AN ANNOTATED LIST OF THE SNAILS OF DALLAS COUNTY, TEXAS

(CONCLUDED)

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HELICINIDAE

Helicina orbiculata (Say)

Remarks—This species is widely and abundantly distributed over the county, therein comparing favorably with *Bulimulus dealbatus*. After a heavy rain *H. orbiculata* is quite active, and at such times has been observed figuratively to cover the vegetation in localities near White Rock Lake. Occasionally it shows aboreal tendencies.

Records—All stations.

HELICIDÆ

Praticolella berlanderiana (Moricand)

Remarks—Additional records of the occurrence of this snail are desired. Although abundant in the southern and western parts of Texas only one specimen was collected in Dallas County, and that in drift along White Rock Creek.

Records—Station 1.

Polygyra clausa (Say)

Remarks—Several shells were collected in drift along White Rock Creek. An intensive search in the heavily wooded region adjoining the creek revealed a few living animals under rotten logs. In Dallas County, *P. clausa* is either unusually well concealed or scarce.

Records—Station 1.

Polygyra monodon (Rackett)

Remarks—This species is found under rotting logs in densely wooded areas. Although not so abundant in its distribution as *Polygyra fraterna* it exhibits the same tendency to aggregate during the winter months.

Records—Stations 1, 4 and 17.

Polygyra fraterna (Say)

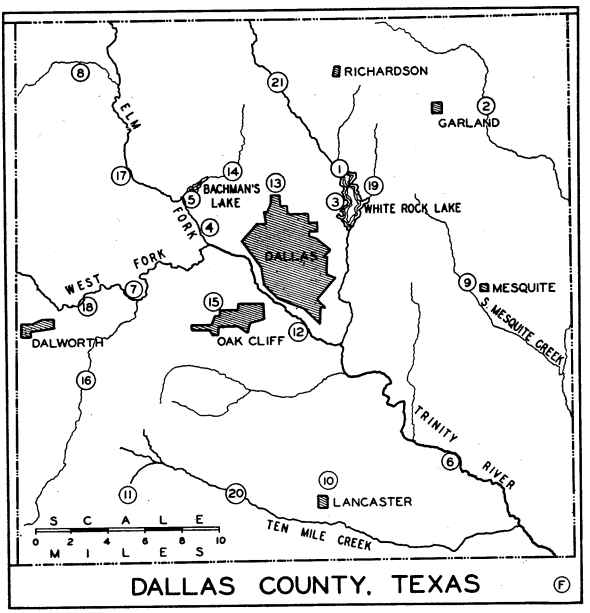
Remarks—This species is distinguished from *P. monodon* by its relatively smooth shell. *P. monodon* is covered with fine hairy-like outgrowths. *P. fraterna* is well represented in Dallas County, especially in low wooded regions along water courses. Large colonies have been found beneath rotten logs and thick mats of humus; living animals have also been taken in exposed areas. Following a week of cold weather in the fall of 1933, sixty-four individuals, closely-crowded, the majority with apertures covered by epiphragms, were found beneath a rotten log.

Records—Stations 1, 4, 5, 11, 14 and 19. Singley (1892) lists it from 10 counties, but Dallas County is not included.

Polygyra roemeri (Pfeiffer)

Remarks—Occurs in heavily wooded areas throughout the county. Many of the shells collected were perforate, others were imperforate. From observations on numerous specimens of all ages, it appears that the heavy deflected peristome is produced comparatively late in the development of the shell. Shells with sharp peristomes and 25-30 mm. in diameter have been taken in a few instances. Following early spring showers, this species is quite active. On cloudy days hundreds of these snails have been found "browsing" over thick beds of humus in densely wooded river bottoms.

Records—Stations 1, 2, 4, 6, 8, 14, 15, 16, 17, 19, 20 and 21. Singley (1892) and Binney (1885) have listed this species from fifteen Texas counties including Dallas.



Polygyra dorfeuilliana (Lea)

Remarks—In abundance at all stations. Its ecology varies widely, as it occurs in exposed areas as well as dense woodlands. This species seems to reach maximum abundance beneath limestone rocks on sparsely-wooded hillsides.

Records—All stations.

Polygyra mooreana (Binney)

Remarks—This species is distributed generally in Dallas County with *P. derfeuilliana*. The ecology is practically the same, and no collections of *P. dorfeuilliana* have been made without accompanying *P. mooreana* shells, dead or living.

Records—All stations.

Polygyra texasiana (Moricand)

Remarks—While less abundant in the county than *P. mooreana* and *P. dorfeuilliana*, this species has approximately the same distribution. The shell is strikingly simi-

lar to *P. mooreana;* the only obvious difference is size. Pilsbry and Ferriss (906, p. 130) state that in *P. mooreana,* "the shell is smaller than any but the smallest *texasiana,* and with about the same number of whorls (5-5½) appears more closely coiled. It is constantly distinct by the elongated columellar tubercle within the last whorl."

Records—All stations but 3. Singley (1892) recorded it from twenty-four counties, Dallas not being included in his list.

Praticolella mobiliana (Lea)

Remarks—Mr. Allan Archer* of the University of Michigan Museums informs the writers that the literature on the Texas *Praticolellae* is so badly scattered at the present time that it is impossible to place this particular shell with certainty in its proper specific rank. No living animals have been found, although several dead shells were collected under rotting logs in a thickly wooded area.

Records—Station 17.

PUPILLIDÆ

Pupsides marginatus (Say)

Remarks—Generally distributed in Dallas County. Examples of this small snail with its tapering shell were found beneath limestone rocks on exposed hillsides, and from moist situations in dense woods. The shells from low, damp surroundings are rather fragile and tend toward pellucidness; those collected in exposed situations, on the other hand, are opaque and thickened.

Records—All stations.

Gastrocopta armifera (Say)

Remarks—Specimens of this species are rather abundant in drift along all water cources. This snail constitutes a faunal element in the majority of diversified habitats. While not so abundant locally as *G. contracta,* the range in the county appears to be more general.

*The writers are indebted to Mr. Allan Archer for the identification of the land shells.

Records—All stations except 8, 15, 16, 18, 20. Singley (1892) recorded it only from New Braunsfel, where he found it in river drift.

Gastrocopta contracta (Say)

Remarks—Found under limestone rocks on sparsely-wooded hillsides, usually in large numbers.

Records—Stations 1, 2, 4, 6, 8, 9, 10, 16 and 18.

Gastrocopta procera duplicata (Sterki)

Remarks—Habitat like that of *G. contracta,* although few shells have been taken under blankets of humus in well-protected areas.

Records—Stations 2, 3, 5, 9, 15 and 20.

Carychium exile (Lea)

Remarks—This minute shell is sometimes found abundantly under layers of moist humus. Its whitish shell makes it easy to distinguish against a dark background. It has never been collected by the writers in exposed areas.

Records—Stations 1 and 17.

Strobilops labyrinthica texasiana (Pilsbry & Ferriss)

Remarks—This species is frequently associated with *Euconulus chersinus trochulus,* whose distribution appears to be more limited. It is recorded from dense woods under humus, bark of trees, rotten logs, and limestone rocks on exposed hillsides. From exposed areas the shell is brownish and thick, while woodlands specimens are thinner and have a reddish hue.

Records—All stations except 3, 5, 8, 11, 16, 17.

ZONITIDÆ

Euconulus chersinus trochulus (Reinhardt)

Remarks—This snail, under a lens, is easily distinguished from the preceding species by its smooth glossy whorls and more elongated dome. It is quite abundant in drift along several of the water courses in the county. Liv-

ing animals have been collected under rotten logs in relatively exposed areas as well as in protected regions.

Records—Stations 1, 6, 10, 12, 14, 19, 20 and 21.

Zonitoides arboreus (Say)

Remarks—Although this snail has a wide distribution in the county it especially favors the shaded areas, as its specific name implies. It is frequently found deeply imbedded in rotten logs and under thick beds of humus.

Records—All stations except 7, 13, 16, 18, 19, 20, 21.

Retinella indentata paucilirata (Morelet)

Remarks—The rapidly increasing whorls of this little snail easily distinguish it from *Zonitoides arboreus*. The shell is fragile and easily broken. Usually it is found in close association with *Z. arboreus*, although not nearly so abundant.

Records—Stations 1, 2, 3, 4, 8, 9, 10, 13, 14 and 19.

Hawaiia minuscula (Binney)

Remarks—Shells are numerous in drift along White Rock Creek. Living animals are found under beds of humus, rotten logs and sometimes deeply imbedded in rotten logs. As observed by Pilsbry and Ferris (1906, p. 149) specimens from the southwest show a tendency toward wider umbilication than do the typical Northern *minuscula*.

Records—Stations 1, 10 and 17.

Mesomphix friabilis (Binney)

Remarks—Although a few dead shells have been found in drift along White Rock Creek, living animals have never, in the writers' experience, been collected in Dallas County.

Records—Station 1.

BULIMULIDÆ

Bulimulus dealbatus (Say)

Remarks—This is the most abundant and widely distributed snail in the county. In favorable habitats after heavy rains it is often possible to gather two or three dozen living snails within an area of a few square feet. Follow-

ing early spring showers, it is often seen crawling over the sidewalks of suburban Dallas. Dead shells in abundance can be found in vacant lots in the outlying section of the city, or in pasture lands throughout the county. The plasticity of shell characters in this species is unique. Some shells are brownish-corneous, marked with grayish ragged streaks; others are chalky white with gray streaks especially pronounced on the basal whorl. A few shells of opaque-white with light brown blotches on the basal whorl have also been found. The size and morphometry of the shell varies considerably, as the following table of measurements of four individuals indicates:

Altitude	28	18	30	16 mm.
Diameter	14	16	13	15 mm.
Aperture	12	7	15	8 mm.
Whorls	7	5½	7½	6 mm.

A series of shells from any habitat where the species occurs in abundance, would include individuals exemplifying the wider range of measurements given above.

Records—Shells were secured at all stations. Pilsbry & Ferriss (1906, p. 134) list *B. dealbatus liquabilis* from Dallas County.

OLEAVINIDÆ

Euglandina texasiana (Pfr.)

Remarks—One dead shell of this species was collected in drift along White Rock Creek. No living animals, to the writers' knowledge, are recorded from Dallas County. Singley (1892) and Pilsbry, Ferriss (1906) report it from the south-central part of the state.

Records—Station 1.

ACHATINIDÆ

Rumina decollata (Linn.)

Remarks—This species, indigenous to the Mediterranean region, seems to be rapidly extending its range in the

United States, especially in Texas. It has been reported from six localities in this state, and a closer check on its distribution will probably add many new records to its present known distribution.

Records—City limits of Dallas.

SUCCINEIDÆ

Succinea avara (Say)

Remarks—This species usually occurs in low, marshy areas adjoining water courses, or even submerged in water. Whether the submergence was accidental or not is not known.

Records—Stations 1, 4, 6, 8, 10, 12, 14, 15, 18, 19, 20 and 21.

Succinea grosvernori (Lea)

Remarks—This species is more limited than the foregoing in its distributed in Dallas County. It has been collected in swampy regions, as well as under thin blankets of humus in relatively dry areas.

Records—Stations 1, 4, 10, 14, 18, 19, 20 and 21.

Succinea luteola (Gould)

Remarks—Occurs in deep woodland areas under rotten logs and leaves, though never in abundance.

Records—Stations 1, 17 and 19.

ENDODONTIDÆ

Anguispira alternata (Say)

Remarks—Perhaps twenty shells have been collected in Dallas County, from drift and beneath rotting logs and humus in dense woodlands. It is possible that this species does not extend farther southward than north-central Texas, since Pilsbry and Ferris (1906) have not reported it.

Records—Station 1.

Helicodiscus parallelus (Say)

Remarks—Shells are found abundantly under limestone rocks and humus in sparsely-wooded areas. Drift along White Rock Creek is rich in these shells.

Records—All stations except 3, 5, 7, 8, 13, 15, 16, 17.

LYMNÆIDÆ

Lymnaea bulimoides techella (Haldeman)

Remarks—Collected in ponds and low marshy areas, creeping over aquatic vegetation.

Records—Stations 1, 20 and 21. Reported from Dallas County by Baker (1911).

Lymnaea bulimoides cockerelli (Pilsbry & Ferriss)

Remarks—Frequently found submerged, adhering to rocks in rather rapid streams with limestone bottoms. A few were also collected in a protected pool adjoining a creek.

Records—Stations 16 and 20.

PLANORBIDÆ

Helisoma lentus (Say)

Remarks—A common inhabitant of the majority of water courses in Dallas County. It occurs by the hundreds in a small pond one mile west of Dallas. Here the shells are very dark, or even coal-black, in color. Although favoring the more protected areas in creeks, the species has been found abundanty in riffles.

Records—Stations 1, 7, 8, 9, 10, 13, 14, 16, 18, 19, 20 and 21.

Gyraulus parvus (Say)

Remarks—This small planorbid snail is found in low marshy areas and in the more protected inlets of White Rock Lake. A favorable habitat is the lower surfaces of leaves of *Nelumbo lutea* (Willd.).

Planorbula obstructa (Morelet)

Remarks—Only three dead shells of this species were collected; in drift along White Rock Creek. This species is not distinguishable, except for the teeth, from *G. liebmanni.*

Gyraulus liebmanni (Dkr.)

Remarks—A few specimens were collected in a protected bay in White Rock Lake.

Records—Station 1.

PHYSIDÆ

Physa humerosa (Gould)

Remarks—Practically all Dallas County specimens of this species possess blackened shells. These are rather heavy and of a much tougher texture than those of other physids. While it occurs at times in small creeks, it thrives best, apparently, in ponds and low marshy areas.

Records—Stations 1, 20, and 21; also collected in a small pond one mile west of Dallas.

Physa forsheyi (Lea)

Remarks—This is the most abundant and widely distributed physid in the county. It is particularly abundant in riffles where the water is highly oxygenated. During cold weather the animals are usually well-concealed beneath submerged dead leaves and rocks.

Records—All stations except 3, 6, 10, 11, 12, 13, 15.

Physa anatina (Lea)

Remarks—Although less widely distributed than the foregoing species and *P. halei,* it occurs in similar habitats.

Records—Stations 10 and 13.

Physa halei (Lea)

Remarks—Collected in a habitat similar to that of *P. forsheyi.*

Records—Stations 5, 9 and 19.