

ANNOTATED DISTRIBUTION RECORDS FOR KENTUCKY MOLLUSCA

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COLLECTING STATIONS

In the annotated list which follows, the numbers of specimens collected at each locality are given first and the collecting station number follows in parentheses. All measurements are in millimeters.

1. December 9, 1968. Mile 18 to mile 14, Tennessee River, below Kentucky Dam, Marshall County.
2. June 1, 1968. Near (in, for aquatics) Cumberland River, Burnside, Pulaski County.
3. October 24, 1966. Eastern Kentucky University Dairy Farm Pond, Madison County.
4. April 1, 1967. Near mouth of Lulbe-
 grad Creek, Clark County, Kentucky.
5. April 1, 1967. Low hill, 1 mile
 southeast of Mina, Clark County.
6. August 25, 1961. Big Bullskin Creek,
 23 miles east of Louisville, U.S. Highway
 60, Jefferson County.
7. August 3, 1961. Two miles west of
 Carrollton, Carroll County.
8. December 5, 1965. Turpin Creek, 3.3
 miles west of Waco, Madison County.
9. April 23, 1967. Daniel Boone Church
 Camp, Jessamine County.
10. October 18, 1966. Flood plains of
 Million Creek, Tates Creek Road, 4.3 miles
 north of Richmond, Madison County.
11. June 10, 1968. Williams Bend, Buck
 Creek, Pulaski County.
12. November 27, 1965. Four and one-
 half miles southeast of Big Hill, State
 Highway 421, Rockcastle County.
13. October 8, 1966. Red River valley,
 1.4 miles downstream from Hazel Green,
 Wolfe County.
14. July 13, 1966. Near Lake Reba spill-
 way, 3 miles east of Richmond, Madison
 County.
15. March 28, 1966. Beneath Interstate
 Highway 75 bridge on Kentucky River, 10
 miles north of Richmond, Madison County.
16. November 21, 1965. Boone Memorial
 Bridge, State Highway 277, Kentucky River
 bluffs, Clark County.
17. September 4, 1966. Silver Creek
 valley, 6 miles west of Richmond on Barnes
 Mill Road, Madison County.
18. October 14, 1965. Low hillside 1.5
 miles west of Richmond on State Highway
 52, Madison County.
19. December 22, 1965. Blue Grass Or-
 dinance, Madison County.
20. August 4, 1964. Licking River at
 Butler, County Highway 609, Pendleton Coun-
 ty.
21. March 11, 1966. Black Creek, 0.75
 mile north of Clay City, Powell County.
22. May 7, 1966. Bluffs of Russell
 Branch of Big Sandy River, east side of
 Elk Horn City, Pike County.
23. August 22, 1966. Eagle Falls, Cum-
 berland Falls State Park, McCreary County.
24. July 19, 1968. Cumberland River
 banks, Williamsburg, Whitley County.
25. March 16, 1966. Limestone outcrop
 on bluffs of Cumberland River, Cumberland
 Falls State Park, McCreary County.
26. June 19, 1968. Boonesborough State
 Park, Madison County.
27. July 3, 1968. Annville, Jackson
 County.
28. May 4, 1966. Berea Woods, near Care-
 taker's home, Berea, Madison County.
29. May 6, 1966. Pottertown, 8 miles
 northwest of New Concordia, Calloway County.

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30. August, 1966. Base of Kentucky River bluffs on flood plains, near Interstate Highway 75 bridge, Fayette County.
31. July 29, 1967. Hillside, 5 miles west of Cumberland Falls, near Honeybee, McCreary County.
32. April 10, 1964. Kentucky River bluffs, Frankfort, Franklin County.
33. August 4, 1964. Flood plains of Licking River, four miles east of Butler on State Highway 609, Pendleton County.
34. December 4, 1966. Richmond Country Club, Madison County.
35. April 30, 1966. Camp Robinson Forest, Perry County.
36. October 8, 1966. Camp Bellsville, Taylor County.
37. April 10, 1966. Little Kentucky River, Bedford, Taylor County.
38. May 17, 1967. Levi Jackson State Park, State Highway 229, Laurel County.
39. August 22, 1966. Near Table Rock Fire tower, northeast boundary, Cumberland Falls State Park, Whitley County.
40. December 16, 1965. Canyon system, 5.5 miles southeast of Berea, Madison County.
41. December 20, 1965. Ravenna, 2 miles southeast of Irvine, Estill County.
42. July 19, 1968. Buck Creek crossing of State Highway 192, near Somerset, Pulaski County.
43. July 7, 1968. Underground valve housing, Crescent Springs, Kenton County.
44. October, 1964. Bluffs of Triplet Creek, 4 miles west of Morehead on State Highway 60, Rowan County.
45. September 20, 1966. Hillsides, intersection of Mountain Parkway and Powell-Clark County line, in Clark County.
46. March 16, 1966. Limestone outcrop overlooking Cumberland Falls, Cumberland Falls State Park, Whitley County.
47. April 7, 1966. Heavily shaded, moist ravine, Disputanta, Rockcastle County.
48. December 5, 1965. Hillside, 1.1 miles south, 3 miles east of Irvine, Estill County.
49. September 6, 1966. Red River valley at Belknap, Wolfe County.
50. July 8, 1967. Bluffs of Red River at U.S. Highway 89 bridge, Estill County.
51. May 16, 1966. Sewage filtration plant, Cumberland Falls State Park, Whitley County.
52. May 14, 1966. Mill Creek valley, 1.5 miles above Mill Lake, Wolfe County.
53. May 29, 1968. Just west of Somerset, old State Highway 80, Pulaski County.
54. May 9, 1966. Lowlands near railroad, 3 miles west of Pineville, old U.S. Highway 25 E, Knox County.
55. April 3, 1966. Murray State University Campus, Murray, Calloway County.

56. December 23, 1966. River bottomland, 8 miles east of Richmond, State Highway 52, Madison County.

57. May 16, 1968. Banks of (or in) Salt River, Shepherdville, Bullitt County.

58. April 9, 1966. Zachariah, Lee County.

59. March 6, 1966. Red River valley and hillsides, Log Lick, Clark County.

ANNOTATED LIST

Corbicula manilensis Philippi

Collections: 3(1) 23(2).

The Asiatic clam, first recorded from the United States in the Pacific Northwest (Ingram, 1959) and from Kentucky near Paducah (Sinclair and Isom, 1961), has steadily spread its range through the Tennessee, Cumberland (Bickel, 1966), Green (Bates, 1962), Kentucky and Red rivers (Branson and Batch 1969). The authors also have several records from Dix River below Lake Herrington Dam in the vicinity of High Bridge. The specimens reported here ranged from 18.5 to 48.0 mm (record size?) in total length, and 17.0 to 41.0 mm in greatest depth. Thomerson's and Myer's (1970) specimen-sample from Granite City, Illinois ranged from 4.0 to 31.0 mm in total length, whereas the 75 specimens reported by us (1969) from the Kentucky River ranged from 14.8 to 33.0 mm.

Pisidium variabile Prime

Collections: 11(3).

The eleven specimens, secured from a mud-bottomed pond, measured 4.0 to 4.5 in total length and 3.9 to 4.0 in height. Bickel (1967) did not list this species for the Kentucky pelecypod fauna.

Sphaerium striatinum (Lamarck)

Collections: 1(42) 8(4).

Probably the most common sphaeriid in Kentucky flowing waters.

Sphaerium sulcatum (Lamarck)

Collections: 2(4).

Sphaerium transversum (Say)

Collections: 1(3).

Common in farm ponds.

Truncilla truncata Rafinesque

Collections: 1(5).

Lampsilis ventricosa (Barnes)

Collections: 1(42).

Dynomia brevidens (Lea)

Collections: 1(42).

Gastrobasis laqueata (Lea)
Collections: 10(6).

Pleurocera canaliculatum (Say)
Collections: 4(7).

The known distribution of this and other Kentucky aquatic snails was outlined by Branson (1970).

Pomatopsis lapidaria (Say)
Collections: 1(8); 3(9); 10(10) 1(45).
The specimens averaged 6.1 (5.3-7.0) in length, and possessed 5½ to 6 w/3 whorls.

Oligyra (Helicina) orbiculata (Say)
Collections: 5(11).
Height 5.8 to 6.3; diameter 7.5; whorls 4¾ to 5.

Carychium exiguum (Say)
Collections: 137(4), 8(5).
Height 1.6 to 2.0; diameter 0.5 to 0.7; whorls 5 to 5½. Shell-sculpturing is rather sharply defined.

Carychium nannodes Clapp
Collections: 40(5), 1(12).
Height 1.5 to 1.6; diameter 0.5 to 0.7; whorls 4¾ to 5½.

Cionella lubrica morseana Doherty
Collections: 1(5) 1(13).
Hubricht (1968) considers this a full species.

Vallonia pulchella (Müller)
Collections: 2(4) 2(14) 1(15).
Diameter 2.0 to 2.5; whorls 2 1/3 to 3¾.

Gastrocopta procera (Gould)
Collections: 14(4), 4(5), 2(14).
This species, in fact pupillids in general, appears to be more abundant west of the eroded plateau area. Height 2.5 to 2.7; diameter, 0.9 to 1.2; whorls 5½ to 6.

Gastrocopta armifera (Say)
Collections: 22(4), 39(5), 37(16), 4(17), 8(18), 1(19).
Height 4.2 (3.7-5.0); diameter 2.2 (2.0-2.5); whorls 6 1/3 to 7½.

Gastrocopta contracta (Say)
Collections: 81(4), 14(5) 1(9) 2(10), 1(12), 2(14), 1(45).
Height 2.3 to 2.7; diameter 1.3 to 1.7; whorls 4 1/3 to 5½.

Gastrocopta pentodon (Say)
Collections: 14(4), 12(5), 4(14).
Height 1.9 (1.6-2.0); diameter 0.9 (0.8-1.0); whorls 4¾ to 5½.

Gastrocopta tappaniana (C. B. Adams)
Collections: 25(4), 62(5).
Height 2.1 (1.8-2.2); diameter 1.1 (1.0-1.3); whorls 4¾ to 5½.

Gastrocopta corticaria (Say)
Collections: 1(4).
A typical specimen.

Vertigo gouldi (Binney)
Collections: 3(4) 1(5).
Height 1.8 to 2.2; diameter 1.0 to 1.1; whorls 4¾ to 5; 5 teeth.
The shells are distinctly, closely and obliquely striate.

Vertigo milium (Gould)
Collections: 5(4), 5(5), 1(14).
Height 1.4 to 1.5; diameter 0.7 to 1.0; whorls 4¾ to 5.

Vertigo tridentata Wolf
Collections: 4(4) 17(5).
Height 1.9 to 2.2; diameter 1.0 to 1.2; whorls 4 7/8 to 5½.

Vertigo ventricosa (Morse)
Collections: 1(14).
Height 2.3; diameter 1.3; whorls 5 2/3.

Columella edentula (Draparnaud)
Collections: 1(5).
Height 2.2; diameter 1.2; whorls 5 2/3.

Strobilops aenea Pilsbry
Collections: 1(5), 2(12).

Strobilops affinis Pilsbry
Collections: 2(16).
Diameter 2.4 to 2.5; 6 whorls.

Succinea species
Collections: 1(4), 2(5).
The specimens were too immature to allow specific diagnosis.

Succinea ovalis Say
Collections: 2(5), 1(20).
Length 11.0 to 23.2; spire length 3.8 to 9.8; aperture length 8.0 to 15.5; whorls 3 to 3½.

Catinella vermeta (Say)
Collections: 2(5), 1(21), 1(45).

Philomycus batchi Branson
Collections: 4(22).
There is an indistinct, thin, longitudinal black line about one-third the way up from the ventral edge on either side of the mantle in two specimens, and all specimens have the mantle profusely pep-

pered with small black punctae. These slugs strongly resemble ones secured from Black Mountain (Branson, 1968). Contracted length 28.6 to 40.8; width of sole, 3.5 to 6.3.

Philomycus carolinianus (Bosc)

Collections: 3(9), 1(23), 2(17), 1(24), 3(25), 1(26), 2(27).

There is considerable variation in the ground color of this slug, dusky-blue to pale yellowish brown. In all specimens, however, the double row of black spots along the midline of the mantle is present. Contracted length 29.7 (16.5 to 38.3); width of sole, 5.5 (2.5 to 8.0).

Philomycus virginicus Hubricht

Collections: 3(22), 1(28).

The ground color is light chamois, the foot margin being pale yellow suffused by pale gray. The back is profusely peppered and mottled with light brown, and two broad, dark mahogany bands parallel the dorsum (nearly contiguously), diverging slightly anteriorly. The mantle bears a dorso-lateral band of the same color on each side. Contracted length 36.9 (27.8 to 47.5); width of sole 6.9 (4.6 to 8.0).

Pallifera dorsalis (Binney)

Collections: 2(17), 4(22).

All specimens were pale- to bluish-gray above and the sides of the foot were rust colored anteriorly (gray in alcohol). The back is immaculate. Contracted length 16.0 (13.6 to 18.0); 2.0 (1.6 to 2.3).

Pallifera fosteri (Baker)

Collections: 2(12), 1(28).

The mantle is light tan with a wavy, dark brown mid-dorsal streak and an interrupted band or series of blotches along each flank of the mantle. The spaces between the bands by grayish or brownish reticulations and blotches. Contracted length, 13.1 (10.0 to 12.5); width of sole 2.0 (1.9 to 2.0).

Pallifera ragsdalei Webb

Collections: 1(14), 1(29), 1(26), 1(28).

The sides of the mantle are dark grayish-brown, bearing an undulating, dorso-lateral, mahogany-brown band on either side. The dorsum is lighter in color, grayish-tan with a double row of elongate mahogany dashes which send a few diagonal stripes to make contact with the lateral bands. The sole is dead white, and the edge of the foot rusty red in life, gray in alcohol. Contracted length 35.4 (27.3 to 43.5); width of foot, 5.5 (5.0 to 5.9).

Pallifera wetherbyi W. G. Binney

Collections: 1(22), 4(24), 1(25 - type locality).

The diagonal cross-bands tend to coalesce laterally to produce an irregular longitudinal band on either side in large specimens, and in the largest specimen from station 24 there is a broad, middorsal band as well, being produced by the contacting chevrons. Contracted length, 36.6 (31.5 to 44.5); width sole, 6.2 (5.5 to 7.4). This species spends daylight hours in sandstone cracks.

Pallifera varia Hubricht

Collections: 3(22).

The mantle bears a very dense, dappled pattern, and the edge of the foot is pinkish gray in life. Contracted length, 29.0 (23.5 to 34.2); width sole, 6.3 (5.5 to 7.5).

Anguispira alternata (Say)

Collections: 1(4), 5(5), 1(8), 1(9), 12(10), 1(12), 14(15), 27(17), 3(18), 2(26), 1(28), 2(30), 3(31), 3(32), 2(33), 2(34), 2(35), 12(36), 8(45).

In shells of 11.0 to 13.0 mm diameter, the periphery is usually strongly depressed to keeled, and in ones 19.0 mm or larger the periphery is nearly always angular. The rib-striation is rather coarse, becoming more so at the periphery, and the basal sculpturing varies from low to as heavy as above. In specimens above 18.0 mm there are 7 to 8 ribs per 3.0 mm of body whorl, but in specimens smaller than 10 mm the striations are considerably more crowded, approximately 11 to 14 per 2.0 mm. The increase in height, as well as increase in umbilical diameter, with increase in shell diameter is essentially a straight line relationship (Fig. 1).

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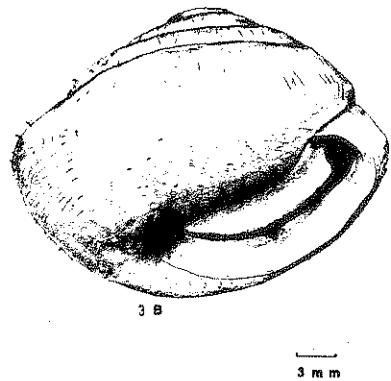
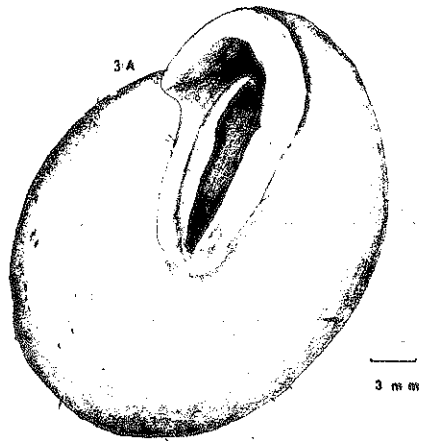
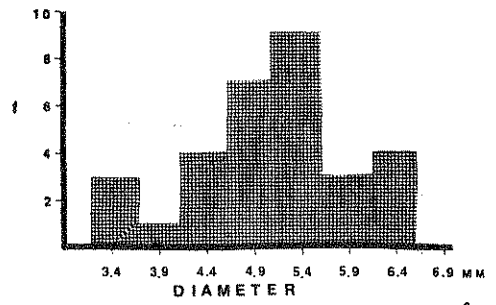
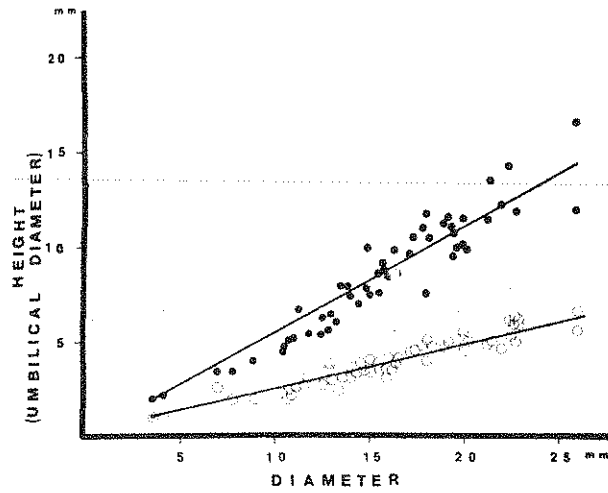
FIGURES 1-3, NEXT PAGE

FIG. 1. Regression of shell height on diameter (solid circles) and umbilical diameter on shell diameter (open circles) in *Anguispira alternata*.

FIG. 2. Histogram showing continuous variation in shell diameter between the nominal species *Retinella cryptomphala* and *Retinella solida*. $t_{0.05}$ of $H_0: \mu_1 = \mu_2$ accepted.

FIG. 3. *Stenotrema edwardsi*. a = basal view; b = apertural view.

Practical Limits	f	Class Mark
3.2-3.6	3	3.4
3.7-4.1	1	3.9
4.2-4.6	4	4.4
4.7-5.1	7	4.9
5.2-5.6	9	5.4
5.7-6.1	3	5.9
6.2-6.6	4	6.4



BRANSON AND BATCH

Anguispira kochi (Pfeiffer)
Collections: 7(9). 4(12). 8(37).

Discus cronkhitei (Newcomb)
Collections: 69(4) 11(5). 4(9). 3(10).
19(15) 7(26).

The specimens from stations 4, 9, and 10 seem to be intermediate between typical *D. cronkhitei* and *D. c. catskillensis* (Pilsbry). In fact, the specimens with coarsely raised, round sculpture, angular periphery, rounded aperture, and moderately elevated spire are nearly identical to specimens from Pennsylvania. Diameter 4.7 (3.9 to 5.9); height 2.9 (2.5 to 3.5); whorls 3 1/3 to 4 1/2.

Discus patulus (Deshayes)
Collections: 17(9), 30(12), 1(24). 4(28),
3(38), 4(39), 1(40), 2(41).

Helicodiscus notius Hubricht
Collections: 2(4), 1(42).

Helicodiscus parallelus (Say)
Collections 3(5), 1(14), 2(15), 1(19)
1(35).

Helicodiscus nummus (Vanatta)
Collections: 1(4), 1(5).

Helicodiscus singleyanus (Pilsbry)
Collections: 1(4), 1(5).

Punctum minutissimum (Lea)
Collections: 10(4) 8(5).
Diameter 1.2 (1.0 to 1.2); whorls 3 1/5
to 3 1/2.

Limax maximus Linnaeus
Collections: 1(38).

Deroceras laeve (Müller)
Collections: 10(43).

Retinella burringtoni (Pilsbry)
Collections: 1(15).

The specimen has very obvious spiral sculpture and an ovate aperture. It measured 4.5 in diameter, 2.3 in height, and had a 1.5 umbilicus and 3 whorls.

Retinella wheatleyi (Bland)
Collections: 6(5), 2(9), 1(12), 3(17),
2(39), 1(44) 1(45).

Retinella carolinensis (Cockerell)
Collections: 5(4), 12(10) 1(38), 6(45).
The shells, 3.7 (1.6 to 4.8) in diameter
with 2 1/2 to 4 1/2 whorls, possess close-set,
beautiful spiral sculpture and an umbilicus
which is approximately one-half open.

Retinella cryptomphala (Clapp)
Collections: 4(5), 6(9), 3(10), 4(15),
3(16), 8(17), 3(18), 1(21), 2(45) 2(48),
2(49) 32(59).

The major radial grooves are rather widely spaced on the body whorl, there being only 2 1/2 of them on the last half of that whorl in a shell of 5.5 mm diameter. The large (4.9 to 6.5 mm) shells from stations 5, 21, and 59 are very similar to the nominate form *R. solida* Baker; the major sculpturing is deep set, relatively broad, and the spirals are dense, wavy. As far as the whole collection is concerned, the shells averaged 5.1 (3.2 to 6.5) in diameter. However, when the diameter data are categorized and transformed into a histogram (Fig. 2) continuous variation is demonstrated, probably of the normal type. Likewise, $t_{0.05} (H_0: \mu_1 = \mu_2)$ indicates a lack of significance between the means of the larger (4.9 to 6.5) and smaller shells, i. e., the two nominate forms cannot be distinguished by size alone.

Retinella indentata (Say)
Collections: 51(5), 1(9), 4(12), 3(13),
1(14), 5(15), 9(17), 9(18) 1(39) 68(45).

Retinella praecox Baker
Collections: 1(5), 3(12), 2(30).
These pinkish-tan shells averaged 5.5
(3.8 to 7.8) in diameter, with 4 to 5 5/6
whorls.

Retinella sculptilis (Bland)
Collections: 1(28), 1(39), 1(44).

These three shells, averaging 6.8 (5.9 to 7.5) diameter, were rather pinkish in life, but faded to a definite brassy color in vials, more or less whitish on the base. The largest (7.5) shell has 62 major grooves on the last whorl, whereas the 7.0 specimens possess 84. The animal was very dark, nearly black. These characters contrast sharply with those of *R. carolinensis*, in which the animal is light-colored, and where there are about 46 major grooves on the last whorl.

This form may be a new race. If this proves to be the case, it is probably most closely related to *R. sculptilis subdola* H. B. Baker (Pilsbry, 1946) from the Tennessee Smokies.

Mesomphix latior (Pilsbry)
Collections: 2(39)
Diameter 13.0; height 7.3; width of
spire 6.0; width of last whorl 6.0; 4
whorls.

Mesomphix perlaevis (Pilsbry)

Collections: 3(5), 18(15), 8(17), 4(23), 2(39), 1(42), 3(44), 1(45), 5(50), 1(51).

Spirally arranged papillae are only weakly developed; the surface is thus glossy. Diameter 15.8 (10.0 to 19.8); height 9.7 (5.7 to 12.3); diameter umbilicus 1.1 (0.4 to 1.4); height aperture 8.2 (5.3 to 11.4); width aperture 8.3 (5.5 to 10.5); 3 5/6 to 5 whorls.

Mesomphix vulgatus Baker

Collections: 15(5), 6(17), 1(18), 1(22), 2(26), 5(30), 3(46).

These beautifully spirally sculptured ('beaded') shells are relatively common in third and fourth order valleys. Diameter 20.6 (16.5 to 23.6); height 12.7 (11.5 to 14.0); whorls 4 1/3 to 5. Two shells, 16.5 and 18.0 in diameter had basal perforations measuring 2.0, respectively.

Mesomphix inornatus (Say)

Collections: 1(5), 5(9), 1(23), 6(35).
Diameter 14.8 (11.5 to 20.0); height 7.3 (6.0 to 10.0); width last whorl 6.4 (4.8 to 7.6); width spire 9.1 (7.0 to 11.3); height aperture 7.5 (5.0 to 10.5); width aperture 7.0 (6.3 to 8.3); 4 1/2 to 5 1/2 whorls.

Mesomphix curvatus (Rafinesque)

Collections: 6(12), 10(23), 6(35).
Diameter 24.9 (19.0 to 29.0); height 13.9 (10.0 to 16.5); height aperture 12.3 (9.7 to 14.0); width aperture 12.1 (10.0 to 14.3); diameter umbilicus 3.6 (2.3 to 4.5); 4 to 4 1/4 whorls. A lowland species.

Mesomphix derochetus Hubricht

Collections: 26(23), 3(26), 11(30), 2(50).

Often confused with *M. vulgatus*, this species has a dull lustre because of numerous close-set papillose spirals. The apex is whitish, and the general ground color varies from light tan to yellow. The preferred habitat seems to be river valleys. Diameter 20.8 (16.2 to 23.2); height 12.7 (10.0 to 15.0); height aperture 10.2 (8.5 to 11.7); width aperture 11.5 (8.8 to 14.0); 4 1/2 to 5 whorls.

Mesomphix friabilis (Binney)

Collections: 1(4).

Paravitrea capsella (Gould)

Collections: 1(17).

This specimen measures 5.5 in diameter, 3.5 in height, 1.0 in umbilical diameter, and has nearly 7 whorls.

Paravitrea placentula (Shuttleworth)

Collections: 4(15), 2(16), 5(18), 1(52).

Diameter 5.0 (4.0 to 5.7); height 2.9 (2.1 to 3.5); 6 1/2 to 7 1/4 whorls.

Paravitrea petrophila (Bland)

Collections: 4(5), 9(9).

Hawaii minuscula (Binney)

Collections: 51(4), 42(5), 1(14), 1(15), 154(45).

Diameter 2.4 (1.9 to 3.0); 3 3/4 to 4 whorls.

Euconulus chersinus (Say)

Collections: 1(5), 2(15), 1(16), 1(19).

Guppya sterkii (Dall)

Collections: 3(5), 1(12).

The spire seems somewhat more depressed than usual for this species. Diameter 1.0 to 1.2; 3 to 3 1/2 whorls.

Gastrodonta interna (Say)

Collections: 1(9), 2(12), 1(45).

Ventridens nodus Pilsbry

Collections: 2(12), 4(46).

The base is distinctly concave around a minute umbilicus, and the shell is broadly dome-shaped. The lamella on the thickened columellar axis is directed outward. A second lamella located near the outer edge of the body-whorl floor, is strongly curved, directed slightly inward and upward. The growth sculpture is very low, rounded, and no spiral sculpture is evident. This form was referred to *V. gularis* by Pilsbry (1946, p. 447; holotype, ANSP 165566). We have also collected the species from the eastern end of Pine Mountain, Pike County, Kentucky. Diameter 7.9 (6.5 to 10.5); height 5.2 (3.5 to 7.4); 6 1/3 to 8 whorls.

Ventridens lawae (Binney)

Collections: 6(38).

Very similar to shells secured from Clay County, North Carolina. Diameter 7.0 (5.5 to 9.0); height 3.2 (2.6 to 4.0); 5 1/2 to 9 whorls.

Ventridens acerra (Lewis)

Collections: 1(4), 5(5), 26(9), 6(15), 1(24), 1(53).

Diameter 11.3 (9.5 to 12.5); height 7.9 (7.0 to 9.0); 5 1/2 to 8 1/3 whorls.

Ventridens demissus (Binney)

Collections: 4(5), 1(12), 4(17), 4(23), 12(34), 1(35), 3(38), 6(45), 1(49).

Diameter 9.1 (6.5 to 10.5); height 6.0 (4.0 to 7.5); 5 1/2 to 7 whorls.

Ventridens intertextus (Binney)

Collections: 13(5), 4(9), 9(10), 11(18), 1(28), 17(30).

In most specimens, the radial striae are sharp and the papillose spirals are distinct above and below (almost as strongly developed in specimens from station 28 as those in *V. intertextus eutropis* (Pilsbry)). The periphery is angular in all specimens and the umbilicus is tiny, less than 1.0 in diameter. Diameter 11.2 (7.5 to 13.0); height 7.8 (4.6 to 10.5), 5½ to 7 whorls.

Ventridens ligera (Say)

Collections: 11(17), 7(21), 22(26), 11(30).

Diameter 11.6 (8.9 to 13.8); height 8.6 (6.0 to 10.9); 6 to 7 whorls.

Ventridens pilsbryi Hubricht

Collections: 1(25), 1(39).
Diameter 6.5 to 7.0; height 4.0 to 4.5; 7½ to 7 2/3 whorls.

Zonitoides arboreus (Say)

Collections: 3(4), 1(5), 10(28), 6(45), 2(54).

Diameter 4.2 (2.5 to 5.2); 3¼ to 4 7/8 whorls.

Zonitoides nitidus (Müller)

Collections: 2(45).

Zonitoides lateumbilicatus (Pilsbry)

Collections: 1(16).
Diameter 4.4; diameter umbilicus 1.8; 3 whorls.

Striatura milium (Morse)

Collections: 9(4), 11(5).
Diameter 1.3 (1.1 to 1.5); 2¼ to 3¼ whorls.

Striatura exigua (Stimpson)

Collections: 1(30).
33 raised riblets on the last whorl. Diameter 1.5; diameter umbilicus 0.6; 2 4/5 whorls.

Striatura ferrea Morse

Collections: 1(4).
Wide open, perspective umbilicus; riblets poorly defined, and the spiral sculpture is faint. Diameter 1.2; 2¼ whorls.

Haplotrema concavum (Say)

Collections: 15(5), 1(8), 6(9), 1(10), 5(12), 3(13), 21(15), 21(17), 5(26), 26(30), 1(32), 1(39), 4(45), 2(50).
Diameter 15.2 (5.5 to 21.3); height 7.2 (2.5 to 10.0); diameter umbilicus 5.0 (2.0 to 6.6); 3 to 5½ whorls.

Polygyra plicata (Say)

Collections: 36(9), 67(11), 1(30).
Diameter 7.0 (6.5 to 7.5); height 3.1 (3.0 to 3.5); 5 to 5½ whorls.

Stenotrema hirsutum (Say)

Collections: 2(5), 2(9), 1(12), 2(17), 11(38), 1(39).

Diameter 7.4 (6.5 to 8.6); height 4.9 (4.3 to 6.0); whorls 4 2/3 to 5.

Stenotrema stenotrema (Pfeiffer)

Collections: 1(4), 6(5), 31(9), 4(10), 25(15), 6(17), 2(18), 1(23), 1(30), 2(38), 1(39), 4(45).

Diameter 10.3 (8.8 to 12.2); height 6.6 (6.0 to 7.7); whorls 5 to 5 4/5.

Stenotrema angellum Hubricht

Collections: 1(5), 33(12), 6(30), 1(32), 2(45), 2(50), 3(54).

Comparing (H_0 ; $\mu = \mu_0$) the measurable data (height, diameter, and height/diameter) secured from specimens of this species with those secured from the *S. stenotrema* cited above indicates that the means are not significantly different at P.05. Hence, the validity of *S. angellum* rests on the angular nature of the body whorl, a character of little value because of extreme variability in the species compared, and the spiral arrangement of the perioracal hairs; in *Stenotrema stenotrema* the bases of the hairs are supposedly radially arranged. In some specimens (station 50) the hairs are very definitely spirally arranged above and below, whereas in others they are spirally arranged above but radially arranged below. One of the specimens from station 12 (10.3 mm in diameter) has radially arranged hairs on the first few whorls but spirally arranged ones on the body whorl. These facts indicate considerable variation in this trait and, to our way of thinking, casts some doubt on the validity of *S. angellum* as a distinct species. Diameter 10.2 (9.5 to 11.2); height 6.5 (5.8 to 7.5); whorls 5 to 5½.

Stenotrema barbatum (Clapp)

Collections: 1(12), 1(15), 3(17), 1(25), 1(30), 1(45).

This interesting form is somewhat of an enigma. The surface is covered with short, stiff hairs, the bases of which are spirally to obliquely arranged. The lip-notch is broadly u-shaped, and the aperture is wider than the reflected portion of the peristome. Since this shell type is relatively scarce by comparison with *S. hirsutum* and *S. stenotrema*, and is sympatrically distributed with both the latter species, the thought occurs that *S. barbatum* might possibly be a hybrid, *S. stenotrema* X *S. hirsutum*. Diameter 9.4 (8.9 to 10.8); height 6.4 (5.8 to 7.0); whorls 4 5/6 to 5½.

Stenotrema edwardsi (Bland)

Collections: 2(23) 3(24) 1(39).

The large specimens from station 24 (Fig. 3 a, b) have been compared with Bland's types at the Museum of Comparative Zoology, Harvard, since they do not "key" well in Pilsbry's (1940) monograph. Diameter (sta. 5) 10.8 (10.0 to 11.3); height 5.8 (5.0 to 6.3); whorls $4\frac{1}{2}$ to $5\frac{1}{3}$.

Stenotrema fraternum (Say)

Collections: 1(4) 3(5) 1(10) 5(17), 2(21).

Diameter 9.9 (9.0 to 11.0); height 6.3 (6.0 to 7.0); whorls $5\frac{1}{5}$ to 6.

Stenotrema leai (Binney)

Collections: 1(26), 26(28).

Diameter 8.7 (8.0 to 9.3); height 5.5 (5.0 to 6.0); whorls $5\frac{1}{2}$ to $6\frac{1}{2}$.

Mesodon clausus (Say)

Collections: 2(5), 4(17), 1(24), 1(26), 23(54), 3(55).

Diameter 14.2 (12.5 to 15.5); height 10.6 (9.4 to 15.5); whorls $4\frac{1}{2}$ to $5\frac{1}{2}$

Mesodon downianus (Bland)

Collections: 7(10), 14(38), 3(54).

The umbilical condition varies from tightly closed to open by the merest niche. Diameter 10.7 (8.5 to 14.0); height 7.5 (5.3 to 10.5); whorls $4\frac{1}{2}$ to $5\frac{1}{3}$.

Mesodon pennsylvanicus (Green)

Collections: 2(15), 1(26).

Diameter 15.5 to 17.0; height 11.2 to 12.8; whorls $5\frac{1}{2}$ to $6\frac{1}{2}$.

Mesodon thyroideus (Say)

Collections: 1(2), 1(3), 1(4), 29(5), 13(8), 16(9), 3(10), 2(14), 9(15), 15(17), 3(18), 5(19), 4(21), 1(25), 7(26), 2(28), 23(30), 6(38), 1(39), 1(45), 4(50), 12(54), 2(56), 4(57).

The umbilicus varies from one-half to two-thirds open, and in all shells, where present (9:1), the parietal tooth is small. The specimens from station 14 have depressed shells. Diameter 23.1 (18.5 to 27.5); height 14.9 (11.8 to 18.5); whorls $4\frac{1}{2}$ to $5\frac{1}{2}$.

Mesodon zaletus (Binney)

Collections: 9(5) 46(9), 1(12), 6(15), 1(16), 6(17), 1(23), 4(28), 3(30), 3(31), 12(45), 2(47).

Diameter 28.0 (24.5 to 34.0); height 19.0 (16.5 to 24.3); whorls $4\frac{7}{8}$ to $5\frac{1}{2}$.

Mesodon elevatus (Say)

Collections 1(17).

Mesodon appressus (Say)

Collections: 3(4) 14(5), 2(8), 42(9), 21(15), 1(21), 5(24), 3(25), 5(26), 23(30), 1(31), 2(35), 11(38), 1(39), 33(44), 3(51), 33(54), 1(58).

At station 5, 5 of 13 specimens (38%) were abnormal: the spire is greatly depressed which causes the outer lip to become flared. In two specimens the second and third whorls are sunken below the level of the first and fourth, and in one fully mature specimen the umbilicus is $\frac{1}{4}$ open. Diameter 17.2 (14.7 to 19.3); height 8.4 (7.5 to 9.3); whorls $4\frac{1}{2}$ to $5\frac{1}{2}$.

Mesodon perigraptus X *M. appressus*

Collections: 3(15).

These rib-striate, chamois-colored shells possess both incised spirals and papillae between the striae, and measure 17.0 to 17.6 mm in diameter, 7.5 to 8.5 mm in height, and have $4\frac{5}{6}$ to 5 whorls. This diagnosis is admittedly a judgement, but, we believe, a valid one. *Mesodon perigraptus* is known from this region (Branson and Batch, 1970), but it is scarce, which probably accounts for its hybridization with *M. appressus*. The scarcity of one species in the presence of an abundance of another often stimulates the phenomenon of hybridization.

Mesodon sayanus (Pilsbry)

Collections: 1(25), 4(35), 2(44), 1(47).

Diameter 26.2 (23.8 to 29.5); height 15.7 (14.5 to 17.0); diameter umbilicus 5.4 (4.2 to 6.5); whorls $5\frac{2}{3}$ to $6\frac{1}{3}$.

Mesodon inflectus (Say)

Collections: 4(4), 27(5), 15(9), 15(10), 2(12), 7(17) 3(19), 1(25) 1(34), 1(36), 8(45), 9(54) 1(56).

Diameter 11.1 (9.7 to 12.7); height 6.2 (5.0 to 7.3); whorls $4\frac{1}{2}$ to $5\frac{1}{3}$.

Mesodon rugeli (Shuttleworth)

Collections: 33(5), 7(12), 31(15) 30(18) 4(21), 8(26) 15(30), 2(32), 5(42) 2(50), 1(51) 3(59).

Mesodon rugeli primarily frequents upland situations, whereas *M. inflectus* is more apt to be collected in the valleys. Diameter 11.1 (9.5 to 12.1); height 6.1 (5.2 to 6.8); whorls $4\frac{1}{2}$ to $5\frac{1}{2}$.

Triodopsis fraudulenta (Pilsbry)

Collections: 2(9), 1(17), 2(26), 1(30), 3(45).

Diameter 15.7 (14.5 to 17.0); height 8.7 (8.3 to 9.3); diameter umbilicus 3.7 (3.5 to 4.5); whorls $5\frac{1}{2}$ to 6.

Triodopsis claibornensis Lutz

Collections: 26(24).

In all specimens, a callus ridge extends from the lower palatal toward the umbilical region. The distal tip of the parietal tooth is directed above the palatal (one specimen has two palatals). The distribution of this species is additional evidence for demonstrating a biologic relationship between the highlands of Tennessee and the Cumberland Pine Mountain portion of Kentucky. Diameter 11.4 mm (10.0 to 12.9); height 6.6 mm (6.0 to 7.1); whorls nearly 5 to 5½.

Triodopsis tridentata (Say)

Collections: 5(3), 1(5), 4(21), 3(25), 2(28), 3(35), 5(50).

Diameter 16.7 (14.2 to 20.0); height 8.2 (7.1 to 10.0); diameter umbilicus 3.0 (2.3 to 3.5); whorls 5¼ to 5 2/3.

Triodopsis complanata (Pilsbry)

Collections: 7(5), 21(12), 2(17), 5(42), 4(45).

By some considered as a subspecies of *T. tridentata* (Pilsbry, 1940), this form does not seem to intergrade with the last-named species, although they are sympatrically distributed over part of the ranges. The glistening shell bears small patches of granules behind the lip and around the umbilicus, and spirally arranged rows of them occur on the whorls above and below, being heaviest near the sutures. The lip teeth are reduced to mere nubs, the spire is depressed, and the umbilicus is large. Diameter 16.3 (11.4 to 19.5); height 8.6 (7.5 to 9.8); diameter umbilicus 3.6 (3.1 to 4.0); whorls 5 to 5 2/3.

Triodopsis tennesseensis (Walker)

Collections: 9(38).

The parietal tooth points at or slightly below the poorly developed outer palatal. Many papillae follow the growth striae. Diameter 16.4 (14.7 to 17.3); height 7.6 (7.0 to 8.3); diameter umbilicus 3.1 (3.0 to 3.5); whorls 5 to 5 2/3.

Triodopsis denotata (Férussac)

Collections: 1(5), 2(9), 1(15), 1(17), 3(26), 1(36).

Diameter 21.7 (20.6 to 22.5); height 11.4 (11.0 to 12.0); whorls 4 7/8 to 5½.

Triodopsis albolabris (Say)

Collections: 1(5), 13(35), 3(38), 1(39), 3(54).

Diameter 34.7 (32.0 to 37.3); height 22.1 (20.5 to 23.0); whorls 5½ to 6.

Allogona profunda (Say)Collections: 2(9), 1(12), 2(17), 1(20).
Diameter 27.9 to 29.5; height 14.5 to 16.5; diameter umbilicus 5.0 to 5.8; whorls 5 1/5 to 5 2/3.

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