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Gastropoda of the 1962 University of Colorado Museum expedition in Mexico

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GASTROPODA OF THE 1962 UNIVERSITY OF COLORADO MUSEUM EXPEDITION IN MEXICO[1]

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During December of 1962 and January of 1963 Mr. P. H. Miller of the U.S. National Park Service and the second author made several collections of terrestrial and freshwater gastropods in Yucatán and Campeche, Mexico. These, with a few collections overlooked in our 1963 contribution, form the basis for this paper. A total of 842 specimens, representing 14 families, 19 genera and 33 species, were diagnosed.

The following species are here reported for the first time from the areas indicated. *Euglandina ghiesbreghti* (Pfeiffer), *Drymaeus multilineatus* (Say) and *Physa princeps* Phillips, Campeche; *Euglandina sowerbyana* (Pfeiffer), *Drymaeus hegewischi* (Pfeiffer) and *Taphius boucardianus* (Preston) from Yucatán; *Taphius havanensis* (Pfeiffer) from Colima; and *Philomycus bilineatus* (Benson) from Estado de México (first record from North America).

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COLLECTING SITES

I. Twenty miles west of México City, in Estado de México. A very wet *Abies-Pinus* forest, 10,000 feet elevation; heavy rainfall and dense fogs from June through October; 12 July 1961.

II. A low, swampy area on the outskirts of Colima, Colima; emergent aquatic vegetation abundant; 14 July 1961.

III. Parque Centenario, Mérida, Yucatán; smooth-barked trees and abundant rocks; 19 December 1963.

IV. Near ruins of Dzibilchaltun, Yucatán; numerous limestone slabs and debris from ruins; vegetation sparse, the result of a profound drouth; 20 December 1962.

V. Two miles east of Dzibilchaltun ruins; conditions similar to those at site IV; 20 December 1962.

VI. Limestone ridge of La Sierrita, a range of low hills, 2.6 miles south of Muna, Yucatán; 20 December 1962.

VII. Limestone plain, 29.7 miles south of Campeche, Campeche; very little soil; about 200 feet from sea; nut palms abundant; 22 December 1962.

VIII. Drying, shallow *aguada*, 3.5 miles south of Champotón, Campeche; 23 December 1962.

IX. Beach situation, near mouth of Río Champotón, Champotón, Campeche; 23 December 1962.

X. A narrow stand of sea-grapes, cacti, palms and mangroves, 17.2 miles south of Champotón, Campeche; abundant limestone slabs and moisture; about 100 feet from sea; 24 December 1962.

XI. A large *aguada*, 1.5 miles south of Libre Unión, Yucatán; numerous limestone boulders and lush vegetation; 29 and 31 December 1962.

XII. Deciduous thorn forest, 3 miles north of Pisté, Yucatán; 1 January 1963.

XIII. Residential area, Mérida, Yucatán; 2 January 1963.

XIV. Eleven miles east of Campeche, Campeche; 16 June 1961.

ANNOTATED LIST

In the following discussion all measurements are presented in mm. Under "collections," the arabic figures are number of specimens collected; the roman figures correspond to the station numbers above.

OLEACINIDAE

Seven species in two genera are represented in our collections.

Streptostyla meridana (Morelet)

Collections: 1 dead, IV; 6 dead, VI; 18 dead, XI.

Since several other species of *Streptostyla* are present in these and adjacent regions, the following measurements and indices are given in order to facilitate identification.

Altitude	Diameter	Spire Length	Aperture Length	Aperture Width	Ultimate Whorl Depth	Penultimate Whorl Depth	Whorls	Station
11.0	5.0	4.2	6.3	2.0	8.8	2.5	6	VI
11.0	4.5	4.0	6.5	1.5	9.0	2.2	5½	VI
10.1	4.3	4.5	5.6	1.7	7.7	1.9	5⅝	XI
(7.5-11.0)	(3.5-4.5)	(3.0-5.5)	(4.8-6.0)	(1.0-2.0)	(6.0-8.5)	(1.0-2.2)	(4¾-6)	

Indices: length/diameter 2.3; length/spire length 2.2-2.8; length/aperture length 1.7-1.8; depth ultimate whorl/depth penultimate whorl 3.5-4.1.

Streptostyla ventricosula (Morelet)

Collections: 8 dead, IV; 1 dead, VI; 6 dead, XI.

The mensurable details below were taken from specimens secured at station XI.

Altitude	Diameter	Spire Length	Aperture Length	Aperture Width	Ultimate Whorl Depth	Penultimate Whorl Depth	Whorls
13.3	5.7	5.4	7.8	2.6	10.5	2.7	5⅔
(9.8-14.8)	(4.8-6.0)	(3.0-6.0)	(6.8-8.3)	(2.0-3.0)	(8.0-12.0)	(1.5-3.2)	(5½-6½)

Indices: length/diameter 2.32; length/spire length 2.58; length/aperture length 1.69; depth ultimate whorl/penultimate whorl 4.1

Streptostyla maslini Branson and McCoy
Collections: 3 dead, IV.

Altitude	Diameter	Spire Length	Aperture Length	Aperture Width	Ultimate Whorl Depth	Penultimate Whorl Depth	Whorls
9.5 (9.0-10.0)	4.0	3.9 (3.5-4.5)	5.9 (5.8-6.0)	1.8 (1.7-2.0)	7.8 (7.5-8.0)	2.1 (2.0-2.2)	5⅗ (5¼-6)

Indices: length/diameter 2.5; length/spire length 4.0; length/aperture length 1.67; depth ultimate whorl/depth penultimate whorl 6.8.

For the purpose of comparison, the indices presented by Branson and McCoy (1962) in *S. toltecorum* are repeated here. Length/diameter 2.71; length/spire length 2.17; length/aperture length 1.80; depth ultimate whorl/depth penultimate whorl 5.3. Measurements given by von Martens (1890-1901) for *S. ventricosula* and *S. meridana* are essentially similar to those above. Similar indices need to be determined for all the species of *Streptostyla*.

Euglandina cylindracea (Phillips)
Collections: 5 dead, IV; 4 dead, V and VI.

E. cylindracea is apparently the common Yucatán representative of this genus and has been reported from several localities by Bequaert and Clench (1933, 1936, 1938), Baker (1941) and Branson and McCoy (1963). The following measurements were taken from the specimens collected at station VI. Length, 29.3 (28.0-30.0); diameter, 12.0; aperture length, 11.8 (11.5-12.0); width of aperture, 6.3 (6.0-6.5); whorls, slightly more than 7.

Euglandina cumingi (Beck)
Collections: 1 mature, 2 immature, dead, VI; 1 live, X; 1 dead, XI.

Our specimens, although slightly more slender, are very similar to those reported from Panama and Nicaragua by Pilsbry (1926) and from Venezuela by Baker (1925). *E. carmenensis* von Martens, also reported from Honduras by Ancey (1886), is probably conspecific with this species, and Smith's (1950) *E. bailyi,* from Guerrero, from its description and measurements, appears to be very similar to *E. cumingi,* with a slightly more elongated spire. *E. yucatanensis* Pfeiffer is another putative synonym.

Length	Diameter	Aperture Length	Aperture Width	Whorls	Station
57.0	22.5	22.0	9.0	6⅞	VI
26.5	12.0	11.0	6.0	6½	VI
28.0	12.5	12.0	6.5	6⅔	VI
42.0	19.7	23.2	8.0	6¼	X

Euglandina ghiesbreghti (Pfeiffer)
Collections: 1 live, VIII.

This species has heretofore apparently been overlooked in Campeche collections. In addition to our record, it is known from Chiapas, Tabasco and Guatemala, the latter locality lying about 125 km. east of Chiapas (Bequaert, 1957). The shell is pinkish-brown and distinctly radially striate, the radial striae being crossed with fine, evenly dispersed growth striae that become moderately nodose at the sutures. The aperture is light pink within. Length 33.7; diameter 16.0; aperture length 19.2; aperture width 8.0; whorls 6.

Euglandina sowerbyana (Pfeiffer)
Collections: 1 freshly dead, XI.

A new record for Yucatán. The shell is pecan brown with fairly heavy, thread-like circular striae crossed by fine growth lines, the latter bearing granular enlargements at the sutures. The embryonic whorls are low, causing the shell to be slightly truncated above. Length 25.0; diameter 8.2; whorls 5¼; length of aperture 9.0; width of aperture 4.2. Harry (1950) and Thompson (1957) reported some large unidentifiable fragments of *Euglandina* from Tabasco and Yucatán, respectively, which may be this species.

Limacidae

Limax flavus Linnaeus
Collections: 1 live, I.

This European exotic has been widely transplanted by the activities of man, especially in greenhouse materials. It has been reported from several Mexican localities; Cockerell (1923) collected a specimen in the vicinity of our station I. Length (alcoholic) 38.2.

PHILOMYCIDAE

Philomycus (Meghimatium) bilineatus (Benson)
Collections: 1 live, I.

Our specimen, 21.0 (alcoholic) long, almost exactly matches the characteristics listed by Likhachev and Rammel'meier (1952) for this species. It is yellowish-brown in color with a stripe along each dorsolateral area and a middorsal one; the mantle covers the entire back. *P. bilineatus* is distributed in the central and lower Amur River Basin of Russia and in China, Korea and Japan. As far as we can tell, this is the first record for this slug in North America, doubtless the result of some sort of artificial import.

FRUTICICOLIDAE

Averellia coactiliata (Deshayes)
Collections: 4 dead, IV; 1 dead, V.

A. coactiliata is widespread from Veracruz to Panama (Richards, 1937). Although often reported from various Mexican localities, it has seldom been described with enough detail to allow its identification. Consequently, a few notes are herein included. The shell is depressed and flattened above, having somewhat the appearance of some southeastern U.S. species of *Polygyra*. One narrow orangish, spiral band occurs just below the periphery of the body whorl and two appear above. The peristome is slightly reflected.

Altitude	Diameter	Whorls	Station
3.5	10.8	$3\frac{4}{5}$	IV
3.7	9.0	$3\frac{1}{2}$	V

POLYGYRIDAE

Praticolella griseola (Pfeiffer)
Collections: 7 live, X; 1 immature, live, XIII.

The specimens at station X were removed from the undersides of very wet slabs of limestone near the road. Harry (1950), indicating agreement with Bequaert and Clench (1936), considered this species to be imported into Mexico and Guatemala. He also indicated that the populations of Yucatán and Guatemala might be incipient species. Although a small sample, our Campeche specimens are approximately intermediate between those of Yucatán and Guatemala, being closer to the Guatemalan material.

Altitude	Diameter	Whorls	Diameter/Altitude
7.2 (5.5-8.0)	9.7 (7.5-11.0)	4-4½	1.35 (1.29-1.41)

Harry's average ratios (last group on right above) ranged from 1.27 to 1.36 for Guatemalan specimens and 1.43 to 1.57 for Yucatán material. Extensive collections from intermediate regions, both east and west of Yucatán, will probably demonstrate clinal variation in this character. This species may only be a southern variety of *P. berlandieriana* (Joseph Bequaert, personal communication).

Bulimulidae

Three genera and eight species, including one apparently new (to be treated in a subsequent paper), are represented in our collections.

Drymaeus serperastrus (Say)

Collections: 7 dead, IV; 1 live, 2 dead, V; 2 live, XI; 1 dead, XII.

Although we recorded this species from several Yucatán localities in a previous paper, we did not include measurements which would allow comparisons with shells from other regions. Some are included here.

Altitude	Diameter	Aperture Length	Aperture Width	Whorls	Station
21.2	12.2	10.0	7.1	5½	
(10.7-30.8)	(6.7-17.0)	(5.0-14.0)	(4.5-9.1)	(4½-6¼)	IV
34.5	18.0	16.0	12.0	6½	V
31.5	16.0	15.2	8.6	6¼	V
32.0	16.0	16.0	9.3	6¼	XI
28.5	14.0	12.6	7.0	6¼	XI
24.5	11.0	11.7	5.6	6	XII

Drymaeus sulphureus (Pfeiffer)

Collections: 14 dead, IV.

D. sulphureus is a relatively widespread species, extending from Veracruz (Solem, 1955) through Guatemala (Goodrich and van der Schalie, 1937; van der Schalie, 1940) to Costa Rica (Bequaert, 1957). As pointed out by the last writer, this and the next species have been confused because of similar pure white and citron-yellow color phases. The 14 shells observed by us vary in color as follows: 6 yellow, 2 light brown and 6 nearly transparent, waxen white. Furthermore, *D. multilineatus* has a longer aperture (at least one-half the length of the shell) and a thicker spire.

Altitude	Diameter	Aperture Length	Aperture Width	Whorls
14.7 (11.8-16.0)	7.4 (6.5-8.2)	6.3 (6.0-7.0)	4.7 (4.0-5.0)	5⅗ (5-6⅙)

Drymaeus multilineatus (Say)

Collections: 1 live, XIV.

This distinctive species has been recorded from Florida, Yucatán, Colombia, Venezuela and Curaçao (Richards and Hummelinck, 1940) but not from Campeche, ours being a new record. This shell is very similar to ones from Florida (Pilsbry, 1946), having the several uneven axial brown stripes and poorly developed striation at the sutures.

Altitude	Diameter	Aperture Length	Aperture Width	Whorls
19.5	9.2	8.0	5.0	6½

Drymaeus dominicus (Reeve)

Collections: 1 immature, dead, XIV.

Our single specimen has a color pattern similar to the large adult described by Baker (1923) from Veracruz and measurements like those listed by Harry (1950) from Yucatán. The species is probably widespread in Campeche.

Altitude	Diameter	Aperture Length	Aperture Width	Whorls
13.0	7.0	6.0	4.0	5⅕

Drymaeus hegewischi (Pfeiffer)

Collections: 1 immature, dead, XI.

This single specimen, if our diagnosis is correct, represents another species heretofore unrecorded from Yucatán. Pilsbry (1903) and von Martens (1890-1901) recorded the species from Veracruz, Toluca, Guerrero, Cuernavaca, Puebla, Tehuacan and Tenango. The shell's coloration is dark brown, its sculpturing quite coarse.

Orthalicus princeps (Broderip)

Collections: 1 dead each, IV and VII, 11 dead, V; 2 dead, XI; 2 live, XII.

This large bulimulid ranges from Veracruz and Sinaloa (Bequaert, 1957; Baker, 1923) and adjacent islands (Richards, 1937) through Guatemala

(Basch, 1959; Goodrich and van der Schalie, 1937) to Panama (Pilsbry, 1926) and Nicaragua (Richards, 1939). Baker (1923) and Branson and McCoy (1963) gave some notes on geographic and intrapopulational variation but few to no measurements respectively.

Altitude	Diameter	Whorls	Station
21.5	30.0	5½	IV
36.9	25.5	6¼	V
(25.0-48.0)	(19.0-31.0)	(5¼-6¾)	
43.0	28.0	7	VII
30.5	46.0	broken	XI
23.5	36.0	6¼	XI

The specimens from station VI possess bands that are much broader (average 4.0 mm) and fewer, only five on the last 20.0 mm of the body whorl, than those from stations VII and XI. The latter specimens possess about 10 bands on the last 20.0 mm. The two individuals from station XII were found aestivating inside a hollow thorn tree.

Urocoptidae

Two species in two genera were collected.

Brachypodella speluncae (Pfeiffer)

Collections: 5 dead, XI.

This medium-sized snail is known from Yucatán and Guatemala (Richards, 1937). The uppermost few whorls are decollated in all of our whitish-horn shells and the sculpture is coarse. The five shells average larger than the one measured by Richards (1937) from Cozumel Island.

Altitude	Diameter Above Aperture	Diameter at Aperture	Whorls
11.3	2.1	2.9	12½-14¼
(10.8-11.6)	(2.0-2.2)	(2.9-3.0)	

We agree with Harry (1950), since our collections in 1961 failed to disclose the species, that it has a discontinuous distribution in Yucatán.

Microceramus concisus (Morelet)

Collections: 2 dead, IV; 10 dead, VI; 12 dead, XI.

Bequaert and Clench (1933) and Bequaert (1957) though *M. gossei* of Jamaica, Cuba and a few other islands to be nothing more than a variant of

M. concisus. *M. gossei* is reputedly separable from *concisus* because of its larger size and coarser sculpture. However, these are highly variable characters with broad overlap. The following measurements include the two specimens reported by us (Branson and McCoy, 1963) from Campeche.

Altitude	Diameter	Whorls	Station
10.5	4.0	11¼	VI
8.8 (7.5-9.6)	3.7 (3.2-4.0)	9½-10¼	XI
9.0	3.5	10	Campeche
9.3	4.0	10¼	Campeche

Subulinidae (=Achatinidae)

Two genera and species were collected.

Lamellaxis gracile (Hutton)

Collections: 2 dead, XI.

This is apparently the second collection taken in Yucatán. Bequaert and Clench (1933) found a single specimen at Dzitas. Our specimens match very well those discussed and illustrated from Panama by Pilsbry (1926). The sculpture is stronger just below the sutures than elsewhere and is distinctly arcuate. The spire is tapered and the columella nearly straight.

Altitude	Diameter	Whorls
7.2	2.2	6½
4.5	2.0	5½

Subulina octona Bruguière

Collections: 1 dead each, III and XIII.

Bequaert and Clench (1933 ,1936) reported a total of three specimens from Yucatán. Richards (1937) and Harry (1950) each found single specimens, and von Martens (1890-1901) alluded to the species as being known from Yucatán. Branson and McCoy (1963) reported 33 dead and nine living specimens from Campeche and Tabasco. However, the only writer to present comparative measurements was Harry (1950). Consequently, the following data include measurements for the 1963 specimens and for those herein recorded. The first data below are from specimens taken near Ciudad del Carmen,

Campeche, in 1961; the second are from the 23 from Villahermosa, Tabasco; and the last are measurements from one of the Mérida specimens.

Altitude	Diameter	Whorls
13.6 (8.0-16.0)	3.7 (3.0-4.0)	8⅛ (6-9)
8.3 (2.0-12.5)	3.0 (1.5-2.7)	6 (2-8)
20.8	4.6	9½

Planorbidae

Two species are reported, each apparently new for Yucatán and Colima respectively.

Taphius havanensis (Pfeiffer)

Collections: 30 live, II; 90 live, 15 dead, XI.

This small planorb is distributed from south central Texas to Sonora (in the lowlands) and southward into Central and South America. The specimens from station XI yielded the following: diameter 6.0 (5.5-8.5); whorls 3⅔ (3-5). The Colima record may be new.

Taphius (*Tropicorbis*) *boucardianus* (Preston)

Collections: 1 dead, XI.

The aperture is similar to that in *Gyraulus parva* but the over-all appearance is like the *P. boucardianus* illustrated by F. C. Baker (1945). It was heretofore unrecorded from Yucatán. Diameter 6.0; whorls 4¼.

Physidae

Physa (*Aplexa*) *princeps* Phillips

Collections: 33 freshly dead (some with animals), VIII.

There are relatively few records for this beautiful snail in Yucatán, only one from Quintana Roo (Bequaert and Clench, 1936), and none, we believe, heretofore from Campeche. All of the physids are very plastic and able to over-weather extensive dry periods by aestivating in mud kept moist by dead algae. Altitude 11.1 (6.0-15.5); diameter 5.5 (4.0-7.5); aperture length 7.9 (6.5-11.0); aperture width 3.5 (2.5-5.0); whorls 5⅖ (5-5½).

Physa (Aplexa) spiculata Morelet

Collections: 6 dead, XI; 6 live, XI, but taken on 19 June 1961.

This beautiful physid ranges from Veracruz through Campeche and Guatemala, and probably further. In general shape it recalls some populations of *P. anatina* Lea. The first figures below are from the living specimens taken in 1961; the second are from the dead ones listed above.

Altitude	Diameter	Aperture Length	Aperture Width	Whorls
11.25	5.7	7.5	3.7	4¾
(9.0-15.)	(4.8-7.2)	(6.0-10.0)	(3.2-5.0)	(4⅕-5)
8.5	4.5	6.0	3.0	4½
8.0	4.5	5.0	2.5	4½

Cyclophoridae

One genus with two species is represented in our collections.

Neocyclotus dysoni (Pfeiffer)

Collections: 15 dead, IV; 5 dead, V; 27 badly weathered, dead, VI; 16 dead, XI.

Various "races" of *N. dysoni* extend from Veracruz and Tabasco (Pilsbry, 1892) to Panama (Richards, 1938). These, if collections from intermediate regions are not scrutinized, are more or less separable. In the specimens before us the sculpture is fine and somewhat vermiculated and the aperture adnate. The following measurements were secured from the 11 specimens taken at station XI; altitude 9.2 (4.5-13.0); diameter 13.8 (7.0-21.0); whorls 3-4¼.

Neocyclotus berendti (Pfeiffer)

Collections: 24 dead, 10 operculae, IV; 2 dead, badly weathered, VI; 1 dead, VII; 1 dead, immature, XI.

In all of these specimens the sculpture is coarse, rather widely spaced, and has no indication of vermiculation; the edge of the aperture is partially free. The 10 operculae are quite similar to the one illustrated by Drake (1957). Baker (1928), Harry (1950) and Solem (1956) considered *N. berendti* a subspecies of *N. dysoni* but Bequaert and Clench (1933, 1938) and Branson and McCoy (1963), for the reasons outlined by the last authors, separate the two. The measurements of our Campeche shell (line 2 below) are very similar

to those presented by Baker (1928); the first line of measurements is from station IV specimens.

Altitude	Diameter	Whorls
13.0 (8.0-17.0)	18.3 (11.0-22.3)	3⅞-4½
14.3	20.0	4⅓

POMATIASIDAE

One genus and two species.

Choanopoma gaigei Bequaert and Clench

Collections: 32 live, IV; 6 dead, VI; 2 dead, VII; 10 dead, IX; 15 dead, XI; 1 dead, XIII.

As now understood, this species ranges from Yucatán and Cozumel (Richards, 1937) through Campeche to Guatemala. None of our shells possessed the holes, bored by a small predatory beetle, seen by Harry (1950), who found 10 to 25 percent of his shells thus pierced. The first line of measurements below are from a complete, immature shell; the next are averages and ranges, for 30 adult, decollated ones; all are from station IV. These specimens very closely resemble those described by Bequaert and Clench (1931, 1933).

Altitude	Diameter	Whorls
16.0	7.4	7⅔
12.6 (11.8-13.2)	7.5 (7.0-8.0)	4⅘ (3½-7)

Choanopoma largillierti (Pfeiffer)

Collections: 220 dead and live, IV; 6 dead, V; 40 dead, VI; 10 dead, IX; 8 dead, XI; 1 dead, XIII.

C. largillierti is apparently restricted to Yucatán Peninsula, having been reported from Yucatán and Campeche. It is one of the most common land snails in Yucatán (Bequaert and Clench, 1933) and is also abundant in Campeche (Branson and McCoy, 1963). Baker (1928) considered *C. grateloupi* (Pfeiffer) to be distinct from *C. lagillierti,* finding the latter about half as abundant as the former under slabs of limestone at Progreso, Yucatán. However, Bequaert and Clench (1936), Richards (1937), Harry (1950) and Branson and McCoy (1963) have been unable to distinguish the two. There is nearly complete variation from one type to the other at a given locality. We found, in the 285 specimens herein reported, four percent of the shells to

possess beetle borings. The measurements which follow were taken from the 214 shells found at station IV.

Altitude	Diameter	Whorls	
8.5 (8.0-9.0)	5.3 (5.0-5.5)	6 ($5\frac{2}{3}$-$6\frac{1}{3}$)	2, immature, complete
14.3 (12.0-16.0)	8.4 (7.0-9.5)	$3\frac{4}{5}$ ($3\frac{1}{2}$-$4\frac{1}{5}$)	decollated

Ampullariidae

Pomacea flagellata (Say)

Collections: 32 dead, VIII; 2 dead, 1 live, X.

A highly variable and common species, *P. flagellata* extends from Veracruz southward into Central America.

Altitude	Diameter	Whorls	Station
34.0	31.0	$5\frac{1}{2}$	VIII
9.0	7.5	$3\frac{3}{4}$	VIII
19.8	16.8	$4\frac{1}{4}$	X
61.0	55.0	$6\frac{1}{4}$	X
75.0	65.5	$6\frac{3}{4}$	X

Helicinidae

Oligyra (*Helicina*) *arenicola* (Morelet)

Collections: 8 dead, IV; 1 dead, XI.

This small helicinid, reported from several Yucatán localities by Bequaert and Clench (1933, 1936, 1938) and Cozumel by Richards (1937), is also known from Guatemala (Goodrich and van der Schalie, 1937) but not elsewhere. This spotty distribution is probably the result of inadequate collecting in intermediate regions. The shell has a slight spiral sculpture with a tendency towards a light revolving band above and below the periphery.

Altitude	Diameter	Whorls	Station
5.4 (5.0-5.7)	6.8 (6.7-7.0)	$4\frac{4}{5}$-$5\frac{1}{6}$	IV
6.0	7.7	$5\frac{1}{2}$	XI

As pointed out by Bequaert and Clench (1936), the terrestrial and freshwater gastropod fauna of Yucatán is depauperate and primarily Central

American in character. There are a few species, such as *Lucidella lirata*, which are more closely related to West Indian complexes, and a similarly small group with South American affinities. Endemicity is very low. Bequaert and Clench (1936), some time ago, indicated that a great deal of work remains to be done on the smaller islands off the northeastern coast of the Peninsula; in the swamps around Lake Chichankanab; and in the low limestone hills called the Sierra de Yucatán. More important, the molluscan faunas of Quintana Roo and Campeche remain partially enigmatic because of the paucity of collections from those areas. Before the entire fauna of the Yucatán peninsula can be placed in its proper zoogeographic perspective these areas must be diligently studied and compared with the faunae of western Mexico and discussed in relation to what happened during Miocene times.

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