa counties (Hoffman 1992, 1999); *Arvechambus* Causey, with two species in northcentral Florida (Alachua, Baker, Leon, and Liberty counties) (Causey 1963, Hoffman 1999); and *Gyniulus* Loomis, endemic to this state, with four species. I think two of these are synonyms of the other two, but there are two undescribed species in the available material to maintain the composition at four species. *Gyniulus* was proposed by Loomis (1963) for *G. myakkensis* Loomis from Manatee County; the generic name refers to the fact that the original specimens were collected by a female, his wife, and not to any

aspects of the cyphopods. Loomis (1968) added two more species, *G. lacustrinus* Loomis, from Palm Beach County, and *G. domesticus* Loomis, from Dade County, and Hoffman (1999) transferred *Ethojulus bufonius* Chamberlin, from Alachua County, into the genus. I have examined material in four collections (acronyms below) and agree with Loomis (1963) that the ventrally directed sternum on segment 8, which forms a transverse shield behind the gonopods (Fig. 5), diagnoses *Gyniulus*. Representatives are also distinguished by their small size; they may be the smallest parajulids in eastern North America. I present herein diagnostic accounts of the genus and the component species. Acronyms of sources of preserved material are as follows:

- FSCA – Florida State Collection of Arthropods, Gainesville.
- NCSM – North Carolina State Museum of Natural Sciences, Raleigh.
- NMNH – National Museum of Natural History, Smithsonian Institution, Washington, DC.
- VMNH – Virginia Museum of Natural History, Martinsville.

Genus *Gyniulus* Loomis

Gyniulus Loomis, 1963: 193-194. Hoffman, 1980: 108; 1999: 155.

TYPE SPECIES: *Gyniulus myakkensis* Loomis, 1963, by original designation.

DIAGNOSIS: A genus of small-bodied Aniulini with ca. 45-52 segments in adults. Sternum of segment 8 bent strongly ventrad, forming shield on posterior side of gonopods, anterior surface concave. Anterior gonopods without coxal lobes; lateral syncoxal process extending laterad and mediad to telopodite in anterior view, distal margin either curvilinear, or curving or angling to blunt or acuminate point at distomedial corner, lateral margin either smooth or irregular with variable number of teeth. Posterior gonopod with or without basal spiniform process, prefemoral process shorter than, or subequal in length to telopodite, closely appressed to, or widely separated from latter, either curvilinear or bent anteriorly or mediad apically, with or without subterminal tooth; telopodite relatively long and slender, generally sublinear for most of length curving slightly caudad apically. Gynaspis projecting slightly ventrad beyond level of cyphopods.

SPECIES: Four.

DISTRIBUTION: Known only from Florida.

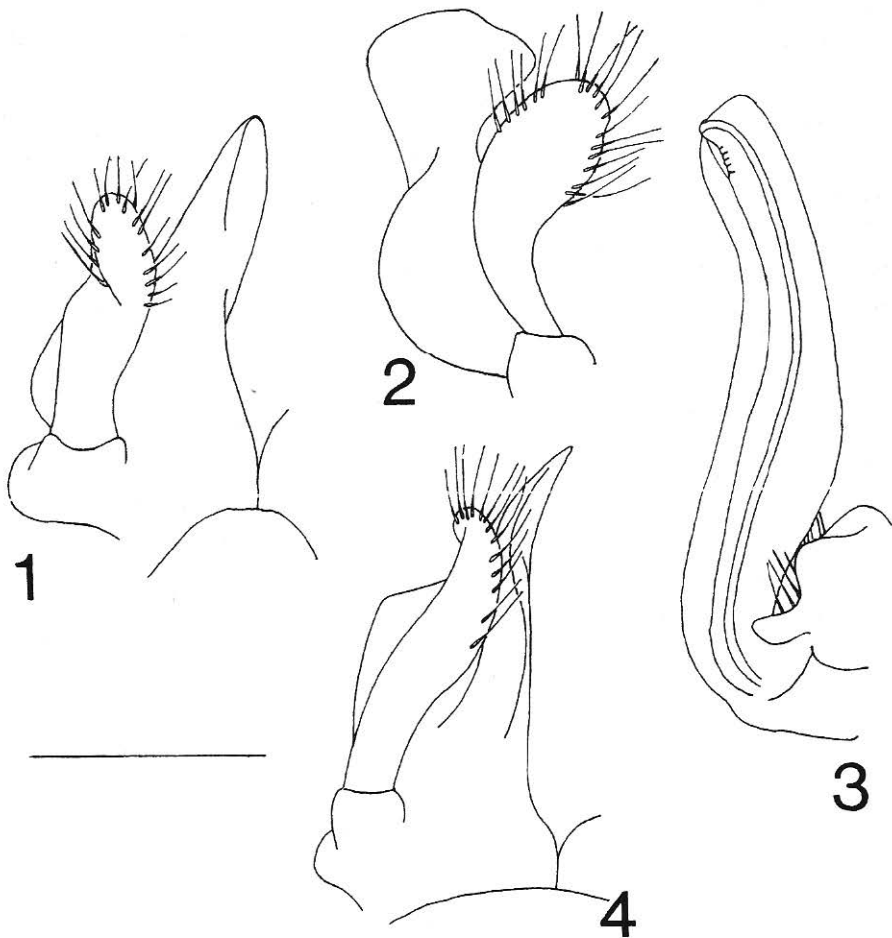
REMARKS: Cyphopods of three species were examined (females are unavailable for *G. occidentalis*), but no distinguishing features at the species level were found. They are therefore figured only for the type species.

Gyniulus bufonius (Chamberlin, 1938)

Figs. 1-4

Ethojulus bufonius Chamberlin, 1938: 206. Chamberlin & Hoffman, 1958: 135.*Gyniulus lacustrinus* Loomis, 1968: 162, 164, figs. 12-15. Hoffman, 1999: 155. **New****Synonymy.**

TYPE SPECIMENS: Male holotype, female allotype, and numerous male and female paratypes (NMNH), and 12 male paratypes (VMNH) collected by A. F. Carr, Jr., on an unknown date in 1932 in Gainesville, Alachua County, Florida.



Figs. 1-4. *Gyniulus bufonius*. 1, left anterior gonopod of holotype, anterior view. 2, the same, lateral view. 3, left posterior gonopod of the same lateral view. 4, left anterior gonopod of male from Palm Beach County, anterior view. Scale line = 0.50 mm for each figure.

Chamberlin (1938) gives the collector's name as "A. J. Can, Jr.". The labels in the three vials of types from the NMNH state, "A. J. Carr"; there is one additional vial from this institution, not labeled as types, whose label states, "A. F. Carr, J." These are all believed to refer to A. F. Carr, Jr., a noted herpetologist who lived in Gainesville in 1932.

Male holotype and female paratype (NMNH), and six male and one female paratypes (FSCA) of *G. lacustrinus* collected by J. W. Wilson on 30 October 1940 on the Haney Farm at Belle Glade, Palm Beach County, Florida.

DIAGNOSIS: Anterior gonopod with distal margin of lateral syncoxal process angling continuously ventrad to blunt or acuminate tip at distomedial corner, lateral margin smooth, extending only short distance lateral to telopodite in anterior view; posterior gonopod without spiniform process basally, prefemoral process appressed to telopodite, apically sublinear (Figs. 1-4).

VARIATION: The distal extremity of the lateral syncoxal process is blunt in specimens from Alachua and Duval counties and subacuminate in those from Palm Beach County.

ECOLOGY: The type specimens were collected "from the stomach of a spadefoot toad"; those from Orange Lake, Alachua County, were found on a water lily; and those from Orange County were encountered in a rotten palm log.

DISTRIBUTION: Extending for most of the length of the peninsula, from Duval County to the southern periphery of Lake Okeechobee. In addition to the types, specimens were examined as follows:

FLORIDA: *Alachua Co.*: Gainesville, 10♂, 8♀, 4 juvs., 30 November 1960, M. S. Wilson, ♂, 23 August 1963, A. E. Graham, and 2♂, ♀, 18 October 1983, G. B. Edwards (FSCA); Orange Lake, 4♂, 16♀, 22 October 1976, M. R. & J. E. Cooper (NCSM); and Payne's Prairie, Chitty Ranch, juv., 5 June 1965, R. E. Woodruff (FSCA). *Clay Co.*: Spring Branch Creek at FL hwy. 21, 2♂, 8♀, 11 November 1977, R. M. Shelley & R. Franz (NCSM). *Duval Co.*: 0.5 mi. (0.8 km) SW Maxville, along FL hwy. 228, ♂, 16♀, 10 February 1970, D. P. Wojcik (VMNH); and Jacksonville, Ortega River, 2 juvs., 26 May 1966, C. F. Zeiger (FSCA). *Orange Co.*: near Econlockahatchee River, 2 mi. (3.2 km) N FL hwy. 50, 3♂, ♀, 31 December 1968, R. E. Tandy (FSCA). *Palm Beach Co.*: Canal Point, 5♂, 2♀, December 1929, O. F. Cook (FSCA).

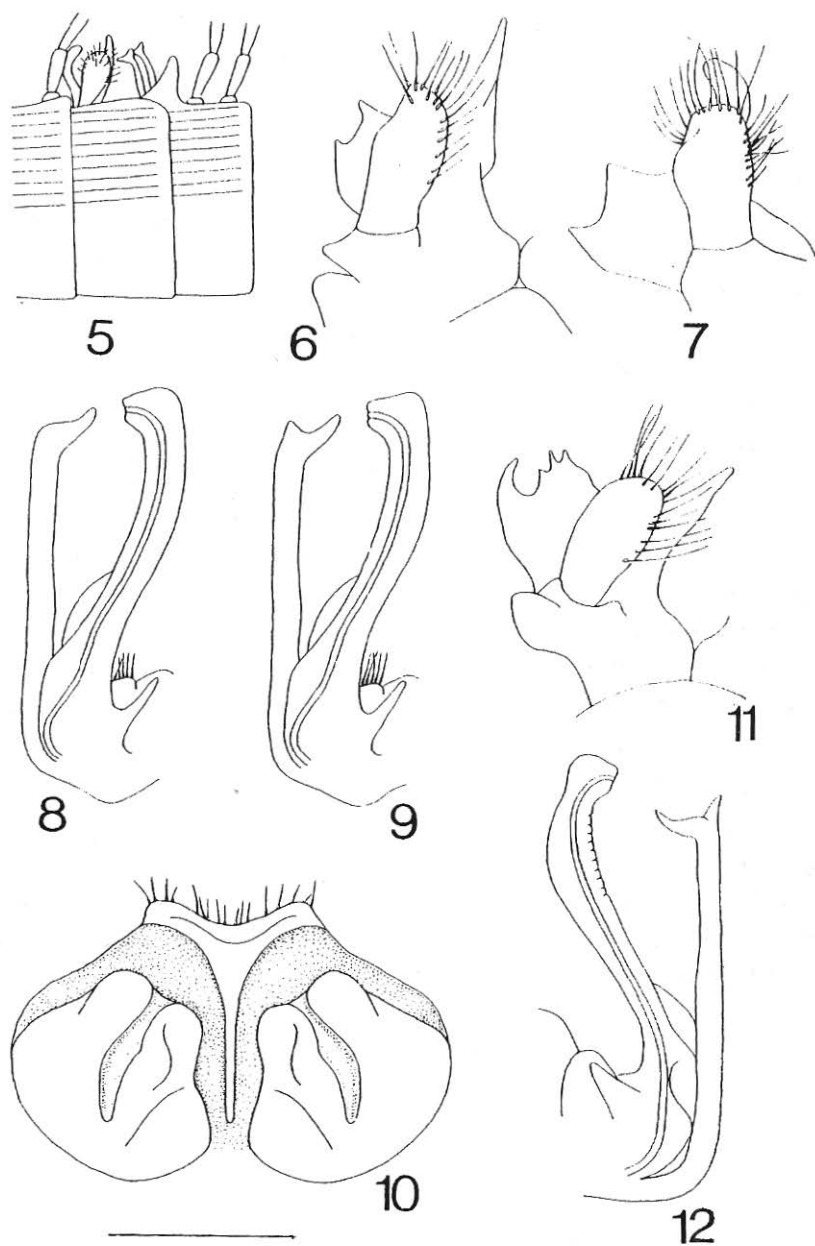
Gyniulus myakkensis Loomis, 1963

Figs. 5-12

Gyniulus myakkensis Loomis, 1963: 194-195, figs. 1-5; 1968: 164. Hoffman, 1999: 155.

Gyniulus domesticus Loomis, 1968: 162, figs. 8-11. Hoffman, 1999: 155. **New Synonymy.**

TYPE SPECIMENS: Male holotype and one male and two female paratypes



Figs. 5-12. *Gyniulus myakkensis*. 5, segments 6-8 of male from Dade County, lateral view. 6, left anterior gonopod of holotype, anterior view. 7, the same, lateral view. 8, left posterior gonopod of the same, lateral view. 9, left posterior gonopod of paratype, lateral view. 10, cyphopods of female paratype, caudal view. 11, left anterior gonopod of male from Dade County, anterior view. 12, right posterior gonopod of the same, lateral view. Scale line = 0.50 mm for each figure.

(NMNH), and one male and one female paratypes (FSCA) collected by E. M. Loomis, 26 October 1962, in Myakka River State Park, Manatee County, Florida.

Male holotype of *G. domesticus* (NMNH) collected by E. M. Loomis, 14 December 1966, at 5355 SW 92nd St., Miami, Dade County, Florida; female paratype (FSCA) taken by same collector at same locality on 23 February 1967.

DIAGNOSIS: Anterior gonopod with distal margin of lateral syncoxal process angling continuously ventrad to acuminate tip at distomedial corner, lateral margin irregularly notched, extending broadly lateral to telopodite in anterior view; posterior gonopod with spiniform process basally, prefemoral process well separated from telopodite, bent anteriorly apically, with or without subterminal spur on outer margin (Figs. 5-12).

VARIATION: The subterminal spur on the posterior gonopod prefemoral process is absent from the holotype but present in all other specimens. The number of teeth on the lateral margin of the anterior gonopod lateral syncoxal process also varies.

ECOLOGY: The type specimens were encountered under Spanish moss and palmetto debris in the campground area of Myakka River State Park. A male from Dade County was found dead inside a house.

DISTRIBUTION: Southern peninsular Florida from the Gulf Coast and north of Lake Okeechobee to Miami. In addition to the types, specimens were examined as follows:

FLORIDA: *Dade Co.*, Miami, 5355 SW 92nd St., 3♂, 6♀, 11 December 1967, E. M. Loomis, and 8♂, 3♀, 3 juvs., 18 November 1970, H. F. Loomis (FSCA). *Highlands Co.*, Highlands Hammock St. Pk., ♂, 28 December 1976, R. L. Hoffman (VMNH), and juv., 4 March 1967, P. C. Drummond (FSCA). *Manatee Co.*, Myakka River St. Pk., ♂, 4 juvs., 22 February 1967, E. M. & H. F. Loomis (FSCA). *Sarasota Co.*, Myakka River St. Pk., ♂, 25 November 1973, R. L. Hoffman (VMNH).

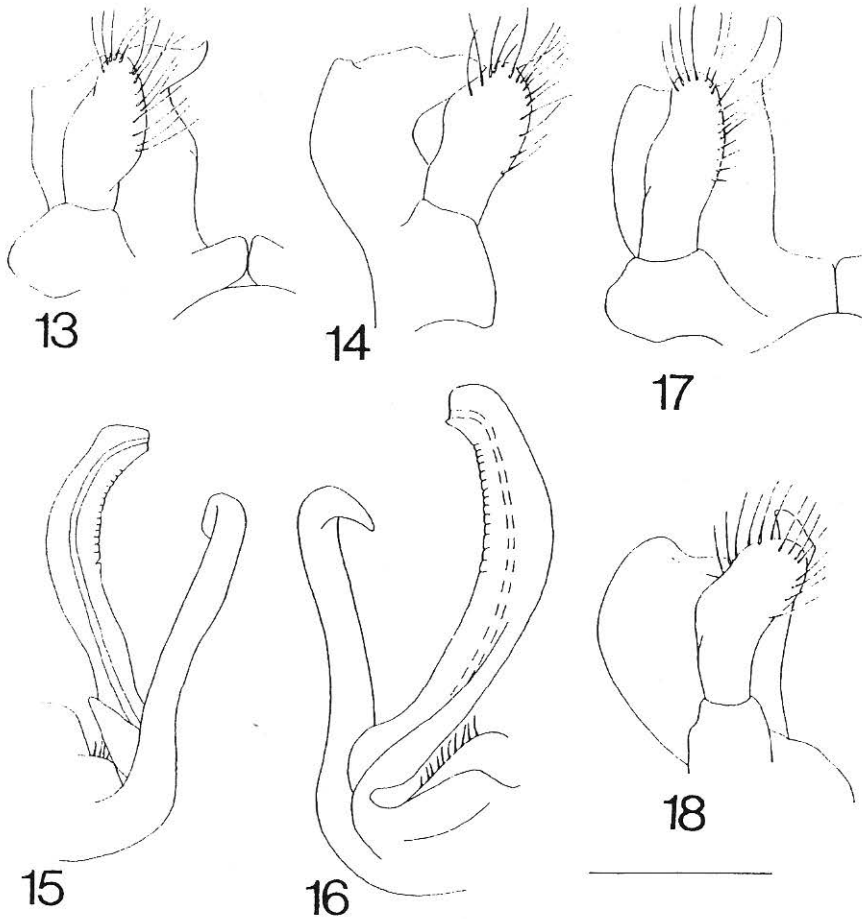
Gyniulus orarius, new species

Figs. 13-16

TYPE SPECIMENS: Male holotype and female paratype (FSCA) collected by P. C. Drummond on 26 January 1967 in Dunedin, Pinellas County, Florida.

DIAGNOSIS: Anterior gonopod with distal margin of lateral syncoxal process curvilinear, distomedial corner slightly pointed, curved anteriorly, lateral margin smooth, extending substantially lateral to telopodite in anterior view; posterior gonopod with spiniform process basally, prefemoral process well separated from telopodite, bent strongly medially apically (Figs. 13-16).

ECOLOGY: The type specimens were collected in a fern hammock; those from Manatee County were found under a grapefruit on the ground; and the female from Pasco County was found under rotten wood at the end of a hammock.



Figs. 13-18. 13-16, *Gyniulus orarius*. 13, left gonopod of holotype, anterior view. 14, the same, lateral view. 15, left posterior gonopod of the same, lateral view. 16, the same, medial view. 17-18, *Gyniulus occidentalis*. 17, left anterior gonopod of holotype, anterior view. 18, the same, lateral view. Scale line = 0.50 mm for each figure.

DISTRIBUTION: Known from a small area along the central Gulf Coast of peninsular Florida. In addition to the types, specimens were examined as follows; the Pasco County female and the juveniles from Pinellas County are assigned based on their proximity to counties with known males.

FLORIDA: *Manatee Co.*, Bradenton, ♂, ♀, 13 January 1966, D. P. Chancey (FSCA). *Pasco Co.*, along US hwy. 19, 1 mi. (1.6 km) N jct. US hwy. 19A, nr. Holiday, ♀, 13 March 1966 (FSCA). *Pinellas Co.*, 1 mi. (1.6 km) NW Safety Harbor, 2 juvs., 8 September 1965, P. C. Drummond (FSCA).

REMARKS: The specific name means "of the coast" and refers to the species' occurrence along the Gulf Coast.

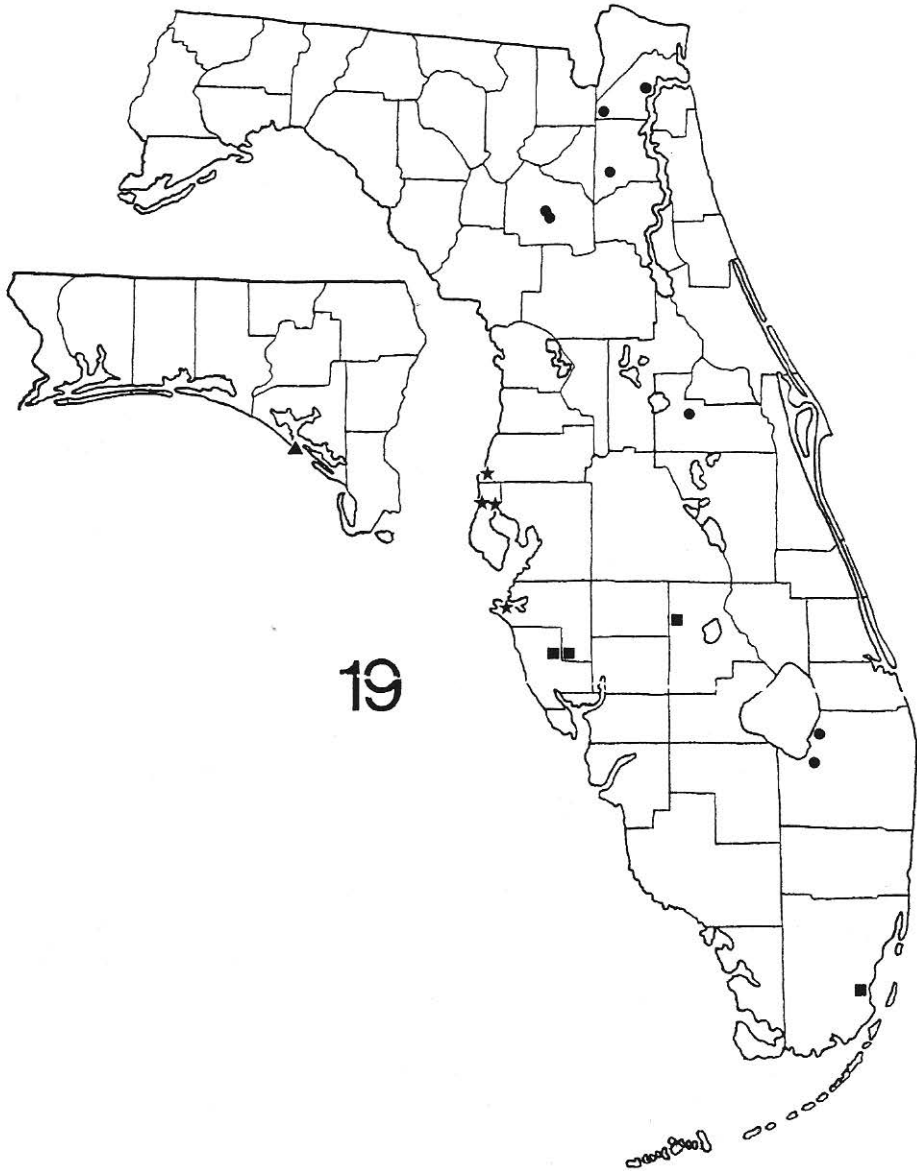


Fig. 19. Distribution of *Gyniulus*. Dots, *G. bufonius*; squares, *G. myakkensis*; stars, *G. orarius*; triangle, *G. occidentalis*.

Gyniulus occidentalis, new species

Figs. 17-18

TYPE SPECIMEN: Male holotype (VMNH) collected by J. A. Beatty on 1 April 1968 at St. Andrews State Park near Panama City Beach, Bay County, Florida.

DIAGNOSIS: Anterior gonopod with distal margin of lateral syncoxal process sublinate then curving strongly into blunt projection on distomedial corner, lateral margin smooth, extending substantially lateral to telopodite in anterior view (Figs. 17-18); posterior gonopods missing.

DISTRIBUTION: Known only from the type locality.

REMARKS: The specific name refers to the geographic position of this species as the westernmost in the genus.

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