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CONTENTS

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ANNOUNCEMENT

STERKIANA is named after Dr. Victor Sterki (1846 - 1933) of New Philadelphia, Ohio, famed for his work on the Sphaeriidae, Pupillidae, and Valloniidae. It is fitting that this serial should bear his name both because of his association with the Midwest and his lifelong interest in non-marine Mollusca.

The purpose of STERKIANA is to serve malacologists and paleontologists interested in the living and fossil non-marine Mollusca of North and South America by disseminating information in that special field. Since its resources are modest, STERKIANA is not printed by conventional means.

STERKIANA will contain articles dealing with non-marine Mollusca of the Americas in English, French, or Spanish, the three official languages of North America. Contributors are requested to avoid descriptions of new species or higher taxa in this serial as the limited distribution of STERKIANA would probably prevent recognition of such taxa as validly published. Papers on distribution and ecology, revised checklists for particular areas or formations are especially welcome but papers on any aspect of non-marine Mollusca will be considered.

STERKIANA will appear once a year or oftener, as material is available. All correspondence should be addressed to the Editor.

STERKIANA est une collection de travaux sur les Mollusques extra-marins des deux Amériques, distribuée par un groupe de malacologues du centre des Etats-Unis. Toute correspondance doit être adressée au rédacteur. STERKIANA publiera à l'avenir les travaux en anglais, en français et en espagnol qui seront acceptés par le comité de rédaction.

STERKIANA es una coleccion de trabajos sobre los Moluscos extra-marinos viventes y fosiles de las dos Americas, editada por un grupo de malacologos de los Estados Unidos centrales. Contenirá en el porvenir trabajos en inglés, francés, y español que serán acceptados por la mesa directiva. La correspondencia deberá ser dirigida al Editor.

A PRELIMINARY LIST OF THE COLONIES OF TREE SNAILS, LIGUUS FASCIATUS, IN THE AREA OF DADE COUNTY, FLORIDA, SOUTH AND WEST OF MIAMI[1]

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In recent years a new threat to the natural environment has appeared in southeastern Florida. Areas of the rocky ridge southwest of Homestead which seemed safe from exploitation for years to come are now being intensively farmed by a technique called "rock farming." This consists of breaking up the surface of the Perrine rockland with bulldozers and other heavy machines and using the resulting fragments of limestone to support various winter crops. The native vegetational associations - largely fire-adapted xeroseres - cannot survive this massive change in the substrate, and even if the "rock farms" are abandoned the original pinelands will have disappeared over considerable areas.

In general the "rock farms" have not yet encroached upon the hardwood hammocks (subtropical jungle hammock associes and associations), and in places the stands of broad-leaved trees are isolated in broad cultivated tracts. This temporary reprieve is due only to the difficulty of clearing the tough hammock vegetation even with heavy equipment. Eventually, these unique patches of woodland, which stood originally as isolated islands of tropical forest in the dry pine forests and gladelands, will be cleared. They have already been almost completely destroyed in the vicinity of Miami (Young, 1951) and to the north (Young, 1958). The dense human population of the southeastern ridge had already doomed the jungle hammocks and their associated faunas, but the "rock farms" have accelerated the process of destruction.

My concern with the jungle hammocks centers principally around the colonies of tree snails, *Liguus fasciatus* (Müller), which most of them once contained. A very few hammocks are preserved in county parks and private estates, but even in these the tree snails seem to be dying out. In view of this situation, I feel we should try to salvage all the data possible on the biology of the hammocks. Competent malacologists and others should make scientific collections from as many of the remaining hammocks as can be reached. If the hammocks cannot be saved, preserved material can at least be made available for future study.

The collections of *Liguus* presently in museums are largely unsuitable for certain types of investigations because of the way in which the material was collected. That is, random samples of the

[1] Contribution No. 673 from the Zoological Laboratories of Indiana University.

populations are needed to make certain kinds of comparisons between different localities. Selected series of "pretty" shells are not enough. Each of the hammocks which still supports tree snails has a distinctive colony which differs from others either in composition or structural features of the shells. These differences reflect not only different ecological conditions in different locations, but also the fact that each hammock represents a different degree of isolation both in time and space. We may never be able to obtain sufficient material of Liguus to make studies such as those on Partula and Achatinella, but at least we can try to save a little for future students.

The following preliminary list includes the hammocks known to have supported colonies of Liguus in the area of Dade County south and west of Miami and some which may have supported Liguus. Other hammocks and unknown colonies of tree snails should be searched for throughout the area. For convenience, I have divided the known localities into groups on the basis of the pineland "islands" with which they are associated. These "islands" are not now surrounded by water since the drainage of the Everglades, but they were formerly separated by flooded transverse glades (drainage ways of the Everglades across the eastern rock ridge or rim). To locate "islands" use the "Official Map of Dade County, Florida, 1949" (scale 10,000 feet to 1 inch) which may be obtained for a nominal sum from the Biscayne Engineering Company of Miami. The boundaries of the "islands" are indicated by dashed lines on this map - marking the boundaries of the pinelands which also correspond to the rocklands. The hammocks are or were mostly around the edges of the "islands" although there are numerous exceptions. Aerial photographs of the USDA, Production and Marketing Division, for Dade County (1938 and 1953) show many of the hammocks or the remnants of them.

Since the present list is preliminary, I have not attempted any analysis of the composition of the tree snail colonies. Where a colony is indicated as "pure" the name of the color form (Clench and Fairchild, 1939) of L. f. roseatus is given. In the mixed colonies, unclassifiable forms are nearly always abundant indicating interbreeding between the various color forms which occur in pure colonies and may thus be assumed to represent genetically pure lines.

1. Brickell Island - The large area of rocky pineland bounded on the north by the Miami River and its transverse glade inland, on the east by the Silver Bluff shoreline, on the west by the Everglades, and on the south by the transverse glade and stream of Snapper Creek.

   The stands of the subtropical jungle hammock associes were largely peripherally distributed around the edges of the island as observed elsewhere. The hammocks of record were located as follows:

   1a. Edges of Miami River and its transverse glade inland:

   North end of Brickell Hammock - extending inland along river for about 2 miles. Old records of Liguus from as far west as area of F. E. C. Railroad and river (vicinity of SW 2nd Avenue). 54-41, Sec. 1. (Young, 1951).

   Second growth hammock on bluffs at about SW 6th Street, west of 3rd Avenue. No positive records, but possibly material in Simpson Collection. 54-41, Sec. 1.

   Hammock on low bluffs at SW 7th Avenue and 4th Street near Ada Merritt School. No records, but probably supported Liguus. 54-41, Sec. 1 (Young, 1951).

   Hammock along low bluffs west of NW 12th Avenue. Fragments only of Liguus. 53-41, Sec. 35. (Young, 1951).

   Lawrence Park Hammock on low bluffs along river west of NW 17th Avenue. Mixed colony. 53-41, Sec. 34. (Young, 1951).

Head of Miami River Hammock, on edge of pinelands, near South Fork of Miami River just east of N. W. 27th Avenue. Mixed colony. Liguus formerly extended into cypress trees and other trees along edge of River. 53-41, Sec. 34. (Young, 1951).

Hammock fringe along edge of pinelands west of 27th Avenue north of N. W. 7th Street. No records of Liguus, but may have supported them prior to clearing in about 1920-21. Possibly "Elizabeth Groves" in Simpson Collection. 53-41, Sec. 33.

Hammock on mound-like rise along edge of pinelands at N. W. 4th Street about 50th Avenue. Cleared, but with remnants of hammock trees - possibly once supported Liguus. 54-41, Sec. 6. (Young, 1951).

Hammock at edge of pinelands, west of 58th Avenue, south of N. W. 7th Street. Pure colony of elliottensis. 54-40, Sec. 1. (Young, 1951).

Oak Hammocks along edge of pinelands west of 67th Avenue. Probably never supported Liguus. - possibly succession after fires were controlled. 54-40, Sec. 2.

1b. Hammocks on Indian mounds in Everglades near Brickell Island:

Flagami Hammock. Pure colony of lossmanicus. 54-40, Sec. 2, possibly into Lot 2. (Young, 1958).

1c. Hammocks in Everglades west of Brickell Island:

Hammock on Bird Road at S. W. 72nd Avenue, N. W. Corner. Pure colony of lossmanicus. 54-40, Sec. 14.

1d. Hammocks within the pinelands, south of Coral Gables canal:

Small Oak Hammock at Red Road just south of Coral Gables canal. (No Liguus, fide Ralph Humes). 54-41, Sec. 18.

Oak Hammock just south of University of Miami. Pure colony of lossmanicus. 54-41, Sec. 19.

? Hammock in vicinity of Coral Gables canal and U. S. Hgw. 1. Pure colony of lossmanicus. 54-41, Sec. 20?

? Hammock on Hardee Drive west of Red Road. Possibly supported Liguus. 54-40, Sec. 25.

1e. Hammocks along edge of Snapper Creek glade and stream:

Edge of glade Hammock, north of U. S. Hgw. 1, at Old Larkins (now South Miami). Possibly supported Liguus. 54-40, Sec. 36.

Edge of glade Hammock south of U. S. Hgw. 1, at Old Larkins (now South Miami). Pure colony of lossmanicus. 54-40, Sec. 36.

Western portion of Matheson Hammock. Mixed colony. 55-41, Sec. 6.

1f. Hammocks on or near the Silver Bluff shoreline along the eastern edge of Brickell Island:

Brickell Hammock - extended from edge of Miami River S. W. along Silver Bluff cliffs to 54-41, Sec. 14, and was probably continued by a fringe of hammock continuously to Coconut Grove. Hammock developed on Rockdale fine sand-limestone complex on top of bluffs along Biscayne Bay, probably spreading inland into pinelands when fires were infrequent and contracting at other times. (Young, 1951).

South Brickell Hammock - possibly a fragment of Brickell proper, but seemingly developed around pockets in the pinelands just west of the Silver Bluffs. Mixed colony of Liguus. 54-41, Sec. 15.

Cocoanut Grove Hammock - Hammock along bluffs of Silver Bluff shore from vicinity of Dinner Key southwestwards. Some modified hammock remnants east of Cutler Road south of Cocoanut Grove. Fragments of Liguus found by Ralph Humes in 1935 on Monroe Estate.

Twin Hammocks - two small hammocks in pinelands back from Silver Bluff shoreline, developed around potholes? Pure colony of lossmanicus. 54-41, Sec. 32; developed on Rockdale fine sand-limestone complex. (Young, 1951).

Matheson Hammock and associated hammock remnants along Silver Bluff shoreline. 55-41, Sec. 6. Hammock developed in deposits of Dade fine sand along bluffs and inland west of Cutler Road. (Large cypresses visible from Red Road were probably in glade west of Matheson.) Mixed colony of Liguus; some extra-areal forms possibly introduced.

Snapper Creek Hammock - partly developed along Silver Bluff shoreline, partly on edges of stream on deposit of Dade fine sand extending inland along Snapper Creek. Mixed colony. 55-41, Sec. 7.

Note: The development of Brickel and Matheson Hammocks seems to be explained by their topographic position in relation to fire protection. Brickell was on relatively high bluffs, and Matheson Hammock was located in a sort of redoubt between the Silver Bluff shoreline and the Snapper Creek glade. Matheson Hammock may have extended down to the present Snapper Creek Hammock area at one time.

2. Larkins Island. - Pinelands west of the north fork of Snapper Creek glade and between it and middle fork. (South Miami on south edge).

Several oak hammocks on glade edges. No records.

3. Upper Snapper Creek Island - Pinelands west of middle fork of glade and north of main Snapper Creek Glade:

?Low Hammock - 1.5 miles west of Larkins. Pure colony of lossmanicus. Not now definitely located. Perhaps at Sunset Drive and Palmetto Road. 54-40, Sec. 26.

Upper Snapper Creek Hammock - large oak-tropical hardwood hammock on SW edge of pinelands in 54-40. Secs. 33-34. Liguus in mixed colony. (Now partly a Boy Scout Camp area).

Note: Upper Snapper Creek Hammock may be developed on Dade fine sand at the edge of the pineland island. A shallow glade in Sec. 22 may have originally separated this portion from the main pinelands.

?Small oak hammocks along glade edges - several patches are still evident. No records known.

?Hammocks on elevated areas in Snapper Creek glade near Island: One fairly well developed hammock with a cypress fringe indicating the original isolation occurs in 54-40, Sec. 32, just SW of Upper Snapper Creek Hammock. No records.

(See also West Kendal Island which is closely associated with Upper Snapper Creek hammock system).

4. North Cutler Island - Pinelands between Snapper Creek and Cutler Creek bounded on east by Silver Bluff shoreline and on west by north fork of Cutler Creek glade. Some of the highest ground on the ridge (over 10 feet elevation at rock surface) lies at the north end of this island:

Snapper Creek Hammock - south side of Snapper Creek. The hammock is developed on deposits of Dade fine sand along the south edge of creek also. Probably originally extending to the Silver Bluff shoreline and inland along the stream. The higher hammock still supports a mixed colony of Liguus. 55-41, Sec. 7.

Warwick Hammock, N. E. of junction Old Cutler Road (Howard Drive) and Ludlum Road. Fairly large hammock developed on deposit of Dade fine sand at eastern edge of small rockland area near glade. Possibly originally on glade edge since aerial photographs show a small arm of glade extending into edge of hammock. No definite records of Liguus. 55-40, Sec. 13.

Low hammock along north side of Cutler Creek in 55-40, Sec. 26. No definite records, but probably originally supported Liguus in some places at least.

Glade edge hammock fringe in 55-40, Sec. 11. (Not explored).

5-6. Kendal and Middle Kendal Islands - Pinelands surrounded by the glades of Cutler and Snapper Creeks. No records known.

?Low oak hammocks along glade edges may have formerly supported Liguus. No definite records.

?Hammocks on elevations in the glade of Snapper Creek north of Middle Kendal Island - several possible hammocks are known, but no definite records.

Hammock south of Upper Snapper Creek Hammock - maybe on arm of Middle Kendal Island.

7. West Kendal Island - Pinelands around Dade County Home and Hospital transected by North Kendal Drive:

County Home Hammock - area around home and hospital. Now largely cleared, but formerly fairly extensive glade-oak-tropical hardwood hammock. Contains mixed colony of Liguus, probably with some introductions. 54-40, Sec. 31.

Springhill Farm Hammock - south of Sunset Drive west of 107th Avenue. Mostly cleared. Pure colony of elliottensis. 54-40, Sec. 31.

Hammocks near north and west edge - not yet explored.

Hammocks along SW glade edge. Fragments of Liguus found by Ralph Humes, 1938.

Hammock on S. E. Glade edge - not yet explored.

?Pawpaw plantation - 5 mi. W. Kendal - lossmanicus and others. - Simpson.

7a. Hammocks on elevations in the Snapper Creek Glade east of West Kendal Island:

Three hammocks in 54-40, Sec. 32 are known to have contained colonies of Liguus. Several others probably did in the past but are now largely cleared.

Chip Hammock - small hammock on elevation in glade, surrounded by fringe of cypress trees - now mostly cleared. Pure colony of elliottensis.

Large hammock south of Snapper Creek north of North Kendal Drive. Largely cleared and fenced. Mixed colony of Liguus in N. E. edge near canal - former orange grove and presently nursery.

Small hammock in NW corner of Sec. 32. Fragments of elliottensis.

8. Howard Island - Pinelands surrounded by glades of Cutler Creek:

East side of glade, oak fringe. (Pure colony of lossmanicus, found by Ralph Humes in 1938).

9. Rockdale Island - Pinelands surrounded by glades running N. W. from vicinity of Rockdale:

No records.

10. Lindgren Island - Pinelands west of Howard transected by Lindgren road:

No records.

11. Little Rockdale Island - Pinelands in glade at S. end of Rockdale Island:
?Hammock fringe along west side in 55-40, Sec. 34 - not explored.

12. Peters Island - Pinelands west of Peters-Perrine north of Black Creek glade and surrounded by arms of the glades and almost transected by an incomplete transverse glade:
No records.

13. South Cutler Island - Pinelands along Silver Bluff shoreline, south of Cutler Creek and bounded inland by the N. W. - S. W. glade connecting Black Creek and Cutler glades:
Note: This island supports an extensive hammock system which has not been thoroughly explored.

Cutler Hammock - portion south of Cutler Creek. This is the main hammock and the classic locality. Supports mixed colony of Liguus with some peculiar marmoratus-testudineus types. 55-40, Sec. 26.

?Oak-tropical hardwood hammock in 55-40, Sec. 35, along Silver Bluff shoreline south of Richmond Drive. Fragments of Liguus found by Ralph Humes, 1938.

Franjo Fringe Hammock - along glade edge from Richmond Drive to Franjo Road. No definite records. 54-40, Sec. 34 -- 56-40, Sec. 4.

Peters Hammock, east of Peters east of Franjo Road, 56-40, Sec. 4. Pure colony of lossmanicus.

Black Creek Fringe hammocks - along edge of Black Creek on South Cutler pineland edge from Franjo Road south and southeast of Old Cutler Road (Ingraham Highway). 56-40, Sec. 5-8-17. Includes 12 or more hammocks or hammock fragments. No records.

Black Creek or Black Point Hammock - developed on elevation, probably with Dane fine sand or Rockdale fine sand-limestone complex, along south side of Black Creek east of Old Cutler Road. Supports mixed colony of Liguus, including fuscoflamellus and alternatus. 56-40, Sec. 17.

Hammock developed on Perrine marl, very shallow phase, north of Black Creek in 56-40, Sec. 17. Probably never supported Liguus. Now completely cleared.

No hammocks seem to have survived along the low Silver Bluff shoreline.

14-15. Small pineland islands surrounded by glades along Quail Roost Drive:
No records. Some low oak hammock fringe shown on aerial photos.

16. Redland Island - The large incompletely dissected pinelands running from Goulds northwest into 56-39, Sec. 19, and southwest to 57-38, Sec. 5, southeast to Florida City. Goulds, Princeton, Naranja, Modello, and Homestead are built on the projecting arms of this island along the F. E. C. Railroad and U. S. Hgw. 1. The Silver Bluff shoreline is greatly dissected south of Black Creek and can be traced in only a few places. The elevation is variable, but all of the pineland seems to be above 5 feet elevation at the rock surface and some areas - northwest of Goulds - are 9 feet or more above mean sea level.

The principal extant hammocks - Cox, Ross-Costello, Timbs, Fuchs, and (actually on Longview Island) Campbell, show an interesting arrangement along a line roughly parallel to U. S. Hgw. 1 and about 2.5 mi. northwest of it and the F. E. C. Railroad. Nearly all of these hammocks are developed in the pinelands around large sinkholes. Of these only Timbs and Campbell also show a clear correlation with existing glades. Some other hammocks are clearly edge of glade hammocks such as Detroit Hammock at Florida City, probably Hattie Bauer, Lewis-Nixon and various hammock fringes. The general elevation and lack of real streams probably limited the development of hammocks except in exceptional situations. The arrangement of the principal hammocks is along a line corresponding roughly to the topographical crest of the ridge of the island although most of the incomplete transverse glades have eroded further inland toward the Everglades. The present structure of the transverse glades between Redland and Longview Islands seems to indicate that the glades developed as drainage channels on the ridge and captured the Everglades proper as their headwaters eroded inland. The incomplete glades may have arisen as a result of water being forced under the ridge from the west and appearing aboveground on the east side of the central crest. The hammocks may lie over underground portions of glades. Such is clearly suggested by the arrangement of Cox, Ross-Costello hammocks and Caldwell, Silver Palm, and other small hammocks to the southeast of them.

The plants and *Liguus* colonies of the Redland hammocks indicate that the major hammocks (along the line indicated) are probably also the oldest. The peripheral hammocks (Lewis-Nixon, Detroit, Modello, Naranja Rockpit, and possibly others) support only pure colonies of *lossmanicus*. The central hammocks not only contain this form, but may have such peculiar mutants as "*fuscoflamellus*" (Timbs), "*castaneus*" (Cox), and others. The central hammocks are thus not only more diversified in flora but also in the composition of their tree snail colonies.

In addition to glade edge hammocks near Goulds, east of Princeton, and in the vicinity of Naranja and Modello, the following major hammocks are still intact or can be located exactly:

Cox or Hainlin Mill Hammock (now Monkey Jungle). Mixed colony. 56-39, Sec. 9.

Little Cox - a lysiloma hammock on Hainlin Mill Road at Newton Road. 56-39, Sec. 8-9. Mixed colony, probably introduced.

Ross-Costello Hammock. Mixed colony. 56-39, Secs. 16-17.

Caldwell (probably not same as hammock referred to by older workers). - A lysiloma hammock with pure colony of *lossmanicus*. 56-39, Sec. 16.

Silver Palm Hammock, on Silver Palm Road about 1.5 miles west of Goulds. A lysiloma hammock with pure colony of *lossmanicus*. Mixed snails introduced about 1942. 56-39, Sec. 15.

?Small hammock northwest of Princeton - 56-39, Sec. 22. No records.

Timbs or Timms Hammock (Bitte Hammocks 1, 2, 3, 4) - west of Tennessee Road, north of Bauer Drive. Mixed colony. 56-39, Sec. 30. (Now in county park).

Bauer Hammock, southwest of Timbs on Bauer Road just east of Krome Avenue. (Pure colony of *lossmanicus*). 56-39, Sec. 30.

Hammock or hammocks between Timbs and Bauer Hammock - 56-39, Sec. 30. Probably originally pure colonies of *lossmanicus*, but now with *Liguus* introduced from Timbs and probably other areas.

Hattie Bauer Hammock (or Murden Hammock). Originally with mixed colony of *Liguus* - 56-39, Sec. 33. (Now Orchid Jungle).

Krome Hammock, on Biscayne Drive near McMinn Road. No records. 57-39, Sec. 6.

Fuchs Hammock (or Sykes Hammock), north of Kings Highway west of Richard Road. Originally mixed colony into which other *Liguus* have been introduced. 57-38, Sec. 10.

?Redland Hammock - probably originally part of Fuchs. 57-38, Sec. 10. No records.

Lewis-Nixon Hammock - at end of Avocado Drive west of Modello. Probably originally a pure colony of *lossmanicus* into which a few *castaneozonatus* were introduced. 57-38, corner of Secs. 4-5, 8-9.

Detroit Hammock - just north of Florida City. Probably included Scott and Miller Hammocks, and possibly Cave Hammock. Remnants now in city park. Pure colony of *lossmanicus*. 57-39, Sec. 24.

?Modells Hammock, at U. S. Hgw. 1 in Modello. Location uncertain. No record.

?Modello Hammock - east of Modello in 57-39, Sec. 9, N.E. corner. Colony of elongate *lossmanicus*, K. Squires in Simpson Collection.

Naranja Rock Pit Hammock. Pure colony of lossmanicus, east of U.S. Hgw. 1 at Naranja.

?Glade edge hammocks east of Princeton. No records.

?Glade edge hammocks north of Goulds. No records.

Homestead Hammock - old record by Livingston. Probably in town of Homestead. Nature of Liguus colony unknown.

17. Longview Island - Pinelands west of Florida City separated from Redland Island by narrow transverse glade:

Campbell Hammock - on Campbell Drive E. of 212th Avenue - 57-38, Sec. 9. Mixed colony of Liguus.

Shields and Strickland hammock on glade edge west of Homestead - 57-38, Secs. 14-15. No records.

Chapman Hammock south and west of Lewis-Nixon Hammock. Mixed colony.

18. Southwest Island No. 1. - Pinelands crossed by Ingraham Highway southwest of Longview Island:

?Hammocks along glade edges - no records.

19. Southwest Island No. 2. - Pinelands east of former Royal Palm State Park on Ingraham Highway:

Oak hammocks. Several mixed colonies not exactly located.

Hammock 1 mi. east of Royal Palm State Park lodge - 58-37, Sec. 14. Mixed colony with eburneus.

I wish to acknowledge the assistance of Mr. Ralph Humes of Miami and Mr. Fred Fuchs, Sr. of Homestead for information concerning the older localities. Descriptions of some of the hammocks are to be found in the botanical works of John K. Small in the Journal of New York Botanical Gardens.

I would appreciate additions, corrections, or emendations to the preceding list as well as information concerning material available for study in museums or private collections.

REFERENCES

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Young, Frank N. (1951) Vanishing and extinct colonies of Tree Snails, Liguus fasciatus, in the vicinity of Miami, Florida. Occ. Papers Mus. Zool. Univ. Michigan, No. 531, 21 pp., 1 map.

----- (1958) Extinct or near extinct colonies of tree snails, Liguus fasciatus, in eastern Broward and northern Dade Counties, Florida. Occ. Papers Mus. Zool. Univ. Michigan, No. 595, 20 pp., 2 maps.

STRATIGRAPHIC DISTRIBUTION OF PLEISTOCENE LAND SNAILS IN INDIANA[1]

WILLIAM J. WAYNE

Bloomington, Indiana.

During the past few years I have prepared reports on the occurrences of land mollusks in the Pleistocene sediments of Indiana, primarily as species lists in guidebooks for field conferences. A few of these lists, with discussions of stratigraphy and ecologic significance of the faunule, are in publications that can be obtained readily, but most of them are in reports of limited distribution.

In order to remove this information from the status of "semi-publication," as well as to assemble the scattered records, I have combined these various lists into this singel report. For greater stratigraphic completeness in this review, I have added data for a few fossil localities previously unreported. Noneof the lists given in Baker (1920) for the Pleistocene of Indiana is reproduced here because doubt exists regarding the correct stratigraphic placement of some of the fossiliferous deposits. Later, when more samples have been studied, I intend to bring out a more complete report on the stratigraphic distribution and the ecology of the land and fresh water mollusks in the Pleistocene sediments of Indiana. Thus, this paper is a preliminary check list of the Pleistocene land snails of Indiana with notes regarding stratigraphic occurrences and the ecologic significance of the faunas.

STRATIGRAPHY

Dust blown from the outwash gravels that were deposited along the Wabash and Ohio Valleys by meltwater streams during each glacial stage in the Pleistocene Epoch accumulated on the bluffs adjacent to these sluiceways as thick layers of loess. Some of this dust settled farther away, though, where it formed a discontinuous cover that is a few millimeters to more than a half-meter thick. Most of the fossil land snails that have been recovered from Pleistocene sediments in central and southern Indiana have come from the accumulations of wind-carried silt where the snail remains were buried quickly enough to prevent corrosion of the shell material through weathering.

Some of the fossiliferous silt deposits were later buried beneath the advancing glacier, whereas others were never reached by the ice. Fossil-rich silt beds have been found beneath the sediments of each of the glacial stages known in Indiana. Fossiliferous sediments of Wisconsin age are well represented south of the boundary of that glaciation in the loess deposits along the Wabash and Ohio Rivers, but few exposures of fossiliferous silts of greater age are known except those buried below glacial drift.

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1 Published with the permission of the Acting State Geologist, Indiana Department of Conservation, Geological Survey.

The ice margin fluctuated through a zone a few tens of kilometers wide during the several thousand years involved in the maximum advance of each glacial stage. Some of these fluctuations had minor significance, but at least once in Indiana during each glacial age, the Kansan, Illinoian, and Wisconsin, a fluctuation of about 100 kilometers permitted a first wave of vegetation and animal life to migrate into the newly deglaciated land before it was again destroyed by readvancing ice. A thin, fossil-rich silt embedded between two layers of conglomeratic mudstone (till) is the stratigraphic record of the most significant of these fluctuations.

Table 1 shows the stratigraphic positions of all fossiliferous silt beds discovered so far in the Pleistocene sediments of Indiana. Some of these can be traced beyond the borders of this state, but precise correlation and identification of drift units from the deposits of one glacial lobe to the next is still difficult.

Table 1. Stratigraphic position, representative species, and environmental interpretation of fossiliferous Pleistocene sediments in Indiana.

STAGE	TYPE OF SEDIMENTS	TYPICAL SPECIES	MAJOR CHARACTERISTICS OF ENVIRONMENT
Recent	River alluvium Marl Lakes		Warm, humic climate, deciduous forest.
	Lakes and sloughs		Cool climate, coniferous forest
Wisconsin	Silts and sands between till beds	Succinea gelida, Columella alticola, Vertigo alpestris	Cool to cold, moist, treeless or open park.
	Peaty silts below till and/or lake sediments; Loess	Hendersonia occulta, Stenotrema leaii	Cool to cold, moist; spruce, willow, birch Cool, boreal
Sangamon	Loess; river alluvium	Anguispira kochi	Warm-humid
	Marl (postglacial lakes, ponds)		
Illinoian	Intertill silts	Succinea gelida, Columella alticola	Cool to cold, moist, open park (subarctic?)
	Peaty layers below till and lake sediments	Succinea gelida var., Hendersonia occulta	Cool to cold; spruce Cool, transitional to boreal forest
Yarmouth	River alluvium	(none known)	
Kansan	Intertill silts	Punctum minutissimum Succinea gelida var.	Subarctic-boreal
	Loess below till	Hendersonia occulta- Succinea gelida var.	Boreal
Aftonian	Colluvium-alluvium		(none known)

True interglacial sediments are rare in Indiana. Wherever active sedimentation takes place in a fluvial environment, erosional processes are also active. For example, most rivers ordinarily completely rework the deposits of their floodplains every few thousand years. Thus, except for the sediments of large lakes, most of the sedimentational records of interglacial stages, along with their flora and fauna, were likely re-eroded before they became buried permanently. What we actually recover from this stratigraphic position is the material dropped by a stream sometime during the last few thousand years before its valley was buried beneath glacial ice or fluviatile sediments such as gravel, sand, and silt that were laid down because of the influence of the approaching ice sheet. A cool climate at the close of the interglacial stage rather than a warm part of the interglacial interval is interpreted from ecological requirements of the fossil snails in most "interglacial" sediments. Some exceptions may be the "Old Forest Bed" at Lawrenceburg (Billups, 1902) which Baker (1920, p. 302-303) regarded as Sangamon in age, and a bed penetrated by a coal shaft near Evansville that contained aquatic mollusks (Baker, 1920, p. 373). Both of these beds contained fossil mollusks whose environmental requirements are about the same as prevail now in the same area.

Snail faunas alone can be used to determine stratigraphic position only with difficulty because similar ecologic conditions existed in central Indiana during each of the three glacial stages recognized in the state. Relative abundance of species in each faunule is useful in a study of the environments in which the snails lived, but so far, data are inadequate to determine whether thismethod of study may show them to have any stratigraphic significance. Few species underwent evolutionary variation during the brief span of Pleistocene time recorded in Indiana. Only one, Succinea gelida, is known at this time to have stratigraphic application in Indiana.

KANSAN STAGE. — The oldest Pleistocene mollusk assemblages found in Indiana are Kansan in age. One silt at the base of Kansan Stage sediments has been studied and the results published (Wayne, 1958). The snail faunule recovered from a sample of a fossiliferous silt bed between two conglomeratic mudstones (tills), both of which are correlated with the Kansan Stage, is listed in table 2, column B. This fossiliferous bed seems to represent the sediment that accumulated during a brief ice-free interval between two subages of the Kansan Age. The most abundant species in this sample is Punctum minutissimum, which generally prefers a moist to dry deciduous woodland environment (Archer, 1939). It is found as far north as Fort Severn, Ontario (Oughton, 1948).

Although 24 species are listed for the faunules in the Kansan Stage, only Succinea gelida var. seems to have any stratigraphic significance. The older variety of this species is found only in sediments older than early Illinoian in age. The modern form of the species probably first appeared during the Illinoian Stage, but is not found in association with the older form.

No faunal assemblages from the Yarmouth Stage have yet been found in Indiana. Thus, the only knowledge we have of the species that lived in the state during Yarmouth time comes from the remnants of the interglacial fauna that survived cooling at the beginning of the Illinoian Stage of glaciation. Proglacial sediments of late Yarmouth or early Illinoian age are relatively rare in Indiana, and the snails in most of the deposits known have been badly crushed. One assemblage that was never buried beneath ice was found beneath proglacial lake sediments of Illinoian age near Bloomington, Indiana, however. A list of species in this bed is included in table 2, column C. A list of the identifiable species from a proglacial silt in Parke County that was buried beneath Illinoian glacial ice is in column D of table 2.

ILLINOIAN STAGE.— At least two distinct advances of ice took place in central Indiana during the Illinoian glaciation. A thin fossiliferous silt bed separates the conglomeratic mudstones that were deposited during two advances of ice during the Illinoian glaciation. The fauna recovered from the few known exposures of this interstadial silt bed differs materially from faunal assemblages found in interstadial silts of Kansan age. In particular, this bed is the oldest unit from which the modern form of Succinea gelida has been recovered. The faunal assemblage does not seem to be noticeably distinctive, however, when compared with the snails found in interstadial silt beds of Wisconsin age. At present, it is not possible to tell the two apart on the basis of a faunal study alone. So far, silt in this stratigraphic position has been found at four localities in Indiana; the faunule of one is presented here (table 2, column E).

WISCONSIN STAGE.— Fossiliferous sediments of Wisconsin age are far more commonly encountered in Indiana than are older Pleistocene fossil beds. A forest bed, which in many exposures contains snail remains, is frequently observed beneath Wisconsin deposits and capping a buried soil profile on Illinoian glacial drift. This stratum has been sampled at several places in central Indiana. Typically it contains Hendersonia occulta, Stenotrema leaii, and Succinea gelida, but Cionella lubrica, Gastrocopta armifera, and Succinea ovalis are present in many samples. Loessal silts south of the Wisconsin glacial boundary contain similar assemblages, but include the species Anguispira alternata and Stenotrema fraternum that have not yet been found in proglacial sediments north of the Wisconsin glacial boundary.

Central Indiana was covered by ice at least twice during the maximum advance of the Wisconsin glacial age. These glaciations and the intervening brief deglaciation are recorded by two layers of conglomeratic mudstone (till) which are separated by a thin (0 to 30 centimeters thick) fossiliferous silt bed (Wayne, 1956; 1957) in many exposures. Succinea gelida ordinarily is the most abundant species in this bed and commonly makes up over half the total individuals in the sample. Stenotrema leaii is the only other moderately large snail found in this bed; the remainder are mostly small pupillids. Columella alticola and Vertigo alpestris oughtoni are present in nearly all samples of this bed. This fauna seems to represent the initial migrants into a recently deglaciated plain into which coniferous forest vegetation had not yet deployed and resembles closely the fauna now inhabiting the park-like area near the northern limit of trees in Ontario or Manitoba (Wayne, 1959).

With the samples available for study so far, I am unable to distinguish this interstadial fauna of Wisconsin age on the basis of species content from one in a similar stratigraphic position in sediments of Illinoian age. Distinction may become possible, however, when additional exposures of the older unit become available and can be studied.

Few mollusks have been found in sediments of glacial origin that are younger than the interstadial silt bed that has been found near the Wisconsin glacial boundary. A single exposure of a thin lens of sandy marl overlying till and beneath glacial lake clay was found in southeastern Noble County (Wayne and Thornbury, 1955, p. 9). This unit contained but three species, none of which has diagnostic stratigraphic significance (table 2, column O).

Postglacial sediments, particularly marls, in lake basins in central and northern Indiana contain rich faunas composed dominantly of fresh-water snails and clams. Several such deposits have been sampled, but so far little study has been done on them. Only one such faunule is included in this report (table 2, column P).

Methods of Sampling and Preparation

Nearly all the fossiliferous strata that are interbedded with ice-laid conglomeratic mudstones (tills) in the Pleistocene sediments of Indiana are thin, generally about 10 to 30 centimeters in thickness. These silt beds vary in fossil content from place to place along any given outcrop, and some are virtually barren of snails except for a concentrate at or near the top of the bed. Because of the nature and thickness of these beds, no attempt was made to subdivide them in sampling. In contrast, many of the exposures of wind-deposited silt along the Wabash and Ohio Valleys, as well as the marls of fresh-water lakes, are much thicker and can readily be sampled in two or more zones.

Whenever possible, I have tried to obtain at least 200 individual specimens from a bulk sample. The addition of more individuals generally increases the total number of species found, but changes only slightly the percentage figures that indicate relative abundance of the dominant species of the faunule. Large samples are desirable especially in order to have enough specimens of the rarer species so that identification can be based on more than one or two individuals, but, unfortunately, large samples are not always obtainable. A sample of at least 2,250 cubic centimeters (228 cubic inches) of moderately fossiliferous sediment is generally necessary in order to obtain 200 or more individuals. Samples from beds that appear sparsely fossiliferous on outcrop may require as much as double this quantity of bulk material, however, to secure 200 or more snails.

The silt samples are soaked in water in half-gallon fruit jars, are agitated gently to disaggregate them, and then are washed through a 25-mesh screen. Material retained on this screen is rinsed thoroughly and oven-dried. Individual snails then are picked out of this concentrate with a small, moistened brush. After they have been picked, the snails in the sample are boiled for a few minutes in a nonfoaming detergent in order to clean the mud out of the apertures of most of the pupillids and then the snails are dried again and are stored in glass vials until they can be studied.

Locations and Descriptions of Sections.

A. Cagles Mill Reservoir Section: SE 1/4 NW 1/4 sec. 13, T. 12 N., R. 5 E., Putnam County, Indiana (Poland Quadrangle), emergency spillway for Cataract Lake, a flood control reservoir on Mill Creek (Thornbury and Wayne, 1957, p. 13-15; Wayne, 1958, p. 10). A highly fossiliferous, massive silt about a meter thick lies at the base of a Pleistocene section that includes tills of Kansan age and of Illinoian age. The silt bed is named the Cagle Silt and is a proglacial loess of Kansan age (591 specimens).

B. Happy Hollow Section: NE 1/4 SE 1/4 sec. 2, T. 14 N., R. 7 W., Parke County, Indiana (Catlin Quadrangle), 3 miles northeast of Bridgeton along a small creek. Pebbly calcareous gray silt with humus stains at top, containing wood fragments and snail shells 0.30 meter thick, overlies 1.0 meter or more of very hard sandy gray till and is overlain by more than 2 meters of calcareous gray till. Entire section is considered to be of Kansan age on the basis of adjacent exposures (189 specimens).

C. Bean Blossom Reservoir Section: center of south edge NE 1/4 sec. 28, T. 10 N., R. 1 E., Monroe County, Indiana (Hindustan Quadrangle), along the outlet trench below the spillway for a water supply reservoir on Bean Blossom Creek. A fossiliferous layer - or "forest bed" - caps a massive silt and floodplain sediments of Yarmouth age and underlies proglacial laminated (or varved?) clayey silts of Illinoian age. (Thornbury and Wayne, 1957, p. 18-20); Wayne, 1958, p. 10-13) (361 specimens).

D. Raccoon Creek Section: center SW 1/4 NW 1/4 sec. 18, T. 14 N., R. 6 W., Parke County, Indiana (Mansfield Quadrangle) about 1.5 miles southwest of Mansfield, along the south bank of Raccoon Creek (Thornbury and Wayne, 1957, p. 11-12). Mollusks, many of which have been crushed beyond recognition, are in the top few centimeters of a group of nonglacial sediments that are rich in organic matter. The base of the section is weathered gravel, perhaps of glacial origin, and the peaty sediments are overlain by about 75 feet of glacial sediments, mostly sand and gravel but capped by till of Illinoian age (66 specimens, mostly fragmentary).

E. Centerville Section: NE 1/4 sec. 33, T. 16 N., R. 14 E., Wayne County, Indiana, 2 miles southeast of Centerville (Wayne and Thornbury, 1955, p. 30-31); Gamble 1958, p. 12-18). The fossiliferous silt separates two till beds, both of which are interpreted to be of Illinoian age because of their relationship to a distinctive paleosol developed on a gravelly sand higher in the section (305 specimens).

F. Martinsville Section: NE 1/4 SE 1/4 sec. 31, T. 12 N., 1 E., Morgan County, Indiana (Martinsville Quadrangle), southwest wall of a small pit used for borrow in highway construction 1.5 miles northwest of Martinsville. Fossiliferous laminated silt and sand about 2 meters thick is overlain by nonfossiliferous sand; stratification resembles that of floodplain sedimentation. Base of the unit overlies siltstone bedrock and is about 8 meters above the present floodplain of White River. The entire unit is probably correlative with terrace sediments of Wisconsin age elsewhere along the valley (197 specimens).

G. Thompson Branch Section: NE 1/4 NW 1/4 sec. 36, T. 12 N., R. 9 W., Vigo County, Indiana (Seelyville Quadrangle), road cut at Terre Haute. (Thornbury and Wayne, 1953, p. 88). Fossiliferous loess of Wisconsin age which is poorly exposed along the east side of the Wabash Valley (150 specimens).

H. Watson Farm Section: SE 1/4 NW 1/4 SE 1/4 sec. 27, T. 11 N., R. 3 E., Johnson County, Indiana (Fruitdale Quadrangle), 4 miles east of Morgantown along a small tributary of Lick Creek. Fossiliferous dark brown to gray calcareous sandy silt about a meter thick, resembling a floodplain sediment, overlies unweathered till and is overlain by calcareous laminated clay, silt, and sand. The exposure is a few hundred feet southeast of the Wisconsin glacial boundary. The fossiliferous part of the section probably is a sediment of Wisconsin age that was deposited in a small valley eroded in till and gravel of Illinoian age (722 specimens).

I. Lick Creek Section: SE 1/4 NE 1/4 NE 1/4 sec. 23, T. 11 N., R. 3 E., Johnson County, Indiana (Trafalgar Quadrangle), 2 1/4 miles south of Trafalgar along the bank of Lick Creek (Thornbury and Wayne, 1957, p. 24-25). Two beds containing organic debris are present between a single till of Wisconsin age and an underlying paleosol on till of Illinoian age. The upper of these two zones contains leaves of Picea, Salix (?), and Arctostaphylos (?), as well as snails (555 specimens).

J. Clayton Section: NE 1/4 NW 1/4 sec. 26, T. 15 N., R. 1 W., Hendricks County, Indiana (Plainfield Quadrangle), 2 miles northeast of Clayton, along southwest bank of the West Fork of White Lick Creek (Thornbury and Wayne, 1957, p. 4-5). A single bed of fossiliferous massive gray silt about 30 centimeters thick is part of a set of stratified sediments that separates two till beds of Wisconsin age (480 specimens).

K. Buckhart Creek Section: SE 1/4 NE 1/4 sec. 8, T. 11 N., R. 4 E., Johnson County, Indiana (Franklin Quadrangle), stream cut about 500 feet north of Indiana Highway 252 and 1.5 miles east of Trafalgar (Thornbury and Wayne, 1957, p. 26-27). A fossiliferous silt separates two till beds of Wisconsin age in this section, as well as in several other similar sections nearby. Wood at the base of the exposure is embedded in weathered till of Illinoian age (467 specimens).

L. Flat Rock River Section: NE 1/4 NW 1/4 sec. 4, T. 12 N., R. 9 E., Rush County, Indiana, stream cut 3 miles northwest of Milroy (Wayne and Thornbury, 1955, p. 25-26). A fossiliferous silt bed about 5 centimeters thick separates two till beds of Wisconsin age, the basal one of which overlies a paleosol on till of Illinoian age.

M. Cave Stone Company Quarry: NE 1/4 NW 1/4 sec. 32, T. 11 N., R. 7 E., Shelby County, Indiana (Hope Quadrangle), near the west edge of the village of Norristown (Murray and others, 1955, p. 35-36). In the thin overburden on the limestone in this quarry, a fossiliferous silt about 20 centimeters thick lies between two till beds of Wisconsin age (218 specimens).

N. NE 1/4 sec. 14, T. 13 N., R. 2 W., Wayne County, Indiana, exposure along a creek bank 2.5 miles southeast of Centerville (Wayne and Thornbury, 1955, p. 33; Gamble 1958, p. 29-31). The fossiliferous silt in this section separates two till beds, both of which are presumed to be of Wisconsin age, although Gamble (1958, p. 31) suggests that they may be older (225 specimens).

O. Avilla Section: SW 1/4 NW 1/4 sec. 33, T. 34 N., R. 11 E., Noble County, Indiana (Ege Quadrangle), Baltimore and Ohio Railroad cut about 7 miles west of Garrett. Till is overlain by fossiliferous calcareous sandy marl about 15 centimeters thick, which in turn is overlain by about 2.5 meters of laminated silty clay, presumably a deposit of an ice marginal lake (Wayne and Thornbury, 1955, p. 9) (600 specimens).

P. Fremont Ditch Section: NE corner SE 1/4 sec. 2, T. 37 N., R. 14 E., Steuben County, Indiana (Angola East Quadrangle), 3 miles southeast of Fremont, ditch bank exposure beside culvert. Peat and marl overlying till have been buried beneath gravelly sand, presumably glacial outwash, that slumped when a buried ice block melted. Radiocarbon dates from both the Washington and Michigan laboratories indicate that the marl and peat were deposited about 13,000 years ago. (W-57, W-65, M-350).

Data on the present molluscan fauna of Indiana are based on Goodrich and van der Schalie (1944).

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TABLE 2. CHECK LIST OF MOLLUSKS FROM PLEISTOCENE DEPOSITS OF INDIANA
(Letters at tops of columns refer to locations in text discussion; figures indicate percentages of total faunule)

SPECIES	A	B	C	D	E	F	G	H	I
Amnicola limosa porata	..	..	..	..	..	..	..	..	..
Anguispira alternata	..	..	..	..	..	10.2	..	..	..
Carychium exile canadense	9.3	..	10.2	5	..	..	..	10.2	..
Cionella lubrica	0.9	..	0.3	..	..	0.1	..	3.7	4.3
Columella alticola	..	..	..	..	..	5.6	0.7	10.1	..
Columella edentula	1.6	..	0.8	..	..	..	..	..	..
Deroceras laeve	..	2.0	1.1	..	..	0.1	..	1.8	1.8
Deroceras sp.	..	..	..	30	..	..	..	..	..
Discus cronkhitei	6.6	..	2.8	..	..	..	..	7.8	3.1
Euconulus fulvus	1.9	..	1.4	..	..	11.2	..	4.7	3.4
Gastrocopta armifera	1.8	3.0	0.6	..	..	0.1	16.0	0.1	13.0
Gastrocopta pentodon	..	..	..	..	..	..	..	..	..
Gastrocopta tappaniana	..	..	..	..	9.2	..	..	..	..
Gyraulus altissimus	..	..	..	..	..	..	..	..	..
Gyraulus deflectus	..	..	..	..	..	..	..	..	..
Hawaiia minuscula	..	..	..	..	..	..	3.3	..	..
Hendersonia occulta	9.7	..	3.9	..	..	[illegible]	..	14.3	7.4
Lymnaea galbana	..	..	34.6	..	..	..	..	..	..
Lymnaea obrussa decampi	..	..	..	..	..	..	..	..	..
Lymnaea parva	0.3	1.5	..	..	21.2	..	..	11.8	..
Oxyloma decampi gouldi	6.2	..	1.4	..	..	..	..	6.7	..
Pisidium sp.	..	..	..	..	..	..	..	..	..
Punctum minutissimum	3.2	36.0	0.3	..	1.6	3.0	3.3	3.7	22.4
Pupilla muscorum	1.6	2.5	..	..	..	1.5	10.0	3.6	0.4
Retinella electrina	1.6	..	0.8	..	..	..	..	1.9	1.8
Stenotrema hirsutum	..	..	0.3	..	..	..	..	..	..
Stenotrema monodon	4.6	..	0.8	..	1.3	..	..	2.2	0.5
Stenotrema sp.	..	..	..	8	..	..	..	..	..
Strobilops labyrinthica	34.7	..	5.5	..	..	..	..	..	..
Succinea gelida	..	..	..	..	16.7	30.4	23.4	10.2	16.9
Succinea gelida var.	8.9	12.0	13.3	..	..	..	..	..	..
Succinea grosvenorii	..	..	..	..	..	..	..	1.0	..
Succinea ovalis	..	..	..	48	..	20.3	2.0	..	..
Succinea vermeta	..	..	..	..	..	..	..	..	..
Vallonia albula	..	..	..	..	1.0	..	..	1.9	4.1
Vallonia cf. V. excentrica	0.1	..	..	..	0.6	..	..	..	..
Vallonia gracilicosta	..	19.5	..	..	..	..	36.0	..	..
Valvata tricarinata	..	0.5	..	..	..	..	..	..	..
Valvata sincera	..	..	..	..	..	..	..	..	..
Vertigo alpestris oughtoni	0.3	..	..	..	..	..	..	0.3	..
Vertigo elatior	4.3	18.5	21.0	..	28.3	..	5.3	3.5	0.4
Vertigo gouldi hannai	..	4.0	..	..	..	..	..	..	..
Vertigo gouldi hubrichti	1.9	..	..	..	..	3.0	..	..	23.2
Vertigo modesta	0.5	..	1.1	..	1.0	3.0	..	0.1	0.4
Vertigo nylanderi	..	..	..	..	3.0	..	..	..	..
Vertigo ovata	..	..	..	..	..	..	..	..	..

TABLE 2. CHECK LIST OF MOLLUSKS FROM PLEISTOCENE SEDIMENTS OF INDIANA
(Since the table is in two parts, the names of species are repeated here for convenience)

A, abundant; C, common; R, rare.

SPECIES	J	K	L	M	N	O	P	Indiana today
Amnicola limosa porata	..	..	..	..	..	..	..	X
Anguispira alternata	..	..	..	..	..	..	..	X
Carychium exile canadense	..	..	..	..	..	..	..	..
Cionella lubrica	..	..	..	..	..	..	..	X
Columella alticola	9.7	4.3	..	3.2	..	..	..	..
Columella edentula	..	..	..	..	..	..	..	X
Deroceras laeve	..	7.4	..	2.7	..	0.2	..	X
Deroceras sp.	..	..	..	..	..	..	..	..
Discus cronkhitei	0.1	..	..	8.1	..	..	..	X
Euconulus fulvus	0.6	0.6	..	0.5	..	..	..	X
Gastrocopta armifera	..	..	..	..	2.2	..	..	X
Gastrocopta pentodon	..	0.9	..	..	..	..	..	X
Gastrocopta tappaniana	..	..	..	..	0.9	..	..	X
Gyraulus altissimus	..	..	..	..	..	..	C	..
Gyraulus deflectus	..	..	..	..	..	..	..	X
Hawaiia minuscula	..	..	..	..	..	..	..	X
Hendersonia occulta	..	..	..	..	..	..	..	..
Lymnaea galbana	..	..	..	..	..	..	..	..
Lymnaea obrussa decampi	..	..	..	..	..	..	C	X
Lymnaea parva	..	14.5	..	4.6	..	69.7	..	X
Oxyloma decampi gouldi	..	..	..	..	..	..	..	..
Pisidium sp.	..	..	..	..	..	0.1	A	..
Punctum minutissimum	..	..	..	..	6.2	..	..	X
Pupilla muscorum	1.7	0.2	R	3.7	0.4	..	..	..
Retinella electrina	..	0.4	..	..	..	..	..	X
Stenotrema hirsutum	..	..	..	..	..	..	..	X
Stenotrema monodon	..	0.6	..	..	..	..	..	X
Stenotrema sp.	..	..	..	..	..	..	..	..
Strobilops labyrinthica	..	..	..	..	..	..	..	X
Succinea gelida	32.3	22.5	A	21.1	89.0	30.0	..	..
Succinea gelida var.	..	..	..	..	..	..	..	..
Succinea grosvenori	..	..	..	..	..	..	..	..
Succinea ovalis	..	..	..	..	..	..	..	X
Succinea vermeta	..	..	..	..	..	..	..	X
Vallonia albula	6.2	4.7	..	13.8	..	..	..	..
Vallonia cf. V. excentrica	..	..	..	..	..	..	..	X
Vallonia gracilicosta	..	..	..	..	..	..	..	..
Valvata tricarinata	..	..	..	..	..	..	C	X
Valvata sincera	..	..	..	..	..	..	C	X
Vertigo alpestris oughtoni	10.9	4.3	R	0.4	..	..	..	..
Vertigo elatior	0.2	..	..	41.3	2.2	..	..	X
Vertigo gouldi hannai	..	..	..	..	0.4	..	..	..
Vertigo gouldi hubrichti	..	..	..	..	..	..	..	..
Vertigo modesta	37.5	..	..	5.5	..	..	..	..
Vertigo nylanderi	..	..	..	..	..	..	..	..
Vertigo ovata	..	39.6	..	..	..	..	..	X

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PLANS FOR A CHECKLIST OF NORTH AMERICAN MOLLUSCA

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Checklists of genera and species on a continent-wide basis are valuable reference works for the study of any phylum. So far, no such list has been compiled for the Mollusca due, apparently to three kinds of difficulties:

1) Disagreement on the validity of taxa and on the proper name to be applied to each one.
2) The volume of literature to be combed for records and the small number of accurate partial lists either for small areas or systematic groups.
3) The cost of printing such a checklist by standard methods and of making the checklist available to individual workers in the field, particularly the beginners, who need it most.

An attempt was made some years ago, before World War II, to prepare such a checklist by creating a checklist committee of the American Malacological Union. The checklist committee stimulated many worthy efforts, for example, the late Calvin Goodrich's numerous papers on the Pleuroceridae. Unfortunately, World War II broke out just as the committee began its work and it passed quietly out of existence, mainly because most of its members were engaged in more pressing activities. The writer's contribution to the project took the form of a Catalogue of the Recent Mollusca of Canada (1953, Nat. Mus. Canada, Bull. 129). Since World War II several local lists have appeared as well as monographic treatment of some groups, for example Pilsbry's Land Mollusca of North America North of Mexico, F. C. Baker's Molluscan Family Planorbidae, and others.

The writer wonders if the time has come for a revival of the Checklist project, under AMU auspices or otherwise, and what chances of success such an undertaking would have. Certainly the need for it exists, as the writer knows through his work on Pleistocene Mollusca. Expressions of opinion on this matter would be welcome.

With regard to the difficulties outlined above, the following considerations may point to at least partial solution of some of them.

TAXONOMIC PROBLEMS. — In spite of apparent difficulty, this is probably the most easily overcome of the troubles facing a checklist compiler. The solution proposed is to design the format of the checklist in such a way as to show various alternatives under a most favored form, if there is one, and to present dissenting opinions succinctly and fairly within the framework of that form. For species and varieties, subspecies, or forms, the procedure would be to list under a particular genus all those claimed to be valid by specialists in the field and to indicate for each contested unit the reasons for acceptance or rejection followed by the initials of the authorities concerned. As an alternative, a series of numbered notes in appropriate places could be used to explain dissenting opinions. Such notes could be placed either just after the taxa in question or as explanatory notes at the end of the treatment of the genus if one note should apply to a number of species or trinomials.

In the writer's opinion there is considerable value in listing even trivial local forms of little taxonomic value as they are a measure of the variability of a species in isolated populations. This does not mean that they must be recognized as subspecies or varieties; they need be listed only as forms of a recognized species, following to a certain extent the practice of Pilsbry with respect to land snails.

For genera, the procedure might be more difficult. For example, many writers still use the generic classification of the Lymnaeidae proposed by Baker in his 1911 monograph and modified in his 1928 work on the freshwater Mollusca of Wisconsin, whereas others recognize only one genus in North America, i. e. Lymnaea, following Colton and Hubendick. Should it be impossible to reconcile these two schools of thought, might not some system be devised which would be satisfactory to both schools? For example, one of the two indicated in Table 1, depending on which plan can be justified on cogent arguments and number of adoptions.

TABLE 1. TWO METHODS FOR ARRANGEMENT OF LYMNAEIDAE

Genus Lymnaea	Genus Lymnaea
Subgenus Lymnaea sensu stricto	
Subgenus Pseudosuccinea[1]	Genus Pseudosuccinea[1]
Subgenus Bulimnea	Genus Bulimnea[1]
Subgenus Fossaria	Genus Fossaria[1]
Subgenus Stagnicola	Genus Stagnicola[1]

[1] Considered as a synonym of Lymnaea s. s. by XYZ, LMN, and others, but treated as a distinct genus by FCB, DEF, etc.

VOLUME OF LITERATURE. — The difficulty here is not one of scientific decision or of personal opinion but of time and effort required for the orderly examination of the literature, the gathering of records from Museums and personal collections, and the labor of arranging them in readily available form for incorporation into a North American checklist. During the preparation of his Canadian Catalogue, the writer developed various methods to simplify the work which proved valuable in the preparation of his Pleistocene Mollusca of Ohio (nearing completion). It seems that widening the scope of these methods to include all of North America by adding to the records already available would be practicable. The writer also believes that the goodwill and co-operation of North American malacologists could be enlisted and that various museums would make their records available for such an undertaking.

PRINTING COSTS. — Judging by the size and cost of the Canadian Catalogue, a North American checklist of similar scope would require a volume, or several volumes, totaling between 1,000 or 1,500 pages, at a total cost per set of about $20.00. Such an estimate, having regard to current printing costs, is probably conservative, both as to size and cost. This would probably mean that the checklist would be available only in large libraries and in the private library of individual workers with some means. Yet it is obvious that those who need such a checklist most are the beginners in the field who generally cannot afford such expenditures. The writer vividly remembers his indebtedness to the Library of the Geological Survey of Canada in the days when he began to study mollusks and the plight of his colleagues who were not fortunate enough to have access to such a fine library. Every effort should be made to render the checklist available to the beginners in our field by keeping its cost as low as possible. Such a powerful tool for the searching of literature and for the evaluation of current opinion on the classification, distribution, ecology, and anatomy of the Mollusca should be easily available to every malacologist. Moreover, it will prove to be a stimulus for continued work in malacology — how many promising malacologists have we lost because they became disgusted with lack of organization in the field?

If some institution with ample funds could be induced to print the checklist and to sell it at cost, or even at a slight loss, the problem of printing costs would disappear. The likelihood of this is very slight and it should not be allowed to prevent us from making plans for publication of a checklist. Other processes besides conventional printing can be used and a typewritten checklist could be as useful as a handsomely printed volume. Once the copy is assembled for the checklist, it should be made available, regardless of the method used. For this purpose, mimeographing or multilith printing should be considered, in spite of the obvious disadvantage of less pleasing appearance.

SUGGESTED PROCEDURE. — Judging from previous experience with the Canadian Catalogue, a North American Checklist could be most advantageously prepared in three steps:

1. Preparation of areal checklists (by states, provinces, territories, or smaller areas, e. g. well studied localities or islands, even counties) by a small committee aided by volunteer workers in special fields.
2. Circulation of areal checklists to persons or groups interested, with a request for criticisms, suggested additions, and deletions.
3. Assembling of the North American Checklist from the areal checklists, first on distribution maps for each species or form, then in written form.

This procedure appears to permit the greatest possible flexibility in preparation by providing for co-operation on any scale and on the basis of interests. For example, a worker interested only in Alaskan Mollusca would have special information at his disposal from the literature, his own collections, and Museum collections, dealing with the species found in his own area. Such a person would undoubtedly want to co-operate to the extent of checking the list for Alaska and perhaps for adjoining areas but would have little interest in the checklist for, say, Mexico. On the other hand, a specialist in Naiades, Sphaeriidae, or Pleuroceridae might be willing to review and comment on the part of each areal check-list dealing with his special group. Still further, a Museum curator would want to check each list for the species represented in his Museum, in particular the types. Each of these co-workers might be too busy to serve on the committee for preparing areal checklists, looking after their circulation, and assembling the data into a final North American Checklist.

FORMAT OF AREAL CHECKLISTS. — Because of their preliminary nature, areal checklists should be kept as simple as possible, should be prepared on a uniform plan, and should be so arranged as to be readily consulted, without the aid of an index. Past experience suggests that they should be divided into parts corresponding to major divisions of the Mollusca but not too numerous as to defeat search for a particular item. In preparing the Canadian list, the following divisions were found to be most practical:

1. Naiades
2. Sphaeriidae
3. Freshwater Pulmonates
4. Freshwater Operculates
5. Land Gastropoda
6. Amphineura
7. Marine Pelecypods
8. Scaphopoda
9. Marine Gastropoda
10. Cephalopoda

The preliminary areal checklists (see next paper in this number, pp. 23 *et seq.* for a sample) should consist simply of lists of species, alphabetically arranged under genera, the genera alphabetically arranged under the numbered divisions shown above. For each species, the generic, specific, and author's name, and date of description are given, followed by abbreviated reference to an authority. The abbreviations in each case are explained in the references cited for each list. Each item is numbered for convenience in reference and co-workers can then refer to items by area and number (*e. g.*, Ohio 253). Policy for inclusion of species is as liberal as possible; doubtful records are included but with notations, "doubtful for the state," "implied by presence in neighboring areas," "a synonym of ----, fide ----" followed by an abbreviated reference to the authority cited.

WHERE TO BEGIN. — Several checklists or compendia of marine Mollusca have already appeared, all of them in need of revision and addition but none so seriously out of date as to require immediate attention. Likewise, the land snails of North America have been recently revised by Pilsbry, for species living north of Mexico, and by H. B. Baker, Pilsbry, and others for Mexico, Central America, and the West Indies. The field appearing to need most pressing attention seems to be that of freshwater Mollusca and it is proposed to begin work by preparing checklists of Naiades, Sphaeriidae, and freshwater Gastropoda. On the other hand, the literature of land snails is so closely related to that of freshwater groups that the land snails might as well be included in areal lists. The Ohio list is presented in the next paper as a sample of an areal checklist and others are now either completed or in preparation.

Readers of STERKIANA are asked to communicate with the writer concerning this particular list and to offer comments on additions and deletions. Volunteer collaborators for other states or areas are asked to communicate with the writer; all contributions to the preparation of the areal checklists will be acknowledged as the lists appear in STERKIANA and in the final checklist if and when it is published.

CHECKLIST OF OHIO PLEISTOCENE AND LIVING MOLLUSCA

AURÈLE LA ROCQUE

NOTE. The following list of Ohio Mollusca is as complete as the writer has been able to make it but it is presented in the hope that corrections and additions will be brought to his attention. A supplementary list, including such changes, will appear in STERKIANA at a later date. References have been reduced to a minimum, using Sterki's (1907, 1914) lists as a basis together with lists of fossil occurrences by Sterki, Baker (1920), and later records by others. Parentheses around a name indicate that the species or form is erroneously recorded for Ohio; a question mark preceding a species or form indicates that it is doubtfully present in Ohio or that its systematic status is in doubt. Synonymy is not given here but can be reconstructed from the references cited. References are given by author, date, and page in the text. When a date alone is given, it is to be assumed to refer to the author of the preceding reference.

1. NAIADES

1. ACTINONAIAS CARINATA (Barnes) 1823. Sterki 1907: 388. Simpson 1914: 79. Ortmann 1919: 232. Baker 1928: 218.

2. ACTINONAIAS CARINATA GIBBA (Simpson) 1900. Sterki 1907: 389. Simpson 1914: 82.

3. ACTINONAIAS ELLIPSIFORMIS (Conrad) 1836. Sterki 1907: 389. Simpson 1914: 128. Baker 1928: 263.

4. ALASMIDONTA CALCEOLUS (Lea) 1830. Sterki 1907: 393. Simpson 1914: 496. Baker 1928: 185.

5. ALASMIDONTA MARGINATA (Say) 1819. Sterki 1907: 393. Ortmann 1919: 181. Baker 1928: 189.

6. ?ALASMIDONTA MARGINATA TRUNCATA (B. H. Wright) 1898. Baker 1928: 192.

7. AMBLEMA COSTATA Rafinesque 1820. Sterki 1907: 390. Simpson 1914: 819. Ortmann 1919: 28. Baker 1928: 80.

8. AMBLEMA PLICATA (Say) 1817. Sterki 1907: 390. Simpson 1914: 816. Ortmann 1919: 25.

9. ?AMBLEMA RARIPLICATA (Lamarck) 1819. Walker 1918: 168, Ohio River, but apparently not as far upstream as Ohio.

10. ANODONTA sp., Baker 1920: 446. Rush Lake marl.

11. ANODONTA GRANDIS Say 1829. Sterki 1907: 394. Simpson 1914: 418. Ortmann 1919:138.

12. ANODONTA GRANDIS BENEDICTENSIS (Lea) 1834. Sterki 1907: 394. Simpson 1914: 423.

13. (Anodonta grandis decora Lea 1836). Sterki 1907: 394. A synonym of _A. grandis gigantea_, _fide_ Simpson 1914: 421.

14. ANODONTA GRANDIS FOOTIANA Lea 1840. Sterki 1907: 394. Simpson 1914: 422. Ortmann 1919: 147. Baker 1928: 157.

15. ANODONTA GRANDIS GIGANTEA LEA 1834. Simpson 1914: 420.

16. (Anodonta grandis plana Lea 1834). Sterki 1907: 394. Baker 1928: 155. A synonym of _A. grandis gigantea_, _fide_ Simpson 1914: 421.

17. (Anodonta grandis salmonea Lea 1838). Sterki 1907: 394, a synonym of _A. grandis plana_, which in turn is considered a synonym of _A. grandis gigantea_ by Simpson.

18. ANODONTA IMBECILLIS Say 1829. Sterki 1907: 395. Simpson 1914: 395. Ortmann 1919: 162. Baker 1928: 172.

19. ?ANODONTA IMPLICATA Say 1829. Sterki 1907: 395. Simpson 1914: 391. Presence in Ohio doubtful.

20. (Anodonta kennicottii Lea 1861). Sterki 1907: 395, has seen no specimens. Simpson 1914: 435. The species seems out of range in Ohio.

21. ?ANODONTA MARGINATA Say 1817. Sterki 1907: 394. Baker 1928: 165. This may be a synonym of _A. grandis_ according to van der Schalie, cited by Robertson and Blakeslee 1948: 100.

22. ?ANODONTA PEPINIANA Lea 1838. Sterki 1907: 395, had seen no specimens. Simpson 1914: 436. "Upper and Middle St. Lawrence; Lake Winnipeg." The type locality is in Ohio so the species is listed here although it is probably a synonym of some earlier species.

23. ANODONTOIDES FERUSSACIANUS (Lea) 1834. Sterki 1907: 394. Simpson 1914: 407. Ortmann 1919: 165. Baker 1928: 175.

24. ANODONTOIDES FERUSSACIANUS BUCHANENSIS (Lea) 1838. Simpson 1914: 469. Ortmann 1919: 170.

25. ANODONTOIDES FERUSSACIANUS MODESTUS (Lea) 1837. Sterki 1907: 394. Simpson 1914: 470.

26. ANODONTOIDES FERUSSACIANUS SUBCYLINDRACEUS (Lea) 1838. Sterki 1907: 394. Baker 1928: 178.

27. ARCIDENS CONFRAGOSUS (Say) 1829. Sterki 1907: 393. Simpson 1914: 475. Baker 1928: 196.

28. CARUNCULINA GLANS (Lea) 1834. Sterki 1907: 389. Simpson 1914: 153.

29. CARUNCULINA PARVA (Barnes) 1823. Sterki 1907: 389. Simpson 1914: 151. Ortmann 1919: 258. Baker 1928: 251.

30. CUMBERLANDIANA MONODONTA (Say) 1829. Sterki 1907: 393. Ortmann 1912: 233. Simpson 1914: 521. Baker 1928: 48.

31. CYCLONAIAS TUBERCULATA (Rafinesque) 1820. Sterki 1907: 390. Simpson 1914: 903. Ortmann 1919: 57. Baker 1928: 103.

32. CYCLONAIAS TUBERCULATA GRANIFERA (Lea) 1838. Sterki 1907: 390. Baker 1928: 107.

33. CYPROGENIA IRRORATA (Lea) 1828. Sterki 1907: 390. Simpson 1914: 326. Ortmann 1919: 218.

34. (Dysnomia brevidens (Lea) 1834). Simpson 1914: 7. Ortmann and Walker 1922: 66. Not Ohio.

35. DYSNOMIA FLEXUOSA (Rafinesque) 1820. Sterki 1907: 388. Simpson 1914: 18. Walker 1918: 185.

36. DYSNOMIA PERSONATA (Say) 1829. Sterki 1907: 388. Simpson 1914: 23.

37. DYSNOMIA SULCATA (Lea) 1829. Sterki 1907: 388. Simpson 1914: 14. Walker 1918: 186.

38. (Dysnomia sulcata delicata (Simpson) 1900). Sterki 1907: 388. La Rocque 1953: 90. Not Ohio.

39. DYSNOMIA TORULOSA (Rafinesque) 1820. Sterki 1907: 388. Simpson 1914: 24.

40. DYSNOMIA TORULOSA CINCINNATIENSIS (Lea) 1840. Sterki 1907: 388. Simpson 1914: 26.

41. DYSNOMIA TORULOSA RANGIANA (Lea) 1839. Sterki 1907: 388. Simpson 1914: 26. Ortmann 1919: 331.

42. DYSNOMIA TRIQUETRA (Rafinesque) 1820. Sterki 1907: 388. Simpson 1914: 5. Ortmann 1919: 325. Baker 1928: 296.

43. ELLIPTIO COMPLANATUS (Solander 1786) or (Dillwyn, 1817). Sterki 1907: 393. Simpson 1914: 651. Ortmann 1919: 103. Baker 1928: 134. Matteson 1948: 13-19.

44. ELLIPTIO CRASSIDENS (Lamarck) 1819. Sterki 1907: 392. Simpson 1914: 607. Ortmann 1919: 91. Baker 1928: 131.

45. ELLIPTIO DILATATUS (Rafinesque) 1820. Sterki 1907: 392. Simpson 1914: 97. Ortmann 1919: 95. Baker 1928: 124.

46. ELLIPTIO DILATATUS STERKII Grier, 1918. Ortmann 1919: 101. Baker 1928: 130.

47. FUSCONAIA EBENUS (Lea) 1831. Sterki 1907: 392. Simpson 1914: 897. Baker 1928: 66.

48. FUSCONAIA FLAVA (Rafinesque) 1820. Sterki 1907: 392. Simpson 1914: 872. Ortmann 1919: 14. Baker 1928: 53.

49. FUSCONAIA FLAVA PARVULA Grier, 1918. Ortmann 1919: 21. Baker 1928: 58.

50. FUSCONAIA SUBROTUNDA (Lea) 1831. Sterki 1907: 391. Simpson 1914: 892. Ortmann 1919: 7.

51. FUSCONAIA SUBROTUNDA KIRTLANDIANA (Lea) 1834. Sterki 1907: 391. Simpson 1914: 891. Baker 1928: 136.

52. FUSCONAIA UNDATA TRIGONA (Lea) 1831. Sterki 1907: 392. Ortmann 1919: 19. Baker 1928: 63.

53. LAMPSILIS ANODONTOIDES (Lea) 1831. Sterki 1907: 389. Simpson 1914: 90. Baker 1928: 266.

54. LAMPSILIS ANODONTOIDES FALLACIOSA (Smith) 1899. Sterki 1907: 389, 399. Simpson 1914: 92. Baker 1928: 268.

55. LAMPSILIS FASCIOLA Rafinesque, 1820. Sterki 1907: 388. Simpson 1914: 55. Ortmann 1919: 309.

56. (Lampsilis fatua Lea 1840). Sterki 1907: 400, "probably or possibly to be found in Ohio." Simpson 1914: 116, "Tennessee system, Beaver River, Pennsylvania. (?)"

57. (Lampsilis higginsii (Lea) 1857). Sterki 1907: 389, not seen from Ohio.

58. ?LAMPSILIS OBSCURA (Lea) 1839. Sterki 1907: 400, "probably or possibly to be found in Ohio." Simpson 1914: 107, "Tennessee and Cumberland River systems; Lower Ohio and its tributaries."

59. LAMPSILIS ORBICULATA (Hildreth) 1828. Sterki 1907: 389. Simpson 1914: 76. Ortmann 1919: 32.

60. LAMPSILIS OVATA (Say) 1817. Sterki 1907: 388. Simpson 1914: 48. Ortmann 1919: 297.

61. LAMPSILIS RADIATA (Gmelin) 1792. Sterki 1907: 388. Simpson 1914: 64. Ortmann 1919: 292. Baker 1928: 301.

62. LAMPSILIS SILIQUOIDEA (Barnes) 1823. Sterki 1907: 388. Simpson 1914: 60. Ortmann 1919: 283. Baker 1928: 270. (May be only a variety of L. radiata according to Clarke).

63. LAMPSILIS SILIQUOIDEA ROSACEA (DEKay) 1843. Sterki 1907: 388. Simpson 1914: 62. Ortmann 1919: 289. Baker 1928: 281.

64. LAMPSILIS VENTRICOSA (Barnes) 1823. Sterki 1907: 388. Simpson 1914: 38. Ortmann 1919: 301. Baker 1928: 281.

65. LAMPSILIS VENTRICOSA CANADENSIS (Lea) 1857. Ortmann 1919: 301. Relationships with the type form and other varieties are not clear.

66. LAMPSILIS VENTRICOSA OCCIDENS (Lea) 1829. Baker 1928: 286.

67. LASMIGONA COMPLANATA (Barnes) 1823. Sterki 1907: 393. Ortmann 1919: 133. Baker 1928: 147.

68. LASMIGONA COMPRESSA (Lea) 1829. Sterki 1907: 393. Ortmann 1919: 116. Baker 1928: 139.

69. LASMIGONA COSTATA (Rafinesque) 1820. Sterki 1907: 393. Simpson 1914: 488. Ortmann 1919: 125. Baker 1928: 141.

70. LASMIGONA COSTATA ERIGANENSIS Grier, 1918. Ortmann 1919: 131.

71. LASTENA LATA (Rafinesque) 1820. Sterki 1907: 393. Simpson 1914: 453.

72. LEPTODEA FRAGILIS (Rafinesque) 1820. Sterki 1907: 393. Simpson 1914: 181. Ortmann 1919: 247. Baker 1928: 234.

73. LEPTODEA FRAGILIS LACUSTRIS (Baker) 1922. Baker 1928: 237.

74. LEPTODEA LAEVISSIMA (Lea) 1830. Sterki 1907: 393. Simpson 1914: 183. Baker 1928: 247.

75. LEPTODEA LEPTODON (Rafinesque) 1820. Sterki 1907: 393. Simpson 1914: 188. Baker 1928: 239.

76. LIGUMIA NASUTA (Say) 1817. Sterki 1907: 389. Simpson 1914: 97. Ortmann 1919: 271.

77. LIGUMIA RECTA (Lamarck) 1819. Sterki 1907: 389. Simpson 1914: 95. Ortmann 1919: 276. Baker 1928: 255.

78. LIGUMIA RECTA LATISSIMA (Rafinesque) 1820. Walker 1918: 184. Ortmann 1919: 276. Baker 1928: 257.

79. LIGUMIA SUBROSTRATA (Say) 1831. Sterki 1907: 389. Simpson 1914: 99.

80. MEGALONAIAS GIGANTEA (Barnes) 1823. Sterki 1907: 390. Baker 1928: 69.

81. OBLIQUARIA REFLEXA Rafinesque, 1820. Sterki 1907: 390. Simpson 1914: 330. Ortmann 1919: 214. Baker 1928: 210.

82. OBOVARIA OLIVARIA Rafinesque, 1820. Sterki 1907: 390. Simpson 1914: 299. Ortmann 1919: 229. Baker 1928: 214.

83. OBOVARIA RETUSA (Lamarck) 1819. Sterki 1907: 390. Simpson 1914: 290. Ortmann 1919: 221.

84. OBOVARIA SUBROTUNDA (Rafinesque) 1820. Sterki 1907: 389. Simpson 1914: 291. Ortmann 1919: 223.

85. OBOVARIA SUBROTUNDA LEIBII (Lea) 1862. Sterki 1907: 390. Simpson 1914: 296.

86. OBOVARIA SUBROTUNDA LENS (Lea) 1831. Sterki 1907: 390. Simpson 1914: 293.

87. OBOVARIA SUBROTUNDA LEVIGATA (Rafinesque) 1820. Ortmann 1919: 226.

88. PLAGIOLA LINEOLATA Rafinesque 1820. Sterki 1907: 389. Simpson 1914: 304. Ortmann 1919: 243. Baker 1928: 231.

89. PLETHOBASUS CICATRICOSUS (Say) 1829. Sterki 1907: 392. Simpson 1914: 807.

90. PLETHOBASUS COOPERIANUS (Lea) 1834. Sterki 1907: 391. Simpson 1914: 852. Ortmann 1919: 62.

91. PLETHOBASUS CYPHYUS (Rafinesque) 1820. Sterki 1907: 391. Simpson 1914: 806. Ortmann 1919: 65.

92. PLEUROBEMA BOURNIANUM (Lea) 1840. Sterki 1907: 392. Simpson 1914: 741.

93. PLEUROBEMA CLAVA (Lamarck) 1819. Sterki 1907: 392. Simpson 1914: 735. Ortmann 1919: 86.

94. PLEUROBEMA CORDATUM (Rafinesque) 1820. Sterki 1907: 392. Simpson 1914: 881. Ortmann 1919: 69.

95. PLEUROBEMA CORDATUM CATILLUS (Conrad) 1836. Sterki 1907: 392. Simpson 1914: 885. Ortmann 1919: 75. Baker 1928: 117.

96. PLEUROBEMA CORDATUM COCCINEUM (Conrad) 1836. Sterki 1907: 392. Simpson 1914: 883. Ortmann 1919: 78. Baker 1928: 113.

97. PLEUROBEMA CORDATUM PAUPERCULUM (Simpson) 1900. Sterki 1907: 392. Ortmann 1919: 83.

98. PLEUROBEMA CORDATUM PLENUM (Lea) 1840. Sterki 1907: 392. Simpson 1914: 886.

99. PLEUROBEMA CORDATUM PYRAMIDATUM (Lea) 1834. Sterki 1907: 392. Simpson 1914: 888. Ortmann 1919: 84. Baker 1928: 137.

100. PROPTERA ALATA (Say) 1817. Sterki 1907: 393. Simpson 1914: 162. Ortmann 1919: 252. Baker 1928: 241.

101. PROPTERA ALATA MEGAPTERA Rafinesque, 1820. Baker 1928: 244.

102. PROPTERA CAPAX (Green) 1832. Sterki 1907: 388. Simpson 1914: 47. Baker 1928: 248.

103. PTYCHOBRANCHUS FASCIOLARE Rafinesque, 1820. Sterki 1907: 390. Ortmann 1919: 208. Baker 1928: 300.

104. QUADRULA CYLINDRICA (Say) 1817. Sterki 1907: 390. Simpson 1914: 832. Ortmann 1919: 52.

105. QUADRULA FRAGOSA (Conrad) 1836. Sterki 1907: 391. Simpson 1914: 843. Baker 1928: 88.

106. QUADRULA METANEVRA Rafinesque, 1820. Sterki 1907: 390. Simpson 1914: 834. Ortmann 1919: 47. Baker 1928: 97.

107. QUADRULA METANEVRA WARDII (Lea) 1861. Sterki 1907: 390. Simpson 1914: 835. Baker 1928: 100.

108. QUADRULA NODULATA Rafinesque, 1820. Sterki 1907: 391. Simpson 1914: 856. Baker 1928: 95.

109. QUADRULA PILARIS (Lea) 1840. Sterki 1907: 392. Simpson 1914: 893.

110. QUADRULA PUSTULOSA (Lea) 1831. Sterki 1907: 391. Simpson 1914: 848. Ortmann 1919: 34. Baker 1928: 90.

111. (Quadrula pustulosa kieneriana (Lea) 1852). Sterki 1907: 391. Simpson 1914: 851. Not Ohio.

112. QUADRULA PUSTULOSA PRASINA (Conrad) 1834. Sterki 1914: 271. Simpson 1914: 850. Ortmann 1919: 38. Baker 1928: 93.

113. QUADRULA QUADRULA Rafinesque, 1820+ Sterki 1907: 390. Simpson 1914: 841. Ortmann 1919: 40. Baker 1928: 84.

114. SIMPSONICONCHA AMBIGUA (Say) 1825. Sterki 1907: 394. Simpson 1914: 325. Ortmann 1919: 136. Baker 1928: 183.

115. STROPHITUS RUGOSUS (Swainson) 1822. Sterki 1907: 394. Simpson 1914: 345. Ortmann 1919: 195, 197. Baker 1928: 198.

116. STROPHITUS RUGOSUS PAVONIUS (Lea) 1836. Baker 1928: 202.

117. TRITOGONIA VERRUCOSA (Rafinesque) 1820. Sterki 1907: 390. Simpson 1914: 318. Ortmann 1919: 43. Baker 1928: 100.

118. TRUNCILLA DONACIFORMIS (Lea) 1828. Sterki 1907: 389. Simpson 1914: 308. Ortmann 1919: 241. Baker 1928: 228.

119. TRUNCILLA TRUNCATA Rafinesque, 1820. Sterki 1907: 389. Simpson 1914: 306. Ortmann 1919: 238. Baker 1928: 224.

120. (Uniomerus tetralasmus camptodon (Say) 1832). Sterki 1907: 392. Simpson 1914: 706. Not Ohio.

121. UNIOMERUS TETRALASMUS SAYI (Ward) 1839. Sterki 1907: 393. Simpson 1914: 709. Baker 1928: 137.

122. VILLOSA FABALIS (Lea) 1831. Sterki 1907: 388. Simpson 1914: 33. Ortmann 1919: 262.

123. VILLOSA IRIS (Lea) 1830. Sterki 1907: 389. Simpson 1914: 113. Ortmann 1919: 265.

124. (Villosa iris novi-eboraci (Lea) 1838). Ortmann 1919: 268. Baker 1928: 260. Not valid.

2. SPHAERIIDAE

125. PISIDIUM sp., Dexter 1950: 25, Dollar Lake, Portage Co.; La Rocque 1952: 12. Dexter 1953: 30.

126. PISIDIUM ADAMSI Prime 1851. Sterki 1907: 397; 1920: 175, Tinkers Creek Marl (P. sargenti). Herrington 1954: 136.

127. PISIDIUM ADAMSI form AFFINE Sterki, 1901. Sterki 1907: 397; 1920: 175, Tinkers Creek marl. Herrington 1954: 136.

128. ?PISIDIUM AEQUILATERALE Prime 1852. Sterki 1916: 451, implied. Herrington 1954: 135.

129. ?PISIDIUM AMNICUM (MÜLLER) 1774. Sterki 1916: 446, possibly implied; La Rocque 1953: 103. Herrington 1954: 135.

130. PISIDIUM CASERTANUM (Poli) 1791. As P. abditum Haldeman: Sterki 1907: 397; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl. As P. elevatum Sterki: Sterki 1916: 455. As P. noveboracense elevatum: Sterki 1907: 397. As P. neglectum: Sterki 1907: 397; 1916: 456. As P. neglectum corpulentum: Sterki 1916: 456. As P. noveboracense Prime: Sterki 1907: 397; Baker 1920: 447, Rush Creek marl. As P. noveboracense fraternum: Sterki 1916: 455. As P. noveboracense proclive Sterki: Walker 1918: 189. As P. noveboracense quadrulum: Sterki 1907: 397; 1916: 455. As P. politum Sterki: Sterki 1907: 398; 1916: 458; Baker 1928: 404. As P. politum decorum Sterki: Sterki 1907: 398; 1916: 458; Baker 1928: 405. As P. roperi: Sterki 1907: 397. As P. streatori Sterki: Sterki 1907: 397; 1916: 458. As P. strengii Sterki: Sterki 1907: 397; 1916: 458. As P. succineum Sterki: Sterki 1907: 397; 1916: 457. As P. trapezoideum Sterki: Sterki 1907: 397. Herrington 1954: 97, 131.

131. PISIDIUM COMPRESSUM Prime 1851; Sterki 1907: 396, 402, Defiance ?loess; 1916: 447; 1920: 175, Tinkers Creek marl; 183, Castalia marl. Baker 1920: 446, Rush Lake marl. Herrington 1954: 135. Reynolds 1959: 155, Humboldt deposit.

132. PISIDIUM COMPRESSUM LAEVIGATUM Sterki 1905. Sterki 1907: 396; 1916: 447.

133. PISIDIUM COMPRESSUM OPACUM Sterki 1905. Sterki 1907: 396; 1916: 447.

134. ?PISIDIUM CONVENTUS Clessin 1877. As P. abyssorum, Great Lakes, possible for Ohio. Herrington 1954: 97, 134.

135. PISIDIUM CRUCIATUM Sterki 1895. Sterki 1907: 396; 1916: 449. Herrington 1954: 137.

136. PISIDIUM DUBIUM (Say) 1816. ?As P. virginicum (Gmelin): Sterki 1907: 396. Pilsbry 1946: 86, considers the two forms separate. Herrington 1954: 136.

137. PISIDIUM FALLAX Sterki 1896. Sterki 1907: 396, 402, Defiance ?loess; 1916: 449; 1920: 175, Tinkers Creek marl. Herrington 1954: 136.

138. PISIDIUM FALLAX KIRKLANDI Sterki 1899. Sterki 1907: 396; 1916: 449. Herrington 1954: 136.

139. PISIDIUM FALLAX MITE Sterki 1905. Sterki 1907: 397; 1916: 449.

140. PISIDIUM FERRUGINEUM Prime 1851. Herrington 1954: 133. Also, several unpublished records for Ohio marl deposits: Newell Lake, Jewell Hill, Souder Farm.

141. PISIDIUM FERRUGINEUM form MEDIANUM Sterki 1899. Sterki 1907: 398; 1916: 466, fossil; 1920: 183, Castalia marl; p. 175, Tinkers Creek marl. Baker 1920: 447, Rush Lake marl; 1928: 426. Herrington 1954: 133.

142. ?PISIDIUM FRAUDULENTUM Sterki 1912. According to Herrington, 1954: 137, a doubtful species, either represented by too few specimens or too badly mixed for any decision.

143. ?PISIDIUM FRAUDULENTUM PERALTUM Sterki. Sterki 1916: 451; same remark as for P. fraudulentum.

144. PISIDIUM LILLJEBORGI Clessin 1886. As P. scutellatum Sterki: Sterki 1920: 175, Tinkers Creek marl. Herrington 1954: 134.

145. ?PISIDIUM LIMATULUM Sterki 1905. Sterki 1916: 451. According to Herrington 1954: 137, too few specimens or too badly mixed for any decision.

146. PISIDIUM MAINENSE Sterki 1903. Sterki 1907: 397; 1916: 457, living and fossil. Baker 1928: 396. Herrington 1954: 136.

147. PISIDIUM NITIDUM Jenyns 1832. Herrington 1954: 136. Reynolds 1959: 155, Humboldt deposit; also identified from Newell Lake, Jewell Hill, and Souder Farm deposits. As P. minusculum Sterki: Sterki 1916: 453; Baker 1928: 383. As P. pauperculum Sterki: Sterki 1907: 398; 1916: 463; 1920: 183, Castalia marl; p. 175, Tinkers Creek marl; Baker 1928: 421. As P. pauperculum crystalense Sterki: Sterki 1907: 398; 1916: 463, living and fossil. As P. splendidulum Sterki: Sterki 1907: 398; 1920: 175, Tinkers Creek marl. As P. splendidulum corneolum Sterki: Sterki 1916: 462. As P. tenuissimum Sterki: Sterki 1916: 463; Baker 1920: 447, Rush Lake marl; 1928: 419. Also known for other marl deposits in the state.

148. PISIDIUM OBTUSALE Pfeiffer 1821. Reynolds 1959: 155, Humboldt deposit. As P. rotundatum Prime: Sterki 1907: 398; 1916: 465; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl. Baker 1928: 423. Herrington 1954: 134.

149. PISIDIUM OBTUSALE form VENTRICOSUM Prime 1851. Sterki 1916: 466. Herrington 1954: 134. Souder Farm deposit (Cornejo, in press).

150. ?PISIDIUM OHIOËNSE Sterki 1903. Sterki 1907: 398; 1916: 461; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl. According to Herrington (1954: 137) too few specimens or too badly mixed for any decision.

151. PISIDIUM PUNCTATUM Sterki 1895. Sterki 1907: 397. Herrington 1954: 135. See also P. variabile brevius, below.

152. PISIDIUM VARIABILE PRIME 1851. Sterki 1907: 396; 1916: 453; 1920: 175, Tinkers Creek marl. Baker 1920: 446, Rush Lake marl. Herrington 1954: 135. Reynolds 1959: 155, Humboldt deposit.

153. ?PISIDIUM VARIABILE BREVIUS Sterki 1906. Sterki 1916: 453. Also given as P. punctatum brevius; not mentioned by Herrington (1954) who recognizes both species.

154. PISIDIUM WALKERI Sterki 1895. Sterki 1907: 397; 1920: 175, Tinkers Creek marl. Herrington 1954: 135.

155. SPHAERIUM sp., La Rocque 1952: 12, ff. Dexter 1953: 30, 31.

156. SPHAERIUM (MUSCULIUM) sp. Sterki 1907: 396. Dexter 1950: 25, Dollar Lake, Portage Co.; 1953: 30, 31. La Rocque 1952: 12, ff. La Rocque and Conley 1956: 26, ff.

157. SPHAERIUM AUREUM (Prime) 1851. Sterki 1916: 432.

158. ?SPHAERIUM (MUSCULIUM) CONTRACTUM (Prime) 1865. Sterki 1907: 395, doubtful.

159. SPHAERIUM (MUSCULIUM) FABALE (Prime) 1851. Sterki 1907: 395.

160. SPHAERIUM FLAVUM (Prime) 1851. Sterki 1907: 395, 399.

161. SPHAERIUM (MUSCULIUM) hodgsoni (Sterki) 1907. Sterki 1916: 440.

162. SPHAERIUM (MUSCULIUM) jayense (Prime) 1851. Sterki 1907: 396; 1916: 441. Baker 1928: 354.

163. SPHAERIUM (MUSCULIUM) lacustre Müller) 1774. Zimmerman (in press), Newell Lake deposit. Mowery (in press), Jewell Hill deposit. Cornejo (in press), Souder Farm deposit.

164. SPHAERIUM (MUSCULIUM) LACUSTRE RYCKHOLTII (Normand) 1844. Cornejo (in press), Souder Farm deposit.

165. ?SPHAERIUM (MUSCULIUM) NITIDUM Clessin 1876. Recorded as S. (M.) tenue Prime for Indiana, Michigan, and Ontario, therefore possible for Ohio. Herrington 1958: 10.

166. SPHAERIUM OCCIDENTALE (Prime) 1852. Sterki 1916: 438. Brooks and Herrington 1944: 94.

167. SPHAERIUM (MUSCULIUM) PARTUMEIUM (Say) 1822. Sterki 1907: 396; 1916: 441. Baker 1928: 354.

168. SPHAERIUM (MUSCULIUM) PARTUMEIUM GLOBOSUM Sterki 1916. Sterki 1916: 441.

169. SPHAERIUM (MUSCULIUM) PARVUM Sterki 1909. Sterki 1916: 445.

170. SPHAERIUM RHOMBOIDEUM (Say) 1822. Sterki 1907: 395; 1916: 438; 1920: 176, Tinkers Creek marl. Baker 1928: 345. Brooks and Herrington 1944: 94.

171. SPHAERIUM (MUSCULIUM) ROSACEUM (Prime) 1851. Sterki 1916: 442. Baker 1920: 446, Rush Lake marl; 1928: 358.

172. SPHAERIUM (MUSCULIUM) SECURIS (Prime) 1851. Sterki 1907: 396; 1920: 176, Tinkers Creek marl.

173. SPHAERIUM SIMILE (Say) 1817. Sterki 1907: 395; 1916: 431, part. Baker 1928: 315. La Rocque and Conley 1956: 326, ff. Herrington 1950: 119.

174. SPHAERIUM (MUSCULIUM) SPHAERICUM (Anthony) 1852. Sterki 1907: 396; 1916: 444. Baker 1928: 362. May be a form of S. securis (Prime).

175. SPHAERIUM (MUSCULIUM) SPHAERICUM SUCCINEUM Sterki 1916. Sterki 1916: 444.

176. ?SPHAERIUM (MUSCULIUM) STEINII A. Schmidt 1850. La Rocque 1953: 101, Great Lakes. Possible for Ohio shore of Lake Erie.

177. SPHAERIUM STRIATINUM (Lamarck) 1818. Sterki 1907: 395; 1916: 435; 1920: 176, Tinkers Creek marl. Baker 1928: 336. Brooks and Herrington 1944: 95. Reynolds 1959: 155, Humboldt deposit.

178. SPHAERIUM STRIATINUM form CORPULENTUM Sterki 1916. Sterki 1916: 435. Baker 1928: 337. Brooks and Herrington 1944: 95.

179. ?SPHAERIUM STRIATINUM form EMARGINATUM (Prime) 1851. Sterki 1916: 434, possibly implied; Ind., Mich., Ont., Me., Man. Brooks and Herrington 1944: 95.

180. SPHAERIUM STRIATINUM form FORBESI Baker 1906. Sterki 1916: 434. Brooks and Herrington 1944: 95.

181. SPHAERIUM STRIATINUM form MODESTUM (Prime) 1851. Sterki 1916: 436. Brooks and Herrington 1944: 95.

182. SPHAERIUM STRIATINUM form OHIOENSE STERKI 1913. Sterki 1916: 436. Baker 1928: 341. Brooks and Herrington 1944: 95.

183. SPHAERIUM STRIATINUM form SOLIDULUM (Prime) 1851. Sterki 1907: 395; 1916: 433. Brooks and Herrington 1944: 95.

184. SPHAERIUM STRIATINUM form STAMINEUM (Conrad) 1834. Sterki 1907: 395; 1916: 433; 1920: 176, Tinkers Creek marl; Baker 1928: 326. Brooks and Herrington 1944: 95.

185. SPHAERIUM STRIATINUM form VERMONTANUM (Prime) 1861. Sterki 1916: 435, Vermont. Brooks and Herrington 1944: 95. Recorded elsewhere for Maine, Que., Ont., Ind., and Ill., therefore probable for Ohio.

186. SPHAERIUM SULCATUM (Lamarck) 1818. Sterki 1916: 431, fossil. Baker 1920: 446, Rush Lake marl; Sterki 1920: 175, Tinkers Creek marl. Baker 1928: 313, part. Brooks and Herrington 1944: 95. Reynolds 1959: 155, Humboldt deposit.

187. SPHAERIUM SULCATUM PLANATUM Sterki 1916. Sterki 1916: 432. Baker 1928: 317. Brooks and Herrington 1944: 95.

188. SPHAERIUM (MUSCULIUM) TRANSVERSUM (Say) 1829. Sterki 1907: 395; 1916: 440. Baker 1928: 351.

189. SPHAERIUM (MUSCULIUM) TRUNCATUM Linsley 1845. Sterki 1907: 396; 1916: 441; 1920: 176, Tinkers Creek marl. Baker 1928: 356.

190. SPHAERIUM WALKERI Sterki 1901. Sterki 1907: 400, "probably or possibly to be found in Ohio;" 1916: 439, implied: Mich., Ind. Brooks and Herrington 1944: 94. La Rocque 1953: 117, also Ohio, Ont., Que.

3. FRESHWATER PULMONATA

191. ACELLA HALDEMANI ("Deshayes" Binney) 1867. Sterki 1907: 382. Baker 1911: 192. Sterki 1920: 174, Tinkers Creek marl. Baker 1928: 266.

192. (Ancylus sterkii "Walker MS" Sterki 1907). Sterki 1907: 384. Probably undescribed.

193. ANISUS PATTERSONI (Baker) 1938. Leonard 1953: 372, ff., Sangamon, Farmdale? loess, Cleveland region (Gyraulus). Taylor 1958: 1149-1153.

194. APLEXA HYPNORUM (Linnaeus) 1758. Sterki 1907: 381. Walker 1918: 116. Sterki 1920: 183, Castalia marl. Baker 1928: 473. Dexter 1953: 30.

195. ARMIGER CRISTA (Linnaeus) 1758. Sterki 1907: 400 "probably or possibly to be found in Ohio;" 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1928: 385.

196. (Australorbis glabratus (Say) 1818). Sterki 1907: 382. Erroneous identification.

197. BULIMNEA MEGASOMA (Say) 1824. Sterki 1907: 381. Baker 1911: 184; 1928: 277.

198. FERRISSIA DIAPHANA (Haldeman) 1841. Sterki 1907: 383. Walker 1918: 120.

199. FERRISSIA KIRKLANDI (Walker) 1903. Sterki 1907: 383; 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1928: 406. 395. La Rocque 195?: ?, ff.

200. FERRISSIA NOVANGLIAE (Walker) 1908. Walker 1918: 119.

201. FERRISSIA PARALLELA (Haldeman) 1841. Sterki 1907: 383; 1920: 174, Tinkers Creek marl. Baker 1920: 450, Rush Lake marl; 1928: 395. La Rocque 1952: 12, ff.

202. FERRISSIA PUMILA (Sterki) 1900. Sterki 1907: 384; 1920: 174, Tinkers Creek marl; p. 182, Castalia marl.

203. FERRISSIA RIVULARIS (Say) 1819. Sterki 1907: 384; 1920: 182, Castalia marl. Baker 1928: 398.

204. FERRISSIA SHIMEKII (Pilsbry) 1890. Sterki 1907: 384. Walker 1918: 119. Baker 1928: 402.

205. (Ferrissia sterkii (Walker) MS). Sterki 1907: 384. Apparently never described.

206. FERRISSIA TARDA (Say) 1830. Sterki 1907: 384. Walker 1918: 120. Baker 1928: 399. Reynolds 1959: 155, Humboldt deposit.

207. FOSSARIA DALLI Baker 1906. Baker 1911: 251. Sterki 1920: 182, Castalia marl. Baker 1928: 288.

208. FOSSARIA DALLI GRANDIS Baker 1930. Leonard 1953: 372, ff., Farmdale? loess, Cleveland.

209. FOSSARIA EXIGUA (Lea) 1841. Baker 1911: 285; 1928: 301.

210. FOSSARIA GALBANA (Say) 1825. Baker 1911: 291; 1928: 304. La Rocque 1952: 12, ff., Orleton deposit.

211. FOSSARIA HUMILIS (Say) 1822. Sterki 1907: 382. Baker 1911: 257. Dennis 1928: 3.

212. FOSSARIA HUMILIS var., "t. Baker." Sterki 1907: 382.

213. FOSSARIA MODICELLA (Say) 1825. Sterki 1907: 382. Baker 1911: 259. Sterki 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1928: 289.

214. FOSSARIA MODICELLA RUSTICA (Lea) 1841. Baker 1911: 268. Sterki 1914: 271; 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1928: 291.

215. FOSSARIA OBRUSSA (Say) 1825. Sterki 1907: 382. Baker 1911: 270. Sterki 1914: 271. Baker 1928: 293. Dexter 1950: 25, Dollar Lake, Portage Co.; 1953: 30, 31.

216. FOSSARIA OBRUSSA DECAMPI (Streng) 1906. Baker 1911: 289. Sterki 1920: 174, Tinkers Creek marl. Baker 1920: 450, Rush Lake marl; 1928: 299. Reynolds 1959: 155, Humboldt deposit.

217. FOSSARIA PARVA (Lea) 1841. Sterki 1907: 382. Baker 1911: 243. Sterki 1920: 182, Castalia marl. Baker 1928: 285. La Rocque and Forsyth 1957: 85, ff., Sidney Cut.

218. FOSSARIA PARVA STERKII (Baker) 1905. Sterki 1907: 382, 399. Baker 1911: 248. Franzen 1958: 33.

219. FOSSARIA SAYI F. C. Baker 1928. Baker 1928: 305.

220. GUNDLACHIA? sp., Sterki 1907: 384; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl.

221. ?GUNDLACHIA MEEKIANA (Stimpson) 1863. Sterki 1907: 384. Walker 1918: 121.

222. ?GYRAULUS ALBUS (Müller) 1774. Sterki 1920: 174, Tinkers Creek marl. Probably a misidentification.

223. GYRAULUS ALTISSIMUS (Baker) 1919. Baker 1920: 449, Rush Lake marl; 1928: 382. La Rocque 1952: 12, ff., Orleton deposit. Reynolds 1959: 155, Humboldt deposit.

224. GYRAULUS ARCTICUS ("Beck" Möller) 1842. Baker 1920: 449, Rush Lake marl; 1928: 380; 1945: 71.

225. GYRAULUS CIRCUMSTRIATUS (Tryon) 1866. Sterki 1907: 383. Baker 1928: 378.

226. GYRAULUS DEFLECTUS (Say) 1824. Sterki 1907: 383. Baker 1920: 449, Rush Lake marl; 1928: 370.

227. GYRAULUS DEFLECTUS OBLIQUUS (De Kay) 1843. Baker 1928: 372.

228. GYRAULUS HIRSUTUS (Gould) 1840. Sterki 1907: 383. Baker 1928: 367.

229. GYRAULUS PARVUS (Say) 1817. Sterki 1907: 383; 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1928: 374; 1945: 22. Dexter 1950: 25, Dollar Lake, Portage Co.; 1953: 30, 31. Leonard 1953: 372, ff., Sangamon; Farmdale? loess, Cleveland.

230. HELISOMA ANCEPS (Menke) 1830. Sterki 1907: 383. Baker 1920: 449, Rush Lake marl; 1928: 317; 1945: 128, ff. Leonard 1953: 372, Farmdale? loess, Cleveland.

231. HELISOMA ANCEPS STRIATUM (F. C. Baker) 1902. Baker 1920: 449, Rush Lake marl; 1928: 328; 1945: 128. Reynolds 1959: 155, Humboldt deposit.

232. HELISOMA CAMPANULATUM (Say) 1821. Sterki 1907: 383; 1920: 174, Tinkers Creek marl. Baker 1920: 449, Rush Lake marl; 1928: 345. Dexter 1950: 25, Dollar Lake, Portage Co.

233. HELISOMA TRIVOLVIS (Say) 1817. Sterki 1907: 382; p. 401, Middletown deposit; 1920: 182, Castalia marl. Dennis 1928: 3. Baker 1928: 330; 1945: 22. La Rocque 1952: 12, ff., Orleton deposit. Dexter 1953: 30, 31. Reynolds 1959: 155, Humboldt deposit.

234. (Helisoma trivolvis binneyi (Sterki, non Tryon). Sterki 1914: 271; 1920: 174, Tinkers Creek marl. Probably a local variation of H. trivolvis but not var. binneyi.

235. (Helisoma trivolvis lentum (Say) 1834). Sterki 1907: 383. Not Ohio.

236. LAEVAPEX FUSCUS (C. B. Adams) 1840. Sterki 1907: 383. Walker 1918: 120. Baker 1928: 404. Dennis 1928: 4. Basch, 1959.

237. LYMNAEA STAGNALIS JUGULARIS Say 1817. Sterki 1907: 381; 1920: 174, Tinkers Creek marl. Baker 1928: 198.

238. MENETUS sp., Leonard 1953: 372, ff., Farmdale? loess, Cleveland.

239. MENETUS BRONGNIARTIANUS (Lea) 1842. Baker 1945: 478, Cincinnati.

240. MENETUS COOPERI MULTILINEATUS (Vanatta) 1899. Sterki 1907: 383, 399. Baker 1945: 186. Reynolds 1959: 155, Humboldt deposit.

241. MENETUS DILATATUS (Gould) 1841. Sterki 1907: 383. Walker 1918: 98. Baker 1945: 190.

242. MENETUS DILATATUS BUCHANENSIS (Lea) 1841. Sterki 1907: 383. Baker 1945: 478, Cincinnati.

243. PHYSA sp., Sterki 1907: 402, Defiance ?loess deposit. La Rocque and Conley 1956: 326, ff., Hunters Run deposit.

244. ?PHYSA ANATINA Lea 1864. Walker 1918: 107. Baker 1920: 450, Rush Lake marl. Ohio records should probably be referred to P. michiganensis Clench.

245. (Physa ancillaria (Say) 1825). Sterki 1907: 381. See Physa heterostropha.

246. (Physa ancillaria magnalacustris Walker 1901). Sterki 1907: 381. If valid, a variety of P. heterostropha.

247. (Physa aplectoides Sterki 1907). Sterki 1907: 381, 399. Walker 1918: 107. Sterki 1920: 183, Castalia marl. Probably not valid.

248. (Physa febigeri Lea 1864). Walker 1918: 110, is P. elliptica, fide Tryon and Crandall.

249. PHYSA GYRINA Say 1821. Sterki 1907: 381. Walker 1918: 110; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl. Baker 1928: 449. Dexter 1953: 30, 31. La Rocque 1952: 12, ff. Orleton deposit. Reynolds 1959: 155, Humboldt deposit.

250. PHYSA GYRINA ELLIPTICA Lea 1839. Sterki 1907: 381; 1920: 183, Castalia marl.

251. PHYSA GYRINA HILDRETHIANA Lea 1841. Sterki 1907: 381; 1920: 183, Castalia marl.

252. PHYSA HETEROSTROPHA (Say) 1817. Sterki 1907: 381; 1920: 175, Tinkers Creek marl. Baker 1928: 447. Wurtz 1949a: 20-33. Dexter 1950: 25, Dollar Lake, Portage Co.

253. PHYSA INTEGRA Haldeman 1841. Sterki 1907: 381; 1920: 175, Tinkers Creek marl; p. 183, Castalia marl. Baker 1928: 460.

254. PHYSA MICHIGANENSIS Clench 1926. Sterki 1907: 381 (P. anatina Lea). Clench 1926: 1-8. Baker 1928: 469.

255. (PHYSA SAYII Tappan 1839). Sterki 1907: 381; 1920: 175, Tinkers Creek marl. Wurtz 1949a: 31, eq. P. heterostropha.

256. PLANORBULA ARMIGERA (Say) 1818. Sterki 1907: 383; 1920: 182, Castalia marl. Baker 1928: 355. La Rocque 1952: 12, Orleton deposit.

257. PLANORBULA CRASSILABRIS (Walker) 1907. Walker 1918: 109. Baker 1928: 359; 1945: 176.

258. PROMENETUS EXACUOUS (Say) 1821. Sterki 1907: 383. Baker 1920: 449, Rush Lake marl. Sterki 1920: 174; Tinkers Creek marl. Baker 1928: 361; 1945: 182. Dexter 1950: 25, Dollar Lake, Portage Co. La Rocque 1952: 12, Orleton deposit. Dexter 1953: 31. Reynolds 1959: 155, Humboldt deposit.

259. PROMENETUS RUBELLUS Sterki 1894. Walker 1918: 102. Sterki 1920: 174, Tinkers Creek marl; p. 182, Castalia marl. Baker 1945: 482, New Philadelphia.

260. PROMENETUS UMBILICATELLUS (Cockerell) 1887. Sterki 1907: 383, 399. Walker 1918: 104. Baker 1928: 383; 1945: 182.

261. PSEUDOSUCCINEA COLUMELLA (Say) 1817. Baker 1911: 163. Sterki 1920: 174, Tinkers Creek marl. Baker 1928: 272. Dexter 1953: 30, 31.

262. PSEUDOSUCCINEA COLUMELLA CASTA (Lea) 1841. Baker 1911: 174.

263. PSEUDOSUCCINEA COLUMELLA CHALYBEA (Gould) 1840. Sterki 1907: 382. Baker 1911: 71.

264. RADIX AURICULARIA (Linnaeus) 1758. Baker 1911: 179. Walker 1918: 93. Baker 1928: 195. Ahlstrom 1930: 45.

265. (Rhodacmea elatior (Anthony) 1855). Sterki 1907: 400, "probably or possibly to be found in Ohio." Probably not Ohio.

266. STAGNICOLA CAPERATA (Say) 1829. Sterki 1907: 382. Baker 1911: 225. Sterki 1920: 182, Castalia marl. Baker 1928: 260.

267. STAGNICOLA CAPERATA, form ? Sterki 1920: 182, Castalia marl.

268. STAGNICOLA CATASCOPIUM (Say) 1817. Sterki 1907: 382. Baker 1911: 380; 1928: 250.

269. STAGNICOLA DESIDIOSA (Say) 1821. Sterki 1907: 382. Baker 1911: 316.

270. STAGNICOLA EXILIS (Lea) 1837. Baker 1911: 343; 1928: 226.

271. STAGNICOLA KIRTLANDIANA (Lea) 1841. Sterki 1907: 382. Baker 1911: 348.

272. STAGNICOLA LANCEATA (Gould) 1848. Baker 1911: 350; 1928: 228. La Rocque 1952: 12, Orleton deposit.

273. STAGNICOLA NASHOTAHENSIS Baker 1909. Sterki 1920: 182, Castalia marl.

274. STAGNICOLA PALUSTRIS (Müller) 1774. Sterki 1907: 381. Baker 1911: 298; 1920: 450, Rush Lake marl; 1928: 212. Dexter 1950: 25, Dollar Lake, Portage Co.; 1953: 30, 31.

275. STAGNICOLA PALUSTRIS ELODES (Say) 1821. Baker 1911: 322; 1928: 212. La Rocque 1952: 12, Orleton deposit.

276. STAGNICOLA REFLEXA (Say) 1821. Sterki 1907: 382. Baker 1911: 332. Sterki 1920: 182, Castalia marl. Baker 1928: 221.

277. STAGNICOLA REFLEXA WALKERI (Baker) 1902. Baker 1911: 341.

278. STAGNICOLA UMBROSA (Say) 1832. Baker 1911: 327; 1928: 220.

279. STAGNICOLA UMBROSA JOLIETENSIS (Baker) 1901. Baker 1911: 327; 1928: 220.

280. ?STAGNICOLA WOODRUFFI (F. C. Baker) 1901. Cockerell 1902: 96, probably eq. Lymnaea peregra. Baker 1911: 398; 1928: 256.

4. FRESHWATER OPERCULATES

281. AMNICOLA sp., undescribed, t. Walker. Sterki 1907: 387.

282. AMNICOLA sp., "smaller and rather different, may be distinct, t. Walker." Sterki 1920: 175, Tinkers Creek marl.

283. AMNICOLA BINNEYANA Hannibal 1913. Sterki 1907: 387; 1920: 175, Tinkers Creek marl. Baker 1928: 126. Berry 1943: 36.

284. AMNICOLA GELIDA Baker 1921. Baker 1928: 110.

285. AMNICOLA INTEGRA Say 1821. Sterki 1907: 387. Berry 1943: 32.

286. AMNICOLA LEIGHTONI Baker 1920. Baker 1920: 448, Rush Lake marl; 1928: 120. Reynolds 1959: 155, Humboldt deposit.

287. AMNICOLA LIMOSA (Say) 1817. Sterki 1907: 386; 1920: 175, Tinkers Creek marl. Dennis 1928: 4. Berry 1943: 23. Dexter 1950: 25, Dollar Lake, Portage Co.

288. AMNICOLA LIMOSA PARVA Lea 1841. Sterki 1907: 386. Walker 1918: 135. Baker 1928: 102.

289. (Amnicola limosa porata (Say) 1821). Sterki 1907: 386. Berry 1943: 23, synonym of A. limosa.

290. AMNICOLA LUSTRICA Pilsbry 1890. Sterki 1907: 387; 1920: 175, Tinkers Creek marl. Baker 1920: 448 (variety), Rush Lake marl; 1928: 104. Berry 1943: 29.

291. AMNICOLA LUSTRICA PERLUSTRICA Baker 1928. Baker 1928: 109.

292. AMNICOLA PILSBRYI Walker 1906. Sterki 1907: 387, 399. Walker 1918: 135. Baker 1928: 118.

293. AMNICOLA WALKERI Pilsbry 1898. Sterki 1907: 387. Walker 1918: 136. Baker 1920: 448, Rush Lake marl. Berry 1943: 26.

294. ANCULOSA PRAEROSA (Say) 1824. Sterki 1907: 386. Goodrich 1940: 20.

295. BULIMUS TENTACULATUS (Linnaeus) 1767. Sterki 1907: 386. Baker 1928: 81. Berry 1943: 53.

296. CAMPELOMA DECISUM (Say) 1817. Sterki 1907: 384. Baker 1928: 57.

297. (Campeloma decisum fecundum (Lewis) 1868). Sterki 1907: 384. Walker 1918: 127, not valid.

298. CAMPELOMA INTEGRUM (Say) 1821. Sterki 1907: 384. Baker 1928: 63.

299. CAMPELOMA INTEGRUM OBESUM ("Lewis" Binney) 1865. Sterki 1907: 384. Walker 1918: 128.

300. CAMPELOMA PONDEROSUM (Say) 1821. Sterki 1907: 384. Walker 1915: 121-127.

301. CAMPELOMA RUFUM (Haldeman) 1841. Sterki 1907: 385. Walker 1918: 128. Baker 1928: 68. Dennis 1928: 3. Reynolds 1959: 155, Humboldt deposit (C. cf. C. rufum).

302. CAMPELOMA SUBSOLIDUM (Anthony) 1860. Sterki 1907: 384. Walker 1918: 129. Dennis 1928: 3.

303. (Goniobasis brevispira Anthony). Sterki 1907: 386. Eq. G. semicarinata, fide Goodrich.

304. (Goniobasis depygis (Say) 1829). Sterki 1907: 401, Middletown deposit. Eq. Lithasia obovata depygis, q.v.

305. (Goniobasis elata (Anthony) 1850). Sterki 1907: 385. Eq. G. livescens, fide Goodrich.

306. (Goniobasis exilis (Haldeman) 1841). Sterki 1907: 386. Eq. G. semicarinata, fide Goodrich.

307. GONIOBASIS HALDEMANI Tryon 1865. Sterki 1907: 386, "listed from Ohio." Goodrich 1939: 4, Lake Erie.

308. (Goniobasis infantula Lea 1863). Sterki 1907: 386, "listed from Ohio." Eq. Lithasia obovata, fide Goodrich.

309. GONIOBASIS LAQUEATA (Say) 1829. Sterki 1907: 386. Goodrich 1940: 14.

310. (Goniobasis lithasioides Lea 1863). Sterki 1907: 386, "listed from Ohio." Eq. G. livescens, fide Goodrich

311. GONIOBASIS LIVESCENS (Menke) 1830. Sterki 1907: 385; 1920: 183, Castalia marl. Goodrich 1940: 18; 1945: 36 pp. La Rocque and Conley 1956: 326, Hunters Run deposit.

312. (Goniobasis livescens depygis Say 1829). Sterki 1907: 385. Eq. Lithasia obovata.

313. GONIOBASIS LIVESCENS GRACILIOR (Anthony) 1854. Sterki 1907: 385. Goodrich 1939: 4.

314. (Goniobasis ohioensis Lea 1862). Sterki 1907: 386, "listed from Ohio." Eq. G. semicarinata, fide Goodrich.

315. (Goniobasis pulchella Anthony 1850). Sterki 1907: 385. Eq. G. semicarinata, fide Goodrich.

316. GONIOBASIS SEMICARINATA (Say) 1829. Sterki 1907: 385. Goodrich 1940: 18.

317. (Goniobasis vicina (Anthony) 1854). Sterki 1907: 385. Eq. Lithasia obovata depygis, fide Goodrich.

318. HYDROBIA NICKLINIANA (Lea) 1839. Sterki 1907: 387. Walker 1918: 138. Berry 1943: 44.

319. LIOPLAX SUBCARINATA (Say) 1817. Sterki 1907: 385. Walker 1918: 26. Baker 1928: 49.

320. LIOPLAX SUBCARINATA OCCIDENTALIS Pilsbry 1935. Nautilus 48: 135.

321. LITHASIA OBOVATA (Say) 1829. Sterki 1907: 386. Goodrich 1940: 6.

322. LITHASIA OBOVATA DEPYGIS (Say) 1829. Sterki 1907: 385. Goodrich 1940: 6.

323. LITHASIA PENNSYLVANICA Pilsbry 1916, Naut. 30: 4-5. Walker 1918: 159.

324. LITHASIA VERRUCOSA (Rafinesque) 1820. Goodrich 1940: 5.

325. (Lyogyrus granum (Say). Sterki 1920: 175, Tinkers Creek marl. See Amnicola walkeri Pilsbry 1898, fide Berry 1943: 29.

326. LYOGYRUS PUPOIDEUS (Gould) 1840. Sterki 1907: 387.

327. NITOCRIS TRILINEATA (Say) 1829. Sterki 1907: 386. Goodrich 1940: 20.

328. PLEUROCERA ACUTUM Rafinesque 1831. Sterki 1907: 385. Walker 1918: 151.

329. PLEUROCERA CANALICULATUM (Say) 1821. Sterki 1907: 385. Goodrich 1940: 9.

330. PLEUROCERA CANALICULATUM UNDULATUM (Say) 1829. Sterki 1907: 385. Goodrich 1940: 9.

331. (Pleurocera conicum (Say) 1821). Sterki 1907: 385. Eq. P. canaliculatum.

332. (Pleurocera elevatum (Say) 1821). Sterki 1907: 385. Eq. P. canaliculatum.

333. (Pleurocera ellipticum Anthony). Sterki 1907: 385, "listed from Ohio." Not located.

334. (Pleurocera labiatum (Lea) 1862). Sterki 1907: 385, a variety of neglectum (?).

335. (Pleurocera neglectum (Anthony) 1854). Sterki 1907: 385. Eq. P. acutum Rafinesque.

336. (Pleurocera pallidum (Lea) 1862). Sterki 1907: 385, "listed from Ohio." Eq. P. acutum.

337. (Pleurocera simplex (Lea) 1862). Sterki 1907: 385, "listed from Ohio." Eq. P. canaliculatum (Say).

338. (Pleurocera troostii (Lea) 1862). Sterki 1907: 385, "listed from Ohio." Eq. P. canaliculatum (Say).

339. POMATIOPSIS CINCINNATIENSIS (Lea) 1840. Sterki 1907: 386. Berry 1943: 58.

340. POMATIOPSIS LAPIDARIA (Say) 1817. Sterki 1907: 386; 401, Middletown deposit; 402, Defiance ?loess; 1920: 183, Castalia marl. Berry 1943: 58.

341. PYRGULOPSIS LETSONI (Walker) 1901. Walker 1918: 139. Baker 1928: 140.

342. SOMATOGYRUS INTEGER (Say) 1829. Sterki 1907: 386. Walker 1918: 144.

343. SOMATOGYRUS SUBGLOBOSUS (Say) 1825. Sterki 1907: 386. Walker 1918: 145. Baker 1928: 155.

344. SOMATOGYRUS SUBGLOBOSUS ISOGONUS (Say) 1829. Baker 1928: 159 (Birgella).

345. SOMATOGYRUS TROTHIS Doherty 1878. Walker 1918: 146, Ohio River.

346. ?VALVATA BICARINATA Lea 1841. Sterki 1907: 387, has seen no specimens of the typical form from Ohio. Baker 1928: 18.

347. VALVATA LEWISI Currier 1868. Sterki 1907: 387. Baker 1928: 26. La Rocque 1952: 12, Orleton deposit.

348. VALVATA PERDEPRESSA Walker 1906. Sterki 1907: 387. Baker 1928: 21.

349. VALVATA PERDEPRESSA WALKERI Baker 1930. La Rocque 1953: 264.

350. VALVATA PISCINALIS Müller 1774. Walker 1918: 131. La Rocque 1953: 264.

351. VALVATA SINCERA Say 1824. Sterki 1907: 387. Baker 1920: 447, Rush Lake marl. Sterki 1920: 175, Tinkers Creek marl. Baker 1928: 23.

352. VALVATA TRICARINATA (Say) 1817. Sterki 1907: 387 (incl. var. simplex Gould); 1920: 175, Tinkers Creek marl. Baker 1920: 447, Rush Lake marl, including vars. perconfusa Walker and unicarinata De Kay. Dexter 1950: 25, Dollar Lake, Portage Co. Reynolds 1959: 155, Humboldt deposit.

353. VIVIPARUS CONTECTOIDES Binney 1865. Sterki 1914: 271. Baker 1928: 35.

354. VIVIPARUS MALLEATUS Reeve 1863. Robertson and Blakeslee 1948: 80. La Rocque 1953: 266.

5. LAND GASTROPODA

355. ALLOGONA PROFUNDA (Say) 1824. Sterki 1907: 401, Middletown deposit; 402, Defiance ?loess; 1920: 174, Tinkers Creek marl; 179, Castalia marl. Baker 1920: 456. Ahlstrom 1930: 44. Pilsbry 1940: 877.

356. ALLOGONA PROFUNDA STRONTIANA (Clapp) 1916. Ahlstrom 1930: 44. Pilsbry 1940: 880.

357. ANGUISPIRA ALTERNATA (Say) 1816. Sterki 1907: 377; 401, Middletown deposit; 402, Defiance ?loess; 1920: 178, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1948: 568. Dexter 1950: 25, Dollar Lake, Portage Co.

358. ANGUISPIRA ALTERNATA ERIENSIS (Clapp) 1916. Ahlstrom 1930: 45. Pilsbry 1948: 572.

359. ANGUISPIRA KOCHI (Pfeiffer) 1845. Sterki 1907: 377; 401, Middletown deposit; 402, Defiance ?loess; 1920: 178, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1948: 591.

360. ANGUISPIRA KOCHI form MYNESITES (Clapp) 1916. Pilsbry 1948: 593.

361. ANGUISPIRA KOCHI STRONTIANA (Clapp) 1916. Pilsbry 1948: 594.

362. ANGUISPIRA KOCHI ROSEOAPICATA (Clapp) 1916. Pilsbry 1948: 594.

363. CARYCHIUM EXIGUUM (Say) 1922. Sterki 1907: 381; 1920: 174, Tinkers Creek marl, 181, Castalia marl. Pilsbry 1948: 1052.

364. CARYCHIUM EXILE H. C. Lea 1842. Sterki 1907: 381; 1920: 181, Castalia marl. Pilsbry 1948: 1058.

365. CARYCHIUM EXILE CANADENSE Clapp 1906. Pilsbry 1948: 1059. Leonard 1953: 372, Farmdale ?loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

366. ?CEPAEA HORTENSIS (Müller) 1774. Pilsbry 1939: 6; Ingram 1952: 26, ff., sold as fish bait, Cincinnati. No record of permanent establishment in the state.

367. CIONELLA LUBRICA (Müller) 1774. Sterki 1907: 380. Ahlstrom 1930: 45. Pilsbry 1948: 1047; Leonard 1953: 372, Sangamon, Farmdale? loess, and Lower and Upper pro-Tazewell loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

368. CIONELLA LUBRICA MORSEANA Doherty 1878. Pilsbry 1948: 1049.

369. COLUMELLA ALTICOLA (Ingersoll) 1875. Pilsbry 1948: 1003. Leonard 1953: 372, pro-Tazewell loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

370. COLUMELLA EDENTULA (Draparnaud) 1805. Sterki 1907: 378; 1920: 178, Castalia marl. Pilsbry 1948: 1002.

371. DEROCERAS? sp., Sterki 1920: 178, Castalia marl (Limax --- ?). La Rocque and Forsyth 1957: 85, Sidney Cut.

372. DEROCERAS cf. D. AENIGMA Leonard 1950. La Rocque and Conley 1956: 326, Hunters Run.

373. DEROCERAS LAEVE (Müller) 1774. Sterki 1920: 178, Castalia marl. Pilsbry 1948: 539. Dexter 1953: 30, 31.

374. DEROCERAS RETICULATUM (Müller) 1774. Sterki 1907: 375. Pilsbry 1948: 534. Dexter 1953: 30, 31.

375. DISCUS CRONKHITEI (Newcomb) 1865. Sterki 1907: 377; 402, Defiance ?loess; 1920: 174, Tinkers Creek marl; 178, Castalia marl. Ahlstrom 1930: 45 (D. c. anthonyi). Pilsbry 1948: 600. La Rocque and Forsyth 1957: 85, Sidney Cut.

376. ?DISCUS CRONKHITEI CATSKILLENSIS (Pilsbry) 1898. Pilsbry 1948: 605, implied; N. Y., N. J. to Minn., and S. D.

377. DISCUS McCLINTOCKI (Baker) 1928. Pilsbry 1948: 606. Leonard 1953: 372, Farmdale? loess, Cleveland.

378. DISCUS PATULUS (Deshayes) 1830. Sterki 1907: 377; 1920: 178, Castalia marl. Pilsbry 1948: 608. Dexter 1950: 25, Dollar Lake, Portage Co. Leonard 1953: 372, Lower and Upper pro-Tazewell loess, Cleveland.

379. EUCONULUS CHERSINUS (Say) 1821. Sterki 1907: 375; 1920: 178, Castalia marl. Pilsbry 1946: 239.

380. EUCONULUS CHERSINUS POLYGYRATUS (Pilsbry) 1899. Pilsbry 1946: 240, implied.

381. EUCONULUS FULVUS (Müller) 1774. Sterki 1907: 374; 1920: 178, Castalia marl. Pilsbry 1946: 235. Leonard 1953: 372, Sangamon, Farmdale? loess, Lower and Upper pro-Tazewell loess, Cleveland.

382. EUCONULUS? sp., La Rocque and Forsyth 1957: 85, ff., Sidney Cut.

383. GASTROCOPTA ARMIFERA (Say) 1821. Sterki 1907: 379; 1920: 179, Castalia marl. Ahlstrom 1930: 44. Pilsbry 1948: 874.

384. GASTROCOPTA CARNEGIEI (Sterki) 1916. Pilsbry 1948: 890.

385. GASTROCOPTA CONTRACTA (Say) 1822. Sterki 1907: 379; 402, Defiance ?loess; 1920: 180, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1948: 880.

386. GASTROCOPTA CORTICARIA (Say) 1816. Sterki 1907: 379; 1920: 180, Castalia marl. Pilsbry 1948: 894.

387. GASTROCOPTA HOLZINGERI (Sterki) 1889. Sterki 1907: 379. Pilsbry 1948: 883.

388. GASTROCOPTA PENTODON (Say) 1821. Sterki 1907: 379; 1920: 180, Castalia marl. Pilsbry 1948: 886.

389. (Gastrocopta pentodon gracilis Sterki 1890). Sterki 1907: 379. A synonym of G. pentodon, fide Pilsbry 1948: 886.

390. GASTROCOPTA PROCERA (Gould) 1840. Sterki 1907: 378. Pilsbry 1948: 907.

391. GASTROCOPTA TAPPANIANA (C. B. Adams) 1842. Sterki 1907: 379; 1920: 180, Castalia marl. Pilsbry 1948: 889.

392. GASTRODONTA INTERNA (Say) 1822. Sterki 1907: 373. Pilsbry 1946: 428.

393. GUPPYA STERKII (Dall) 1888. Sterki 1907: 375. Pilsbry 1946: 245.

394. HAPLOTREMA CONCAVUM (Say) 1821. Sterki 1907: 375; 401, Middletown deposit; 402, Defiance ?loess; 1920: 178, Castalia marl. Baker 1920: 456. Pilsbry 1946: 208.

395. HAWAIIA MINUSCULA (Binney) 1840. Sterki 1907: 373; 1920: 178, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1946: 420. Dexter 1950: 25, Dollar Lake, Portage Co. La Rocque 1952: 12, Orleton deposit. Leonard 1953: 372, Farmdale? loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

396. HELICODISCUS sp., La Rocque and Forsyth 1957: 85, Sidney Cut.

397. HELICODISCUS PARALLELUS (Say) 1821. Sterki 1907: 378; 1920: 178, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1948: 625.

398. HELICODISCUS SINGLEYANUS (Pilsbry) 1890. Sterki 1907: 373; 402, Defiance ?loess. Pilsbry 1948: 636.

399. HELICODISCUS SINGLEYANUS INERMIS H. B. Baker 1929. Pilsbry 1948: 637, implied; Ind., Penna.

400. HENDERSONIA OCCULTA (Say) 1831. Pilsbry 1948: 1087. Leonard 1953: 372, Sangamon, Farmdale? loess, Lower and Upper pro-Tazewell loess, Cleveland. La Rocque and Conley 1956: 326, Hunters Run.

401. LIMAX FLAVUS Linnaeus 1758. Sterki 1907: 375, has seen no specimens, but "probably in greenhouses and nurseries." Pilsbry 1948: 528.

402. LIMAX MAXIMUS Linnaeus 1758. Sterki 1907: 375, introduced. Pilsbry 1948: 524.

403. MESODON APPRESSUS (Say) 1821. Sterki 1907: 375. Pilsbry 1940: 749.

404. MESODON CLAUSUS (Say) 1821. Sterki 1907: 376; 402, Defiance ?loess. Baker 1920: 457. Pilsbry 1940: 712. La Rocque 1952: 12, Orleton deposit.

405. MESODON ELEVATUS (Say) 1821. Sterki 1907: 376; 401, Middletown deposit; 402, Defiance ?loess. Baker 1920: 456. Pilsbry 1940: 727.

406. MESODON INFLECTUS (Say) 1821. Sterki 1907: 376; 402, Defiance ?loess. Ahlstrom 1930: 44. Pilsbry 1940: 770.

407. MESODON MITCHELLIANUS (Lea) 1839. Sterki 1907: 376; 402, Defiance ?loess. Pilsbry 1940: 715.

408. MESODON PENNSYLVANICUS (Green) 1827. Sterki 1907: 376; 1920: 179, Castalia marl. Pilsbry 1940: 726. Webb 1943: 42-45.

409. (Mesodon sayanus (Pilsbry) 1906). Sterki 1907: 375. Pilsbry 1940: 762, not Ohio.

410. MESODON THYROIDUS (Say) 1816. Sterki 1907: 376; 401, Middletown deposit; 402, Defiance ?loess; 1920: 179, Castalia marl. Ahlstrom 1930: 44. Pilsbry 1940: 706. Dexter 1950: 25, Dollar Lake, Portage Co.

411. MESODON ZALETUS (Binney) 1837. Sterki 1907: 376; 402, Defiance ?loess. Baker 1920: 456. Pilsbry 1940: 722.

412. MESOMPHIX CUPREUS (Rafinesque) 1831. Sterki 1907: 374. Pilsbry 1946: 333.

413. MESOMPHIX FRIABILIS (W. G. Binney) 1857. Sterki 1907: 374. Pilsbry 1946: 328, not Ohio.

414. MESOMPHIX INORNATUS (Say) 1821. Sterki 1907: 374. Pilsbry 1946: 307.

415. (Mesomphix subplanus (Binney) 1842). Sterki 1907: 374. Pilsbry 1946: 312, Tenn. and N. C. only.

416. MESOMPHIX VULGATUS H. B. Baker 1933. Sterki 1907: 374. Pilsbry 1946: 324.

417. ?OTALA LACTEA Müller 1774. Pilsbry 1939: 11. Ingram 1952: 26, sold as fish bait, Cincinnati. Not necessarily established.

418. OXYCHILUS ALLIARIUS (Miller) 1822. Sterki 1907: 374. Pilsbry 1946: 251.

419. OXYCHILUS CELLARIUS (Müller) 1774. Sterki 1907: 374. Pilsbry 1946: 249.

420. OXYCHILUS DRAPARNALDI (Beck) 1837. Sterki 1907: 374. Pilsbry 1946: 250.

421. OXYLOMA DECAMPI GOULDI Pilsbry 1948. Pilsbry 1948: 782, implied.

422. OXYLOMA RETUSA (Lea) 1834. Sterki 1907: 380; 402, Defiance ?loess (O. retusa or near); 1920: 181, Castalia marl; 174, Tinkers Creek marl. Ahlstrom 1930: 45. Pilsbry 1948: 785. Dexter 1950: 25, Dollar Lake, Portage Co. La Rocque 1952: 12, Orleton deposit. La Rocque and Conley 1956: 326, Hunters Run deposit. Dexter 1953: 30, 31.

423. PALLIFERA DORSALIS (Binney) 1842. Sterki 1907: 377. Pilsbry 1948: 760.

424. PALLIFERA FOSTERI F. C. Baker 1939. Pilsbry 1948: 768, not Ohio. Dexter 1955: 35, 36, Portage Co.

425. PALLIFERA HEMPHILLI (Binney) 1885. Pilsbry 1948: 765, implied.

426. PALLIFERA MUTABILIS Hubricht 1951, Naut. 65: 57, implied.

427. PALLIFERA OHIOENSIS (Sterki) 1916. Pilsbry 1948: 763.

428. PARAVITREA CAPSELLA (Gould) 1851. Pilsbry 1948: 374.

429. (Paravitrea lamellidens (Pilsbry) 1898). Sterki 1907: 374. Pilsbry 1946: 358, Tenn. and N. C. only, "probably P. multidentata lamellata H. B. Baker, a sporadic variant."

430. PARAVITREA MULTIDENTATA (Binney) 1840. Sterki 1907: 374. Pilsbry 1946: 352.

431. PHILOMYCUS CAROLINIANUS (Bosc) 1802. Sterki 1907: 377. Pilsbry 1948: 753.

432. PHILOMYCUS CAROLINIANUS FLEXUOLARIS Rafinesque 1820. Pilsbry 1948: 756.

433. ?PHILOMYCUS PENNSYLVANICUS (Pilsbry) 1894. Sterki 1907: 377. Pilsbry 1948: 767, "practically a nude name."

434. PUNCTUM MINUTISSIMUM (Lea) 1841. Sterki 1907: 378; 1920: 178, Castalia marl. Pilsbry 1948: 644.

435. ?PUNCTUM VITREUM H. B. Baker 1930. Pilsbry 1948: 649, possibly implied: Penna., Ind., Tenn.

436. PUPILLA MUSCORUM (Linnaeus) 1758. Sterki 1907: 378. Pilsbry 1948: 933. Leonard 1953: 372, Sangamon, Farmdale? loess, Lower and Upper pro-Tazewell loess, Cleveland.

437. PUPOIDES ALBILABRIS (C. B. Adams) 1841. Sterki 1907: 378; 1920: 179, Castalia marl. Pilsbry 1948: 921.

438. QUICKELLA VERMETA (Say) 1829. Sterki 1907: 380. Hubricht 1958: 60, ff.

439. RETINELLA sp. (fragments), La Rocque and Conley 1956: 326, Hunters Run deposit.

440. RETINELLA BINNEYANA (Morse) 1864. Sterki 1907: 374. Pilsbry 1946: 259.

441. RETINELLA ELECTRINA (Gould) 1841. Sterki 1907: 374; 402, Defiance ?loess; 1920: 178, Castalia marl. Pilsbry 1946: 256.

442. RETINELLA INDENTATA (Say) 1823. Sterki 1907: 374; 402, Defiance ?loess; 1920: 174, Tinkers Creek marl; 178, Castalia marl. Baker 1920: 455. Ahlstrom 1930: 45. Pilsbry 1946: 288.

443. RETINELLA RHOADSI (Pilsbry) 1899. Sterki 1920: 178, Castalia marl. Pilsbry 1946: 286.

444. RETINELLA WHEATLEYI (Bland) 1883. Sterki 1907: 374; 1920: 178, Castalia marl. Pilsbry 1946: 272.

445. STENOTREMA sp., La Rocque and Forsyth 1957: 85, Sidney Cut.

446. STENOTREMA FRATERNUM (Say) 1824. Sterki 1907: 377. Baker 1920: 457. Pilsbry 1940: 681.

447. ?STENOTREMA FRATERNUM CAVUM (Pilsbry and Vanatta) 1911. Pilsbry 1940: 684, implied: Ind., Mich., Penna., but validity in doubt.

448. STENOTREMA HIRSUTUM (Say) 1817. Sterki 1907: 377; 401, Middletown deposit; 402, Defiance ?loess. Baker 1920: 179. Sterki 1920: 179, Castalia marl. Pilsbry 1940: 662. Dexter 1950: 25, Dollar Lake, Portage Co.

449. STENOTREMA LEAII (Binney) 1878. Sterki 1907: 377; 401, Middletown deposit; 1920: 179, Castalia marl. Pilsbry 1940: 676; 1948: 1099. La Rocque 1952: 12, Orleton deposit. Leonard 1953: 372, Lower and Upper pro-Tazewell loess, Cleveland.

450. ?STENOTREMA LEAII ALICIAE (Pilsbry) 1893. Pilsbry 1940: 679, possibly implied: Iowa, Ill., Ind., Ky., Md.

451. STENOTREMA STENOTREMA (Pfeiffer) 1842. Sterki 1907: 376. Baker 1920: 457. Pilsbry 1940: 655.

452. STRIATURA EXIGUA (Stimpson) 1850. Sterki 1907: 373; Pilsbry 1946: 490.

453. STRIATURE FERREA Morse 1864. Sterki 1907: 374. Pilsbry 1946: 497.

454. STRIATURA MILIUM (Morse) 1859. Sterki 1907: 373. Pilsbry 1946: 495.

455. STROBILOPS AENEA Pilsbry 1926. Pilsbry 1948: 862. Dexter 1950: 25, Dollar Lake, Portage Co.

456. STROBILOPS AFFINIS Pilsbry 1893. Sterki 1907: 378; 1920: 179, Castalia marl. Pilsbry 1948: 860.

457. STROBILOPS LABYRINTHICA (Say) 1817. Sterki 1907: 378 (incl. var. virgo); 1920: 179, Castalia marl. Pilsbry 1948: 854, implied. Leonard 1953: 372, Farmdale? loess, Cleveland.

458. SUBULINA OCTONA Bruguière 1792. Sterki 1914: 272. Pilsbry 1946: 173.

459. SUCCINEA sp., Sterki 1907: 401, Middletown deposit.

460. SUCCINEA AUREA Lea 1846. Sterki 1907: 380. Pilsbry 1948: 815.

461. SUCCINEA AVARA Say 1824. Sterki 1907: 380, 402, Defiance ?loess; 1920: 174, Tinkers Creek marl; 181, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1948: 837, implied. La Rocque and Forsyth 1957: 85, Sidney Cut.

462. SUCCINEA GROSVENORI Lea 1864. Pilsbry 1948: 819, implied. Leonard 1953: 372, Sangamon, Farmdale? loess, Lower and Upper pro-Tazewell loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

463. SUCCINEA GROSVENORI GELIDA Baker 1927. Pilsbry 1948: 823, Ill. Leonard 1953: 372, Lower and Upper pro-Tazewell loess, Cleveland.

464. SUCCINEA OVALIS SAY 1817. Sterki 1907: 380; 1920: 174, Tinkers Creek marl; 181, Castalia marl. Pilsbry 1948: 801. La Rocque 1952: 12, Orleton deposit.

465. SUCCINEA OVALIS OPTIMA Pilsbry 1908. Pilsbry 2: 805, implied.

466. TRIODOPSIS ALBOLABRIS (Say) 1816. Sterki 1907: 376; 402, Defiance ?loess; 1920: 179, Castalia marl. Ahlstrom 1930: 44. Pilsbry 1940: 835.

467. TRIODOPSIS DENOTATA (Férussac) 1823. Sterki 1907: 376; 1920: 179, Castalia marl. Pilsbry 1940: 821; 1948: 1100.

468. (Triodopsis dentifera (Binney) 1837). Sterki 1907: 376. Pilsbry 1940: 844, Pa., W. Va. Dexter 1950: 25, Dollar Lake, Portage Co.

469. TRIODOPSIS FRAUDULENTA VULGATA Pilsbry 1940. Sterki 1907: 376; 402, Defiance ?loess; 1920: 179, Castalia marl. Baker 1920: 456. Pilsbry 1940: 805.

470. TRIODOPSIS MULTILINEATA (Say) 1821. Sterki 1907: 375; 402, Defiance ?loess; 1920: 179, Castalia marl. Ahlstrom 1930: 44 (including T. m. rubra). Pilsbry 1940: 847.

471. ?TRIODOPSIS OBSTRICTA (Say) 1821. Sterki 1907: 376, has seen no specimens. Pilsbry 1940: 827, doubtful.

472. TRIODOPSIS TRIDENTATA (Say) 1816. Sterki 1907: 376; 401, Middletown deposit; 1920: 179, Castalia marl. Baker 1920: 456. Pilsbry 1940: 792.

473. TRIODOPSIS TRIDENTATA DISCOIDEA (Pilsbry) 1904. Sterki 1907: 376. Pilsbry 1940: 799.

474. TRIODOPSIS TRIDENTATA JUXTIDENS (Pilsbry) 1894. Pilsbry 1940: 798.

475. VALLONIA COSTATA (Müller) 1774. Sterki 1907: 378. Ahlstrom 1930: 44. Pilsbry 1948: 1026.

476. VALLONIA EXCENTRICA Sterki 1883. Sterki 1907: 378. Pilsbry 1948: 1025.

477. VALLONIA GRACILICOSTA Reinhardt 1883. Pilsbry 1948: 1028, nearest records Minn. and Mo. La Rocque and Forsyth 1957: 85, Sidney Cut.

478. VALLONIA PARVULA Sterki 1893. Sterki 1907: 378. Ahlstrom 1930: 44. Pilsbry 1948: 1027.

479. VALLONIA PERSPECTIVA Sterki 1893. Pilsbry 1948: 1033, implied.

480. VALLONIA PULCHELLA (Müller) 1774. Sterki 1907: 378; 1920: 179, Castalia marl. Ahlstrom 1930: 44. Pilsbry 1948: 1023, fossil. Other records (Ill., Penna., Md., Ky.) imply that it might also be living in the state.

481. ?VENTRIDENS COLLISELLA (Pilsbry) 1896. Sterki 1907: 373. Pilsbry 1946: 450, gives only Ala., Tenn., and Va.

482. VENTRIDENS DEMISSUS (Binney) 1843. Sterki 1907: 373. Pilsbry 1946: 460.

483. VENTRIDENS GULARIS (Say) 1822. Sterki 1907: 373. Pilsbry 1946: 443.

484. VENTRIDENS INTERTEXTUS (Binney) 1841. Sterki 1907: 373. Pilsbry 1946: 468.

485. (Ventridens lasmodon (Phillips) 1841). Sterki 1907: 373; 1914: 270, erroneous for Ohio. Pilsbry 1946: 457, gives only Ala. and Tenn.

486. VENTRIDENS LIGERA (Say) 1821. Sterki 1907: 373; 402, Defiance ?loess; 1920: 178, Castalia marl. Pilsbry 1946: 465.

487. VENTRIDENS SUPPRESSUS (Say) 1829. Sterki 1907: 373. Pilsbry 1946: 438.

488. VERTIGO ALPESTRIS OUGHTONI Pilsbry 1948. Pilsbry 1948: 969. Leonard 1953: 372, Sangamon, Farmdale? loess, Cleveland. La Rocque and Forsyth 1957: 85, Sidney Cut.

489. VERTIGO BOLLESIANA (Morse) 1865. Pilsbry 1948: 981, implied: Ind., Mich., Ont., N. Y., Va., Tenn.

490. VERTIGO ELATIOR Sterki 1894. Sterki 1907: 379; 1920: 181, Castalia marl. Pilsbry 1948: 956, fossil.

491. VERTIGO GOULDII (Binney) 1843. Sterki 1907: 380. Pilsbry 1948: 971.

492. VERTIGO MILIUM (Gould) 1840. Sterki 1907: 379; 1920: 181, Castalia marl. Pilsbry 1948: 944.

493. VERTIGO MODESTA (Say) 1824. Sterki 1907: 380. Pilsbry 1948: 982, implied.

494. VERTIGO MORSEI Sterki 1894. Sterki 1907: 379; 1920: 180, Castalia marl. Pilsbry 1948: 952, implied.

495. VERTIGO OVATA Say 1822. Sterki 1907: 379; 1920: 180, Castalia marl. Pilsbry 1948: 952. La Rocque 1952: 12, Orleton deposit.

496. VERTIGO PARVULA Sterki 1890. Sterki 1907: 380. Pilsbry 1948: 969. MacMillan 1944: 127-128.

497. VERTIGO PYGMAEA (Draparnaud) 1801. Sterki 1907: 379. Pilsbry 1948: 961. Leonard 1953: 372, Sangamon, Farmdale? loess, Lower and Upper pro-Tazewell loess, Cleveland.

498. VERTIGO TRIDENTATA Wolf 1870. Sterki 1907: 380; 1920: 181, Castalia marl. Pilsbry 1948: 965, implied.

499. VERTIGO VENTRICOSA (Morse) 1865. Sterki 1907: 379. Pilsbry 1948: 957.

500. ZONITOIDES ARBOREUS (Say) 1816. Sterki 1907: 373; 402, Defiance ?loess; 1920: 174, Tinkers Creek marl; 178, Castalia marl. Ahlstrom 1930: 45. Pilsbry 1946: 480.

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