

## Habitat Notes on *Gastrocopta riograndensis* Sterki

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REPORTS OF *Gastrocopta riograndensis* Sterki, 1892 have been spotty with respect to collection and to geographic locality. The original specimens (STERKI 1891, 1892) came from Hidalgo, Hidalgo County, Texas. The first compilation of Texas records (SINGLEY, 1893) merely repeated this record. Singley apparently made the initial collection and sent these snails to Sterki who "semi-described" the new species. PILSBRY (1917) considered the Hidalgo specimens to be river drift and added Brownsville (Cameron County) to the locality listing, but these were also river drift specimens; he also listed two localities from the Mexican states of Tamaulipas and San Luis Potosi. Later CHEATUM (1935) reported *G. riograndensis* from Limpia Canyon, Jeff Davis County, Texas, from a bed of humus below *Quercus gravesii*, but he also reported that "Pilsbry is not certain of the identification since the shell is possibly that of a juvenile specimen." (This specimen, DMNH 346, is in poor shape.) The second summary of Texas snail records (STRECKER, 1935) still listed only the Sterki and Cheatum records. HUBRIGHT (1960) recovered 100 specimens in beach drift samples taken from sand dunes 1.6 km S of the now closed Boca Chica Pass in Cameron County approximately 4.8 km north of the mouth of the Rio Grande. Of course, original provenance of these specimens is unknown. CHEATUM & FULLINGTON (1973) included Starr County from the Cheatum Collection, but added that the habitat of this species was unknown ("Our specimens were recovered from stream drift"). A number of these specimens (DMNH 1547) are very fresh in appearance, however. The Dallas Museum of Natural History has specimens of *G. riograndensis* collected by R. W. Fullington from drift in McKittrick Canyon, Guadalupe Mountains National Park, Culberson County, Texas (DMNH 3273). PRATT (1976) did report *G. riograndensis* from remnant brush tracts in Hidalgo County. PRATT (*in litt.*) has found *G. riograndensis* at a number of sites in Cameron and Hidalgo Counties in tracts of native brush. It seems to be rare except for a tract found within Bentsen-Rio Grande Valley State Park.

The restricted contemporary distribution of *Gastrocopta riograndensis* is apparently a long-standing character of this species. Pliocene and Pleistocene distribution of this species may also have been limited. This species apparently did not have an extended distribution into the high elevations of the southeastern Rockies in extreme west Texas or southern New Mexico, because it has not been found in Pleistocene sediments (METCALF, 1967; METCALF & JOHNSON, 1971; METCALF & SMARTT, 1974; METCALF, 1977). Extension of *G. riograndensis* into the Great Plains was not reported by TAYLOR (1960, 1966). However, presence of this species is reported from Quaternary deposits of Oklahoma (LEONARD & FRANZEN, 1944) and northeastern New Mexico (FRYE, *et al.*, 1978). This latter study reported no contemporary specimens in modern drift samples. FRYE & LEONARD (1957) reported it questionably from Kansan deposits of Garza County and from deposits tentatively dated as Illinoian of Briscoe County. Both of these counties are located along the eastern margin of the Great Plains in north Texas. HUBRIGHT (1962) reported *G. riograndensis* from an undated Pleistocene terrace in Brooks County in the South Texas Plains. Significance of this locality cannot be determined at this time.

I collected *Gastrocopta riograndensis* approximately 42.3 km S of Alpine, Brewster County, Texas, on State Highway 118 at approximate elevation of 1325 m. The Crossen Mesa consists of a ridge of Tertiary (probably Eocene) calcareous tuff (volcanic ash, igneous in origin but deposited in an aqueous sedimentary environment) known as the Pruett Formation (see GOLDICH & ELMS, 1949). Dominant vegetation of the talus slope and outwash consists of creosotebush, *Larrea tridentata* (DC.) and tarbush, *Flourensia cernua* DC. Also present were mesquite, *Prosopis glandulosa* var. *glandulosa* Torr.; tascajillo, *Opuntia leptocaulis* DC.; white-thorn acacia, *Acacia neovernicosa* Isely; and Warnock grama, *Bouteloua warnockii* Gould and Kapadia. Mature and immature individuals were found under rocks (tuff) and old juniper fence posts along the roadside at the foot of a gentle talus slope.

Heavy rains had soaked this area during the month before this collection was made, but little moisture was evident at time of collection. Specimens have been deposited with the Dallas Museum of Natural History (DMNH 5360).

Many areas in West Texas now covered by a creosote-tarbrush community were originally desert grassland (HARVARD, 1885; HUMPHREY, 1958). Creosote invasion areas of West Texas have previously been found to be devoid of snails (METCALF, 1967: "a habitat seemingly inimical to terrestrial gastropods"). The area of collection is within an area delimited by MILSTEAD (1960) as one of 5 (3 in Texas, 2 in Mexico) areas of Chihuahuan Desert where relict populations of vertebrates exist at present.

Fossil land snails have been recovered from undated Quaternary terrace deposits associated with Calamity Creek probably within 2 km of the collection site of *Gastrocopta riograndensis* (ALBRITTON & BRYAN, 1939). No specimens of *G. riograndensis* were found although both *G. contracta* (Say, 1822) and *G. procera duplicata* (Sterki, 1912) were reported (identifications were provided by E. P. Cheatum). Time of deposition is unknown but later terrace deposits yielded no *Gastrocopta* (CHEATUM in ALBRITTON & BRYAN, 1939).

Given the previous collections of *Gastrocopta riograndensis* in wooded environments, I believe that the occurrence in a creosote bush area was a short-term phenomenon following heavy rains. The collection site was favorable to survival of this snail because inter-rock crevices in the talus slope provide ample protected spaces in which the snails could survive for a probably short period of time. These animals probably originated from a wooded canyon habitat somewhere above the site of collection. FRANZEN & LEONARD (1947) concluded that *G. riograndensis* was a "woodland snail" based on paleobotanical work on the source formation of the Oklahoma record (CHANEY & ELIAS, 1936). Records of CHEATUM (1935), PRATT (1976) and my collection verify this interpretation even though the snails I found had temporarily expanded beyond their presumed woodland habitat.

Lest the occurrence of fence posts as a key part of the microhabitat of *Gastrocopta riograndensis* in the Chihuahuan Desert indicate a human-related origin of this population, I have 2 observations to refute this possibility. A nearby roadside park revealed no land snails when examined. Two localities in Alpine were located which contained land snails; neither contained *G. riograndensis* but both yielded *G. procera* (Gould) (see NECK, 1976, for discussion of one of these sites).

The currently-known geographic distribution of *Gastrocopta riograndensis* is very scattered. The known populations appear to represent survival in locally favorable micro-habitats; undoubtedly additional populations will be found in the future.

## ACKNOWLEDGMENTS

I thank W. Fullington for review of an earlier draft of this paper and identification of *Gastrocopta riograndensis* and D. H. Riskind for identification of *Bouteloua* and *Acacia*. W. L. Pratt provided unpublished details of his collections which were invaluable in producing this work.

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