

STERKIANA

NUMBER 30

COLUMBUS, OHIO

JUNE 1968

CONTENTS	PAGE
JUAN J. PARODIZ : ANNOTATED CATALOGUE OF THE GENUS <i>DIPLODON</i> (UNIONACEA-HYRIIDAE)	1
DOUGLAS A. WOLFE and JERALDINE BROOKS : A COLONY OF <i>EUGLANDINA ROSEA</i> AT BEAUFORT, NORTH CAROLINA	23
HAROLD D. MURRAY and EDWARD C. ROY, Jr. ; CHECKLIST OF FRESHWATER AND LAND MOLLUSKS OF TEXAS.	25
INDEX TO STERKIANA 21-30	

EDITORIAL BOARD

HENRY VAN DER SCHALIE, UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN
WILLIAM J. WAYNE, GEOLOGICAL SURVEY, BLOOMINGTON, INDIANA
DAVID H. STANSBERRY, OHIO STATE UNIVERSITY, COLUMBUS, OHIO
AURELE LA ROCQUE, OHIO STATE UNIVERSITY, COLUMBUS, OHIO

EDITOR

Aurèle La Rocque
Department of Geology
Ohio State University
125 S. Oval Drive
Columbus 10, Ohio

ANNOTATED CATALOGUE OF THE GENUS *DIPLODON*
(UNIONACEA - HYALIDAE)

J. J. PAROBIZ

Carnegie Museum, Pittsburgh, Pa.

The present catalogue lists all specific and subspecific names introduced since 1792 into the generic group now known as *Diplodon* Spix, 1827. Names in capitals are followed by the original reference of the taxon, and type locality. References have been kept to a minimum in order to simplify the procedure; for authors as d'Orbigny, Lea, and Simpson, who first diagnosed their species briefly without giving illustrations, the next reference with full description and figures is added. Lea usually reprinted his own description in several journals, but the original reference is followed by that of the 'Observations on the genus *Unio*,' which ran for 13 volumes and compiled all his descriptions and figures.

Subgeneric denominations are not indicated. Although there are embryological bases to divide *Diplodon* into subgenera characterized by larval forms, the results have not always been consistent with, or manifest in, those extracted from anatomi-

cal or conchological characteristics. Their introduction will require a discussion which is beyond the scope of this catalogue. Thus all the forms are listed as *Diplodon sensu lato*.

Actual status and nomenclature of each taxon is indicated following the ♀ sign. Such indication makes the catalogue taxonomically more useful than a bare checklist, and at the same time it reveals that a basic research on the genus taxonomy has necessarily been made. Many years in the observation and classification of the species of *Diplodon* led the author to experience not a few frustrations. *Diplodon* taxonomy always has been one of a difficult and complicated nature. Most of the large collections which I had opportunity to re-visit contain a considerable amount of mis-identified materials. In the literature of the genus it is not likely to be found two authors who agree even on half of the accepted taxa or synonyms; under such fashion, while some authors were creating more

names for taxa they could not identify with species already named, others were increasing the list of synonyms. The approaches to recognition of the valid species in this catalogue were made with the author's awareness that, far from being definitive, it is sure to have shortcomings. Nevertheless, it will help to clarify much of the confusion.

A factor which had called very little attention from previous authors, is the hybridization among closely related species of probably common ancestry. Not a small number of specific names which were synonymized under broadly defined species, simply as ecological or clinal variations, are usually found together in the same ecological locus. That any single species would present very distinct populations in the same locality or same type of habitat, is very unlikely; some of these *Diplodon* populations when confronted with the specific descriptions of Lea and d'Orbigny, and studied in detail, were perfectly identifiable. Also, some of the so-called subspecies have not sufficient allopatry to qualify as such; on the contrary, they overlap greatly. From all this it follows that the 'intermediaries' within or between these populations must have been the result of cross-breeding. The system of reproduction peculiar to the Naiades makes such hybridization not only feasible but also frequent. When related species of very close genetic affinity share a same locality, and male gametes of more than one species are drawn with the water into the inhalant female opening, fertilization may produce an heterozygous organism developing in company with others, which are perfectly pure or homozygous, in the marsupia. Thus a generation produced by a single female may be of heterogeneous composition. This has not been proved experimentally, but theoretically there is nothing to preclude such multiple fertilization, except that the limitation of the occurrence is determined only by the degree of relationship among the species involved; heterozygous individuals are com-

mon in the overlapping areas of subspecies, and to a lesser degree among the very closely related species of a superspecific monogenetic complex. In fact the modern concept of superspecies is based on these premises. A superspecific group contains both species and subspecies; while in subspecies the segregation is caused by geographic isolation, in the species of a superspecies the tendency to isolation is genetical, but not so completely as to preclude occasional interbreeding with other species of the same group.

Many species although identifiable conchologically, were declared synonyms on account of similarities in larval forms. Actually, the glochidia differ less between species than the adults. But overall similarity between two glochidia does not warrant the co-specificity of their adult individuals. While differences in glochidia are perfect indicators of differences in shell groups, similarities are not, because a number of specific characters become evident only after the individual reaches a certain stage in its development. It is for this reason that I consider *Diplodon variabilis*, *burroughianus*, *paranensis*, and *funerialis* as different species, even if their glochidia are almost identical.

The Notes have been numbered and grouped after the alphabetical listing. Since each note may discuss or compare more than one name such procedure results in economy of space. The bibliography cites only the titles corresponding to the references in the text.

All living and Tertiary species of *Diplodon* are South American. Older fossil records are only known from the Mesozoic of the Nearctic Region.

ACUTIROSTRIS

Unio Lea 1866: 34; 1869: 30, pl. 35, f. 84. Type loc.: South America (according to Haas: Uruguay River near Salto). = *Diplodon parallelipipidon* (Lea). See Note 1.

AETHIOPIFORMIS

Unio Ihering (in litteris). Nomen nudum. = *Diplodon parallelepipedon aethiops* (Lea). See notes 1, 2.

AETHIOPS

Unio Lea 1860: 91; 1863: 13, pl. 41, f. 285. Type loc.: Uruguay River. = *Diplodon parallelepipedon aethiops* (Lea). See Note 2.

AMPULLACEUS

Unio Lea 1866: 34; 1869: 29, pl. 35, f. 83. Type loc.: South America (Uruguay River near Salto). = *Diplodon uruguayensis* (Lea).

ANDINA

Unio frenzelli 'var.' *andina* Ihering 1893: 113. Type loc.: Cordillera of Patagonia (probably in province of Neuquén). = *Diplodon chilensis patagonicus* (d'Orb.).

APLATUS

Unio (Swainson MS) Sowerby in Reeve 1865, sp. 143. Type loc.: Island of Chiloe, Chile. = *Diplodon chilensis* (Gray). It appears like a hybrid with *patagonicus* in that area where the two subspecies overlap.

APPRIMUS

Unio Lea 1866: 34; 1869: 23, pl. 33, f. 78. Type loc.: Uruguay River near Salto. = *Diplodon uruguayensis* (Lea). See note 3.

ARAUCANUS

Unio Philippi 1847 (*Unio* IV): 10, pl. 4, f. 3. Type loc.: 'Austral province of Chile.' = *Diplodon chilensis* (Gray).

ARCUATUS

Diplodon Marshall 1922: 4, pl. 1, f. 4-6, pl. 2, f. 7, 10, pl. 3, f. 3. Type loc.: Barra of Arroyo Sacra, Paysandú, Uruguay. = *Diplodon variabilis* Maton. See note 4.

ASUNCIONIS

Diplodon Marshall 1926: 8, pl. 2, f. 2, 3, pl. 3, f. 5. Type loc.: Paraguay River at Asunción, Paraguay. = *Diplodon guaranianus* (d'Orb.). See note 5.

ATRATUS

Unio Sowerby, Conchol. Man. 1839 (no description) f. 148. Type loc.: not given. = *Diplodon chilensis* (Gray). Sowerby in the table of plates gives Lamarck as the author, but I have not found the name *atratus* among Lamarck's species. Not '*Natica atrata*' Swainson 1841 which is *Unio gracilis* Barnes.

AUREUS

Diplodon Simpson 1900: 883 (new name for *aureatus* Kuster 1856 not Philippi 1847). Type loc.: 'Chile.' = *Diplodon chilensis* (Gray).

BASSLERI

Prediplodon Marshall 1928: 3, pl. 1, f. 1. Type loc.: from strata of probable Miocene age (Pebas formation) of Pebas, eastern Peru. = *Diplodon bassleri* (Marsh.). See note 6.

BERTHAE

Diplodon Ortmann 1921: 528, pl. 38, f. 1-4, pl. 46, f. 6. Type loc.: Jacuhy River at Cachoeira, Rio Grande do Sul, Brazil; also Vaccahy River at Santa Maria. = *Diplodon piceus* (Lea). See note 2.

BESKEANUS

Unio Dunker 1848: 182. (Illustr. in Haas 1930 figs. 18-22). Type loc.: Minas Geraes, Brazil. = *Diplodon beskeanus* (Dunker). See note 7.

BIBLIANA

Ecuadorea Marshall 1932: 5, pl. 1, f. 7, 8. Type loc.: Biblian, NE of Azogue, in strata of Lower Miocene, Ecuador. = *Diplodon guaranianus biblianus* (Marsh.).

BINNEYI

Unio Lea 1845: 165; 1848: 51, pl. 6, f. 18. Type loc.: 'Southern states, U.S.A.' (a mistake, the form is probably from southern Brazil). = ? *Diplodon martensi* Ih. See note 8.

BISCHOFFI

Unio Ihering (in litteris). Nomen nudum.

BOETTGERI

Unio firmus 'var.' *boettgeri* Ihering 1893: 105, pl. 4, f. 2. Type loc.: Cambucy, in the Tietê River drainage, São Paulo, Brazil. = *Diplodon martensi* (Ihering). See note 9.

BOMPLANDI

Unio Valenciennes 1827? Nomen nudum. See note 1.

BONDENBENDERI

Diplodon Doello Jurado 1927: 411, pl. 3, f. 14-16, pl. 4, f. 18. Type loc.: from strata of the Jahuel Formation (Danian) Paleocene, at Bajo de Santa Rosa, 50 miles S. Negro River (Patagonia), Argentina. The most abundant fossil species to which belong most of the reported *Unios* from Rio Negro. = *Diplodon bondenbenderi* (D. J.). See note 6.

BOREALIS

Diplodon Pilsbry 1921: 33, text f. 5, a, b, c. Type loc.: from gray shales of Little Conewago Creek, Newark Series. (Triassic) of York County, Pennsylvania. = *Diplodon borealis* (Pils.). See note 6.

BROWNI

Unio Lea 1856: 95; 1857: 27, pl. 29, f. 22. Type loc.: Lea indicated that the specimens were obtained by Capt. Brown, in

Mocha, Asia! It must have been originally from southern Brazil. = *Diplodon rhombeus* (Wagner) Spix.

BULLOIDEUS

Unio Lea 1859: 187; 1860: 82, pl. 62, f. 144. Type loc.: Rio de la Plata. = *Diplodon variabilis* (Maton). See note 4

BURCKHARDTI

Unio Mayer-Eymar in Burckhardt 1900. 124, pl. 24, f. 6, 7. Type loc.: Valle de Paula between the rivers Bio Bio and Lonquimay, Chile, in the Lonquimay limestone, Upper Paleocene or Lowest Eocene. = *Diplodon burckhardti* (M. E.).

BURROUGHIANUS

Unio Lea 1834: 67, pl. 10, f. 27; Type loc.: Paraná River at Province of Corrientes, Argentina. = *Diplodon burroughianus* (Lea). See notes 4 and 20.

CAIPIRA

Unio Ihering 1893: 98, pl. 4, f. 9. Type loc.: Piracicaba, on the Tietê River, Sao Paulo, Brazil. = hybrid: *Diplodon uruguayensis* X *expansus*. See note 17.

CAROLUSIMPSONI

Diplodon Pilsbry 1921: 34, pl. 2, f. 4, 5, 6. Type loc.: Shale, Little Conewago Creek (Newark Series, Triassic), York County, Pennsylvania. See note 6. = *Diplodon carolusimpsoni* (Pils.).

CASABLANCAE

Unio Philippi 1848: 146; Pfeiffer 1869: 481, pl. 104, f. 1, 2. Type loc.: Casablanca, 20 km SW of Valparaiso, Chile. = *Diplodon chilensis* (Gray).

CHARRUANUS

Unio d'Orbigny 1835: 35; 1843: 606 (for reference to figures see note 10). Type loc.: 'Banda Oriental' -Uruguay. See note 2. = *Diplodon charruanus* (d'Orbigny).

CHILDRENI

Unio Griffith in Cuvier 1834: Index 600; pl. 20, f. 1. Type loc.: 'South America' (probably Chile). *Nomen nudum*, see note 11.

CHILENSIS

Unio Gray 1828: pl. 6, f. 12. Philippi 1847: 9, pl. 4, f. 2. Type loc.: 'Chile.' = *Diplodon chilensis* (Gray). See note 21.

CHILOENSIS

Unio Kuster 1856: 161, pl. 35, f. 6. Type loc.: Chiloé Island, Chile. = *Diplodon chilensis* (Gray).

COLCHAGUENSIS

Unio Philippi 1869: 47; Pfeiffer 1869: 484, pl. 104, f. 9-10. Type loc.: San Fernando, 80 km S. of Santiago, Colchagua, Chile. = *Diplodon chilensis* (Gray).

COLHUAPIENSIS

Diplodon Ihering 1903: 217, f. 2. Type loc.: Lake Colhue Huapi in strata of the 'Sehuenian' Paleocene (originally indicated as Upper Cretaceous), province of Chubut, Patagonia, Argentina. = *Diplodon colhuapiensis* (Ih.).

CORIACEUS

Unio Dunker 1848: 181. Type loc.: Rio Negro in State of Rio Janeiro, Brazil. = *Diplodon granosus* (Bruguière).

CUPRINUS

Unio Simpson 1900: 883 (new name for *fragilis* Sowerby, not Swainson). Type loc.: Chiloé Island, Chile. = *Diplodon chilensis* (Gray).

DECEPTUS

Diplodon fontaineanus 'var.' *deceptus* Simpson 1914: 1281. Type loc.: Guahyba River, Rio Grande do Sul, Brazil. = *Diplodon rotundus gratus* (Lea). See note 12.

DECIPIENS

Diplodon Ortmann 1921: 499, pl. 36, f. 3-6, pl. 45, f. 4, pl. 48, f. 7, text fig. 4e. Type loc.: a creek tributary of Iguaçu River at Serrinha, state of Paraná, Brazil. = *Diplodon martensi* (Ihering). See note 17.

DELODON

Unio Strobel 1874: 71. Type loc.: Argentina. = *Diplodon delodontus* (Lam.).

DELODONTUS

Unio delodonta Lamarck 1819: 77. Delessert 1841: pl. 12, f. 7. Type loc.: ? (The synonym *lacteolus* Lea is from Rio de la Plata). = *Diplodon delodontus* (Lamarck).

DEMERARENSIS

Unio Lea 1859: 152, 1860: 71, pl. 29, f. 133. Type loc.: Demerara River, British Guiana. = *Diplodon rhombeus* (Wagner). See note 14.

DEPRESSA

Unio 'Lamarck' d'Orbigny 1835: 34. Not *Unio depressa* Lam. 1819 from Australia = *cultelliformis* Conrad? D'Orbigny's references cannot be but *chilensis* as indicated by Haas.

DILUVII

Unio d'Orbigny 1842: 127, pl. 7, f. 12, 13. Type loc.: 'Falaises du Nord' (Barrancas al Norte) of the Negro River (Patagonia) Argentina, in Pliocene strata. Information from the British Museum confirmed that its type is lost; I have selected a neotype (collected by R. Wichmann in 1924) from the right bank of the Colorado River at Colorado, province of Rio Negro. = *Diplodon diluvi* (d'Orbigny).

DIPLODON

Unio Philippi 1869: 45; illustration

in Pfeiffer 1869: 483, pl. 104, f. 7, 8. Type loc.: Valdivia, Chile. = *Diplodon chilensis* (Gray).

Genus *Diplodon* Spix 1827. Type: *D. ellipticum* (Wagner).

DISCULUS

Unio Lea 1860: 91; 1863: 21, p. 44, f. 293. Type loc.: Uruguay River. = *Diplodon funebris* (Lea). See note 15.

DIVARICATUS

Unio Lea 1834: 64, pl. 9, f. 24. Type loc.: South America (Uruguay River). = *Diplodon delodontus delodontus* (Lam.).

DUNKERIANUS

Unio Lea 1856: 94; 1857: 25, pl. 23, f. 20. Type loc.: Rio Janeiro, Brazil; also New Granada! See note 16.

EFFULGENS

Unio Lea 1856: 94; 1857: 23, pl. 28, f. 18. Type loc.: Brazil (probably) Piracicaba, being the same as *eurhynchus*. = *Diplodon expansus* (Küster).

ELLIPTICUS

Unio Wagner in Spix 1827: 33, pl. 26, f. 2. Type loc.: San Francisco River, northern Brazil. = *Diplodon ellipticus* (Wagner); as *D. ellipticum* Spix in plate. See note 8.

ENNO

Diplodon Ortmann 1921: 531, pl. 38, f. 5, pl. 46, f. 7. Type loc.: Rio Grande at Boqueirao, Bahia, Brazil. = *Diplodon rotundus enno* (Ortmann). See note 12.

EURHYNCHUS

Unio Küster 1861: 237, pl. 79, f. 5. Type loc.: Brazil (Sao Paulo). = *Diplodon expansus* (Küster). See note 17.

EXPANSUS

Unio Küster 1856: 149, pl. 43, f. 5. Type loc.: Conigo River at Nova Friburgo, State of Rio Janeiro, Brazil. = *Diplodon expansus* (Küster). See note 12.

FABA

Unio d'Orbigny 1835: 35; 1843: 606, pl. 71, f. 8-11. Type loc.: Uruguay. = *Diplodon charruanus* (d'Orbigny). See notes 9 and 10.

FELIPPONEI

Diplodon Marshall 1917: 381, pl. 50, f. 1-3, pl. 51, f. 1. Type loc.: Maldonado, Uruguay (also from tributaries of the Negro River in south-central Uruguay). = *Diplodon delodontus wymanni* (Lea). See notes 3, 13, 24.

FIRMUS

Unio Lea 1866: 33; 1869: 27, pl. 34, f. 82. Type loc.: 'South America' (Uruguay River, near Salto). = *Diplodon delodontus* (Lam.). See note 9.

FLUCKI

Diplodon Morrison 1943: 14, pl. 5, f. 5-9. Type loc.: Munduapo, Orinoco River, Venezuela. = *Diplodon flucki* Mor. Related to *suavidicus* (= *rhombus*), but larger, elongated and more solid, this is a northernmost isolated species.

FLUCTIGER

Unio Lea 1859: 152; 1860: 68, pl. 39, f. 130. Type loc.: unknown. This does not belong to *Diplodon* or any other South American genus; according to Simpson (1900) and Haas (1910) it is a *Nodularia*. The two shells described by Lea were labelled (cfr. Simpson) as coming from British Guiana but it is one of those mistakes not uncommon among labels of the Cumings collection.

FOKKESI

Unio Dunker 1853: 354. Type loc.: 'Rio de la Plata, Brazil'. Hybrid: *Diplodon uruguayensis* X *expansus*. See note 13.

FONCKI

Unio Philippi 1869: 49; 1869 (Conch. Nov. 2): 483, pl. 104, f. 9, 10. Type loc.: Puerto Mont, province Llanquihue, Chile. = *Diplodon chilensis*.

FUNCKI

Unio Paetel 1890: (3) 153. Misspelling for *foncki*.

FONTAINEANUS

Unio fontaineana d'Orbigny 1835: 36; 1843: 605, pl. 49, f. 6, 7. Type loc.: Parahyba River, Parahyba State, northeastern Brazil. = *Diplodon rotundus fontaineanus* (d'Orb.). See note 12.

FORTIS

Diplodon Marshall 1917: 382, pl. 52, f. 1-4. Type loc.: Tacuarembó River, northern affluent of the Negro River, Uruguay. = *Diplodon piceus*. See note 2.

FRAGILIS

Unio Sowerby in Reeve 1866: no. 155 (wrong date at foot of page '1856'). Not *fragilis* Swainson 1823 = *Lampsilis*, or *Rafinesque* 1820 = *Elliptio*. Type loc.: Chiloe Island, Chile. = *Diplodon chilensis* (Gray).

FRAUS

Diplodon Ihering 1907: 467, pl. 18, f. 129. (New name for *Modiola contorta* Borchert = *Unio contorta* Ameghino not Heude). Type loc.: Barrancas at Paraná, Paraná River, Entre Rios, Argentina (probably Pliocene). = *Diplodon fraus* Ih. See note 1.

FRENZELLI

Unio Ihering 1893: 111, pl. 4, f. 12. Type loc.: 'Patagonia et republicae chilensis'. = *Diplodon chilensis patagonicus* (d'Orb.).

FUNEBRALIS

Unio Lea 1860: 91; 1863: 14, pl. 41, f. 286. Type loc.: Uruguay River. = *Diplodon funebris* (Lea). See note 15.

GARBEI

Diplodon Ihering 1903: 133, pl. 12, f. 7a, 7b. Type loc.: Lagoa Juparana, State of Spirito Santo, Brazil. = *Diplodon beskeanus* (Dunker). See note 7.

GARDNERAE

Eodiplodon Marshall 1928: 4, pl. 1, f. 2, 8. Type loc.: in Pliocene strata of Pebas, Iquitos region, eastern Peru. = *Diplodon gardnerae* (Marshall).

GASSIESI

Unio Küster 1856: 148, pl. 43, f. 4. Type loc.: Chile (Chiloé). = *Diplodon chilensis* (Gray).

GRANOSUS

Unio granosa Bruguière, Journ. d'Hist. natur. 1792:(I) 107, pl. 6, f. 3, 4. (See also Deshayes, Encyclop. méthod. pl. 249, f. 2). Type loc.: (cfr. Lamarck) 'Rivières de la Guyane.' *Diplodon granosus* (Bruguière). See note 18.

GRANULIFERUS

Unio Dunker 1848: 182. Pfeiffer 1866: 150, pl. 39, f. 1, 3. Type loc.: Maccue, State of Rio Janeiro, Brazil. = *Diplodon granosus* (Brug.).

GRATUS

Unio Lea 1860: 91; 1863: pl. 43, f. 290. Type loc.: Uruguay River. = *Diplodon rotundus gratus* (Lea). See notes 14 and 15.

GREEFFIANUS

Unio Ihering 1893: 96, pl. 4, f. 8. Type loc.: Campinas and Piracicaba in headwaters of the Tiete River, Sao Paulo, Brazil. = *Diplodon paulista* (Ihering). See note 19.

GUAHYBAE

Unio Ihering (in litteris). Nomen nudum. Specimens labelled by Ihering with this name from Guahyba River, Rio Grande do Sul, in the Senckenberg Museum are, according to Haas, equal to *expansus*).

GUARANIANUS

Unio d'Orbigny 1835: sp. 16; 1846: 608, pl. 61, f. 12. Type loc.: Paraná River at Italy, Corrientes, Argentina (50 km E. of Corrientes city. = *Diplodon guaranianus* (d'Orb.). See note 5.

GUAYANENSIS

Diplodon Haas 1929: 12, f. 6-7. Type loc.: NW British Guiana. = *Diplodon guayanensis* Haas. Species of the group of *granosus*.

HARTWRIGHTI

Diplodon Ihering 1910: 135, pl. 12, f. 8. (Not *Unio hartwrighti* Wright). Type loc.: Lagoa Alagadinha, Goyaz, Brazil (also Tapajoz River and Amazon). = *Diplodon rhombeus* (Wagner). See note 14.

HASEMANI

Diplodon Ortmann 1921: 478, pl. 34, f. 1, 4, pl. 47, f. 5, text f. 4a. Type loc.: Guaporé River, near Sao Simao, Rondonia, Brazil. = *Diplodon guaranianus* (d'Orb.). See note 5.

HIDALGOI

Diplodon Haas 1916: 18, 49, pl. 1, f. 1. Type loc.: Arroyo Miguelete, Montevideo, Uruguay. = *Diplodon piceus* (Lea). See note 2.

HILDAE

Diplodon Ortmann 1921: 514, pl. 36, f. 1-3, pl. 46, f. 3. Type loc.: Jacuhy River at Cachoeira (100 miles W of Porto Alegre), Rio Grande do Sul, Brazil. = *Diplodon piceus* (Lea). See note 2.

HUAPENSIS

Diplodon Bartsch 1906: 394, pl. 27, f. 1, pl. 28, f. 1, pl. 29, f. 2. Type loc.: Lake on Victoria Island, Lake Nahuel Huapi. (Province of Neuquen), Argentina. = *Diplodon chilensis patagonicus* (d'Orb.).

HYLAEUS

Unio hylaea d'Orbigny 1835: 36; 1843: 607, pl. 49, f. 8, 9. Type loc.: Palometa River, in the headwaters of Marmoré-Guaporé Rivers, north-central Bolivia. = *Diplodon hylaeus* (d'Orb.). See note 5.

IHERINGI

Unio (Cléssin?). Unfigured and publication uncertain after Simpson 1914: 1272. Not *Unio iheringi* Wright 1898 from Texas. Simpson gave a description in 1914 from specimens of Guahyba River which seem to be = *Diplodon burroughianus* (Lea). See note 20.

IMITATOR

Diplodon Ortmann 1921: 491, pl. 34, f. 5-7, pl. 45, f. 1, 2, pl. 47, f. 6. Type loc.: Vaccahy-Mirim River, Santa Maria; also Jacuhy at Cahoeira, Rio Grande do Sul, Brazil. = *Diplodon martensi* (Ih.). See note 9.

JACKSONI

Diplodon Marshall 1928: 1, pl. 4, f. 1-3. Type loc.: Small tributary of San Francisco River, Arcas, Minas Geraes, Brazil. = *Diplodon ellipticus* (Wagner).

JACOBÆUS

Unio Philippi 1869: 44. Pfeiffer 1869: 478, sp. 635, pl. 103, f. 3, 4. Type loc.: Santiago, Chile. = *Diplodon chilensis* (Gray).

JANTHINUS

Unio Philippi 1869: 46. Pfeiffer 1869: 485, pl. 104, f. 11, 12. Type loc.: Santiago, Chile. = *Diplodon chilensis* (Gray).

KELSEYI

Diplodon F. Baker 1913: 665, pl. 27, f. 5-7. Type loc.: Jamauchin River (Jamanxim), tributary of the Tapajoz River, Amazon drainage, state of Par , Brazil. = *Diplodon beskeanus* (Dunker). See note 7.

KERESETZI

Unio Clessin 1888: 172 (unfigured). Type loc.: Guahyba River, Rio Grande do Sul, Brazil. Uncertain species for Simpson; 'charruanus' for Haas. = *Diplodon piceus* (Lea).

LADDI

Castalioides Marshall 1934: 78, f. 1-4. Type loc.: Biblian, NE Ecuador, from strata of Lower Miocene age. = *Diplodon guaranianus* (Marshall). See notes 5 and 6.

LACTEOLUS

Unio Lea 1834: 40, pl. 8, f. 19; Obs.: 152, pl. 8, f. 19. Type loc.: Rio de la Plata. = *Diplodon delodontus delodontus* (Lamarck). See note 13.

LANDBECKI

Unio Philippi 1869: 45; Pfeiffer 1869: 479, pl. 103, f. 5-6. Type loc.: Province of Colchagua, south of Santiago, Chile. = *Diplodon chilensis* (Gray).

LATOURI

Triplodon Pilsbry & Olsson 1935: 16, pl. 15, f. 3-5. Type loc.: Oponcito River near Guanabanas, Magdalena Valley, Colombia, at the base of La Cira Formation, Oligocene. = *Diplodon latouri* (Pils. & Ols.). (A fossil form of the *guaranianus* group).

LEAI

Diplodon Simpson 1900: 876; 1914: 1241. Type loc.: 'Brazil' (Probably Sao Paulo). = *Diplodon paulista* (Ih.). See note 19 (leai was given as a new name for *modestus* Lea).

LEPIDIOR

Margar n (*Unio*) Lea 1870: 53 (new name for *lepidus* Lea not Gould) Type loc.: Uruguay River. = *Diplodon charruanus* (d'Orb.) typical. See note 10.

LEWISI

Antediplodon Richards 1948: 3, f. 2. Type loc.: Montclare, near Phoenixville, Montgomery County, Pennsylvania; Stockton Formation of the Newark Series, Triassic. = *Diplodon lewisi* (Rich.). See note 6.

LIDDLEI

Diplodon Palmer 1941: 48, pl. 8, f. 1, 5. Type loc.: Center of the Azogue anti-

cline, NW of Azogue, prov. Canar, Ecuador, Miocene. = *Diplodon liddlei* Palmer. (Fossil sp. of the *guaranianus* group).

LIMENSIS

Unio K ster 1856: 146, pl. 42, f. 7, pl. 43, f. 1. Type loc.: Lima, Peru. = *Diplodon chilensis* (subsp. *limensis*?). See note 21.

LOCELLUS

Unio Lea 1866: 34; 1869: 24, pl. 23, f. 79. Type loc.: Buenos Aires. = *Diplodon burroughianus* (Lea). See note 20.

LONGUS

Unio Philippi 1869: 44; Pfeiffer 1869: 477, pl. 103, f. 1-2. Type loc.: Valdivia Chile. = *Diplodon chilensis* (Gray).

LOSADAE

Diplodon Haas 1966: 238, f. 54-56. Type loc.: Cano Losada, Upper Guayabero River, Dept. Meta, Central Colombia. = *Diplodon losadae* Haas. A form related to *D. rhombus* (Wag.) isolated in Colombia.

LUJANENSIS

Unio charruanus lujanensis Doer. 1884 (Bolet n Acad. Nac. Ciencias Cordoba, 6: 328). Nomen nudum. *U. charruanus* 'subsp. *lujanensis* Ihering 1907: 468 (brief descr., no figures). I have observed a discrete number of fossil *Diplodon* from the Pleistocene of Luj n River (and other localities from strata usually called Lujanense) and none of them can be identified as *charruanus* but belong to several other species, *delodontus*, *piceus*, and also probably *rhuacoicus*.

MACROPTERUS

Unio Dunker 1846: 109. Type loc.: 'Brazil'? Lea (1870) placed this unfigured species under his *Physunio superbus* from Asia, the indication 'Brazil' being doubtful as in other Dunker species. But the type label in the Berlin Museum (see Haas 1929: 11) reads (in Dunker's handwriting): '*Diplodon furcatum* Spix' (= *caudatum* Wagner). Haas identified this species with *Prisodon obliquus* Schumacher.

MARTENSI

Unio Ihering 1893: 100, pl. 4, f. 10. Type loc.: 'Taquara and Santa Cruz' in the Vaccahy River drainage, Rio Grande do Sul, Brazil; also Rio de Janeiro. = *Diplodon martensi* (Ih.). See notes 8 and 9.

MATONIANA

Unio d'Orbigny 1835: 35 sp. 8; 1846: 604 (as *variabilis*), pl. 71, 1-3 (as *matoniana*). Type loc.   Rio de la Plata at Buenos Aires. = *Diplodon variabilis* (Maton). See note 4.

MEMBRANACEA

Unio Hanley, 'Bivalve Shells, etc.' 1843: 202, pl. 22, f. 6. = *Diplodon variabilis* (Maton). See note 4.

MIMUS

Diplodon Simpson 1914: 1249 (unfig.). Marshall 1917: 383, pl. 51, f. 3-6. Type loc.: Iguape, Ribeira River, Sao Paulo, Brazil. = *Diplodon expansus* (Dunker). See note 17.

MODESTUS

Unio Küster 1856: 147, pl. 43, f. 2. (Not *modestus* Lea 1836 -- see *leai* Simp. = *paulista*). Type loc.: Concepción, Chile. = *Diplodon chilensis* (Gray).

MOGYMIRIM

Diplodon Ortman 1921: 520, pl. 37, f. 4-7, pl. 46, f. 5, pl. 48 f. 2. Type loc.: Creek near Mogy-Mirim, Sao Paulo, Brazil. = *Diplodon expansus* Küster. See note 17.

MONTANUS

Unio Philippi 1869: 48; Pfeiffer 1869: 482, pl. 104, f. 3-4. Type loc.: Mountain streams of Valdivia Chile. = *Diplodon chilensis* (Gray).

MOLINAE

Unio Philippi 1847: 50, pl. 4, f. 4. Type loc.: Southern Chile (probably Chile). = *Diplodon chilensis* (Gray).

MULTISTRIATUS

Unio Lea 1831: 91, pl. 12, f. 22; 1834: 101, pl. 12, f. 22. Type loc.: Brazil. = *Diplodon ellipticus* Wagner. See note 8.

NOCTURNUS

Unio Lea 1860: 91; 1863: 380, pl. 42, f. 288. Type loc.: Lower section of the Uruguay River. = Hybrid *Diplodon funebris* X *paranensis*. See note 15.

NORDENSKJOLDI

Anodonta Steinmann & Wilckens 1908: 35, f. 1 (on p. 98). Type loc.: Condor River South of Bahia Inutil, Tierra del Fuego, from the upper strata of 'Minas de Carbón', Oligocene. = *Diplodon nordenskjoldi* (St. & W.).

NORDESTINUS

Diplodon Haas 1938: 46, f. 1-3. Type loc.: San Francisco River near Jatoba, State of Pernambuco, Brazil. = *Diplodon hombeus* (Wag.). See note 14, 7.

OBSOLESCENS

Diplodon F. Baker 1914: 666, pl. 22, f. 16-17. Type loc.: Jamauchin River (Tapajoz-Amazon drainage) State of Para, Brazil. = *Diplodon obsolescens* Baker. See note 1.

OBTUSA

Unio Férussac? (in d'Orbigny 1835: 35; 1843: 610). Not *Unio obtusus* Lea 1840 = *Lampsilis*. *Unio obtusa* is not found among Férussac's species, and Simpson and Haas referred the authorship to d'Orbigny. Type loc.: Laguna, prov. Valparaiso, Chile. = *Diplodon chilensis*.

OPONCITONIS

Diplodon Pilshry & Olsson 1935: 17, pl. 4, f. 1, 2. Type loc.: Oponcito River near Guanabanas, Magdalena Valley, Colombia, from Upper Oligocene strata of La Cira Formation. = *Diplodon oponcitonis* P. & O.

PANCO

Diplodon Ihering 1910: 132, pl. 12, f. 6. Type loc.: Panco River, state of Espírito Santo, Brazil. = *Diplodon beskeanus* (Dunker). See note 7.

PARAGUAYANUS

Unio Martens 1895: 34 (unfigured). Type loc.: Paraguay? Unidentifiable species according to Simpson 1914, but probably the same as *paraguayensis* Lea = *Diplodon delodontus*?

PARAGUAYENSIS

Unio Lea 1866: 34; 1869: 31, pl. 35, f. 85. Type loc.: Paraguay. = *Diplodon delodontus* (Lam.). See note 13.

PARALLELIPIPEDON

Unio Lea 1834: 60, pl. 8, f. 20; Obs. 1834: pl. 8, f. 20. Type loc.: Parana River, prov. of Corrientes, Argentina = *Diplodon parallelipipedon parallelipipedon* (Lea). See note 1.

PARANENSIS

Unio Lea 1834: 49, pl. 14, f. 42; Obs. 1834: pl. 14, f. 42. Type loc.: obtained by Dr. Burrough at Buenos Aires, where, he said, have been brought from the Parana River; it might be from La Plata River as well. = *Diplodon paranensis* (Lea). See note 15.

PARCUS

Unio Lea 1866: 34; 1869: 22, pl. 33, f. 77. Type loc.: 'South America' (Uruguay River). = *Diplodon charruanus* (d'Orb.). See note 10.

PARODIZI

Diplodon Bonetto 1961: 214, fig. in p. 216, 217. Laguna Vargas, at the confluence of Arroyo Malabrigo and San Javier River, near Romang, Santa Fe, Argentina. = *Diplodon parodizi* Bonetto. See note 20.

PATAGONICUS

Unio d'Orbigny 1835: 37; 1843: 610, pl. 70, f. 1-4. Type loc.: 'Río Negro, Patagonia.' D'Orbigny explored the Negro River only 40 or 50 miles from its mouth & saying he collected the specimens there; this corresponds to the extreme eastern distribution of *patagonicus*, but it is more abundant in the west. = *Diplodon chilensis patagonicus* (d'Orb.).

PATELLOIDES

Unio Lea 1860: 89; 1863: 19, pl. 43, f. 291. Type loc.: see note 15. = *Diplodon paranensis* (Lea).

PAUCARPATENSIS

Pseudodiplodon Marshall 1928: 4 pl. 1, f. 2, 8. Type loc.: Paucarpata, on the Marañon River, in Upper Pleistocene strata of Pebas Formation, NW Peru. = *Diplodon singewaldi* (Marshall).

PAULISTA

Unio Ihering 1893: 93, pl. 4, f. 7. Type loc.: Piracicaba, Tiete River, Sao Paulo, Brazil. = *Diplodon paulista* (Ih.). See note 19.

PAZI

Castalia Hidalgo, Journal de Conch. 1868: 353, pl. 13, f. 6. Type loc.: Imbabura, Ecuador. = *Diplodon pazi* (Hidalgo). See note 5.

PEBASENSIS

Eodiplodon Marshall 1928: 5, pl. 1, f. 5-7. Type loc.: Pebas, Iquitos region, western Peru, from Upper Pliocene Pebas Formation. = *Diplodon gardnerae* (Marshall).

PECULIARIS

Unio Lea 1866: 33; 1869: 25, pl. 34, f. 80. Type loc.: 'South America' (Uruguay River, near Salto). = *Diplodon delodontus* X *uruguayensis*. See note 13.

PEHUENCHENSIS

Diplodon Doello Jurado 1927: 410, pl. 3, f. 13, pl. 4, f. 20. Type loc.: Lowlands of Lenza Niyeu, province of Rio Negro (Patagonia) Argentina, Jahuel Formation (Danian) Paleocene. = *Diplodon pehuenchensis* D. J. Originally described as 'var.' of *colhuapiensis*.

PENNSYLVANICUS

Diplodon Pilsbry 1921: 32, pl. 2, f. 1-3, pl. 3, f. 4. Type loc.: Little Conewago Creek, York County, Pennsylvania, from Triassic strata of the Newark Series. = *Diplodon pennsylvanicus* Pils.

PERAEFORMIS

Unio Lea 1860: 90; 1863: 20, pl. 43, f. 292. Type loc.: Uruguay River. = *Diplodon peraeformis* (Lea). See note 22.

PERFRAGILIS

Diplodon Marshall 1923: 2, pl. 1, f. 3, 4, pl. 2, f. 1-3. Type loc.: Rio de la Plata at Colonia, Uruguay. = *Diplodon variabilis* (Maton). See note 4.

PERPLEXUS

Diplodon Simpson 1914: 1248; Marshall 1917: 384, pl. 52, f. 5, pl. 53, f. 1-4. Type loc.: Lake Potrero, Maldonado, Uruguay. = *Diplodon charruanus* (d'Orb.).

PFEIFFERI

Unio Dunker 1848: 181; Pfeiffer 1866: 151, pl. 39, f. 4, 9. Type loc.: Negro River, State of Rio Janeiro, Brazil. = *Diplodon burroughianus wheatleyanus* (Lea)? See note 20.

PICEUS

Unio Lea 1860: 91; 1863: 15, pl. 41, f. 287. Type loc.: Uruguay River. = *Diplodon piceus* (Lea). See note 2.

PIGER

Unio Lea 1860: 90; 1863: 23, pl. 41, f. 296. Type loc.: Uruguay River. = *Diplodon uruguayensis* (Lea). See note 3.

PILSBRYI

Diplodon Marshall 1928: 2, pl. 1, f. 1, pl. 3, f. 2. Type loc.: Canada Grande, Departamento Cerro Largo, Uruguay. = an oversized specimen of *Diplodon huacoicus* (d'Orb.). See note 23.

PIRACICABANA

Unio aethiops piracicabana Ihering 1893: 102 (unfigured). Type loc.: Piracicaba Tiete River, Sao Paulo, Brazil. = *Diplodon expansus* (Küst.). See note 17.

PODAGROSUS

Diplodon Marshall 1923: 3, pl. 1, f. 1, 2, 5, pl. 2, f. 6-7. Type loc.: Uruguay River at Colon, Entre Rios, Argentina. = *Diplodon uruguayensis* (Lea).

PRUNOIDES

Unio Lea 1868: 150; 1869: 83, pl. 53, f. 136. Type loc.: 'South America' (Uruguay). = *Diplodon peraeformis* (Lea). See note 22.

PSAMMATICUS

Unio Philippi 1848: 11, pl. 5, f. 2, (as Bronn's in litt.). Type loc.: near Rio Janeiro, Brazil. = *Diplodon granosus* (Brug.).

QUADRANS

Unio Lea 1859: 306, 1860: 42, pl. 61, f. 185. Type loc.: 'Texas'. This is according to Simpson and Haas a South American species, and very probably = *Diplodon rotundus* (Wagner).

RHOMBEUS

Unio Wagner in Spix 1827: 34, pl. 23, f. 1, 2. Type loc.: Solimoes River and tributaries (western branch of the Amazon), Brazil. See note 7.

ROTHI

Diplodon Ihering 1904: 232, f. 6; 1907: 466. Type loc.: Arroyo Lele, foot of Sierra Leleque, western Chubut (Patagonia) Argentina; from the 'Colloncura' strata (Priasean Formation), middle Miocene. = *Diplodon rothi* Ihering.

RHUACOICUS

Unio rhuacoica d'Orbigny 1835: 35; 1843: 606, pl. 69, f. 4, 5. Type loc.: 'Banda Oriental' = Uruguay. = *Diplodon huacoicus* (d'Orb.). See note 9.

RHUACONICUS

Unio Küster 1856: 145, pl. 42, f. 5.
Type loc.: Nova Friburgo, State of Rio
Janeiro, Brazil. = *Diplodon wheatleyanus*
(Lea). See note 20.

ROTUNDUS

Unio Wagner in Spix 1827: 34, pl. 25,
f. 3, 4 (as *Diplodon*). Type loc.: Rivers
of southern Brazil. = *Diplodon rotundus*
(Wag.). See note 12.

RUDUS

Unio Lea 1859: 187; 1860: 84, pl. 43,
f. 146. Type loc.: Rio de la Plata. = *Di-*
plodon delodontus delodontus (Lam.). See
note 13.

RUFOFUSCUS

Unio Lea 1865: 76; 1869: 42, pl. 39, f.
96. Type loc.: unknown. = *Diplodon rotun-*
dus gratus (Lea). See note 12.

SANTAMARIAE

Diplodon Simpson 1914: 1270; Marshall
1917: 386, pl. 52, f. 6, pl. 55, f. 1-4.
Type loc.: Itapoca River, Rio Grande do
Sul, Brazil. = *Diplodon martensi* (Ih.). See
note 9.

SANTANUS

Diplodon ellipticus santanus Ihering
1910: 134 (type fig. in Haas 1931, f. 19).
Type loc.: Santa Maria River, drainage of
Dolce River, Spirito Santo, Brazil. = *Di-*
plodon rhombeus (Wagner). See note 7.

SCHENEDERI

Unio Dunker MS. Nomen nudum (fontaine-
anus after Ihering 1893 = *rotundus*).

SEBASTIANI

Unio Ihering MS. Nomen nudum. (In
Senckenberg Museum specimens under this
name from Camaquam River, Rio Grande do
Sul). = *Diplodon martensi* (Ih.).

SEMIGRANOSUS

Diplodon Simpson 1914: 1252; Marshall
1917: 387, pl. 55, f. 5-8. Type loc.: Ti-
ete River, Sao Paulo, Brazil. = *Diplodon*
paulista (Ih.). See note 19.

SIMILLIMUS

Diplodon Ortmann 1921: 495, pl. 35, f.
3-6, pl. 45, f. 2. Type loc.: Nhundia-
guara River, at Morretes, State of Paraná,
Brazil. = *Diplodon martensi* (Ih.). See
note 9.

SINGEWALDI

Prodiplodon Marshall 1928: 2, pl. 1,
f. 3, 6. Type loc.: Paucarpata, on the
Marañon River, NW Peru, in Upper Pliocene
strata (Pebas Formation).

SMITHI

Unio 'Gray' 1834 Griffith & Pidgeon (in
Cuvier's Animal Kingdom): vol. 1, pl. 20,
f. 3 (undescribed). Type loc.: unknown.
= *Diplodon chilensis*.

Diplodon Marshall 1926: 9, pl. 2, f. 1,
7, pl. 3, f. 6. Type loc.: Tigre River,
Prov. Buenos Aires (Paraná Delta), Argen-
tina. = *Diplodon burroughianus* (Lea).

SOLIDULUS

Unio Philippi 1869: 45; Pfeiffer 1869:
480, pl. 103, f. 9, 10. Type loc.: San-
tiago, Chile. = *Diplodon solidulus* (Philip-
pi). See note 21.

SOLISIANA

Unio d'Orbigny 1835; 1843: 604, pl. 69,
f. 1-3. Type loc.: Solis River, W. of Mal-
donado (at Piriapolis) Uruguay. = *Diplodon*
solisianus (d'Orb.). See note 24.

SUAVIDICUS

Unio Lea 1856: 95; 1857: 29, pl. 29, f.
24. Type loc.: Amazon River, Brazil. = *Di-*
plodon rhombeus (Wagner). See note 14.

SUBCYLINDRICUS

Diplodon Marshall 1922: 3, pl. 2, f. 1,
2, pl. 3, f. 1, 2, 11. Type loc.: Arroyo
Manga, Montevideo, Uruguay. = *Diplodon rhu-*
acoccus (d'Orb.). See note 23.

SUBQUADRATUS

Diplodon Marshall 1922: 3, pl. 2, f. 6,
8, pl. 3, f. 8-10. Type loc.: Paysandu,
Uruguay. = *Diplodon variabilis* (Maton). See
note 4.

SUBTRAPEZIUS

Unio Philippi 1848: 12, pl. 5, f. 3.
Type loc.: ? = *Diplodon variabilis* (Maton).

SUPPOSITUS

Diplodon Simpson 1914: 1245; Marshall
1917: 385, pl. 51, f. 2, pl. 54, f. 1-4.
Type loc.: State of Paraná, Brazil; also
several localities on Tiete River, Sao Pau-
lo after Marshall). = *Diplodon martensi*
(Ih.). See note 9.

TRANSANDINUS

Diplodon Parodiz 1963: 145, pl. 2, f.
1-4. Type loc.: Paleocene strata (Jahuel
Formation) of Paso Tinguiririca, between
headwaters of the Tinguiririca and Grande
Rivers, Colchagua, Chile. = *Diplodon trans-*
andinus Par.

TRIFIDUS

Unio Lea 1860: 89; 1863: 22, pl. 44, f.
295. Type loc.: Buenos Aires, Argentina.
= *Diplodon trifidus* (Lea). See note 20.

TRIVIALIS

Diplodon Simpson 1914: 1250; Marshall
1917: 386, pl. 54, f. 5-8. Type loc.: Ja-
boticabal, Sao Paulo, Brazil; also Pira-
cicaba, Rio Grande do Sul, Marshall. = Hy-
brid *Diplodon uruguayensis* X *expansus*.

TRIVIALOIDES

Diplodon Marshall 1922: 5, pl. 1, f.
12, 14, pl. 2, f. 3, 5, pl. 3, f. 12.
Type loc.: Arroyo Bellaco, Paysandu, Uru-
guay; also in southeastern Uruguay. = *Di-*
plodon charuanus (d'Orb.). See note 10.

URUGUAYENSIS

Unio Lea 1860: 90; 1863: 24, pl. 45, f. 298. Type loc.: Uruguay River. = *Diplodon uruguayensis* (Lea). See note 3.

VALDIVIANUS

Unio Philippi 1869: 48; Pfeiffer 1869: 482, pl. 104, f. 3, 4. Type loc.: Valdivia, Chile. = *Diplodon chilensis* (Gray).

VARIABILIS

Mya Maton 1811: 327, pl. 24, f. 4-7. Type loc.: Río de la Plata, Argentina. = *Diplodon variabilis* (Maton). See note 4.

VICARIUS

Diplodon Ortmann 1921: 497, pl. 25, f. 7, 8, pl. 34, f. 1, 2, pl. 45, f. 3. Type loc.: Agua quente, Iporanga, São Paulo, Brazil; in creeks tributaries of Ribeira River). = *Diplodon martensi* (Ih.). See note 9.

WANNERI

Diplodon Pilsbry 1921: 34, pl. 3, f. 5. Type loc.: Little Conewago Creek, York County, Pennsylvania, in shale of the Newark Series, Triassic. = *Diplodon wanneri* Pilsbry. See note 6.

WAGNERIANUM

Diplodon Simpson 1900: 877; 1914: 1246. Type loc.: San Francisco River, Brazil. = *Diplodon ellipticus* (Wagner).

WHEATLEYANUS

Unio Lea 1856: 94; 1857: 28, pl. 29, f. 23. Type loc.: 'Río de la Plata' and Negro River (a mistake); see note 20; must be Tiête River, São Paulo. = *Diplodon burroughianus wheatleyanus* (Lea).

WYMANI

Unio Lea 1860: 90; 1863: 17, pl. 42, f. 289 (*wymanii*). Type loc.: Uruguay River. = *Diplodon delodontus wymani* (Lea). See notes 3, 13.

YAGUARONIS

Diplodon Marshall 1930: 5, pl. 2, f. 2, 3, 5, 6. Type loc.: Yaguaron River, Cerro Largo, northeastern Uruguay. = *Diplodon rhuacotus* (d'Orb.). See note 23.

YORKENSIS

Diplodon Pilsbry 1921: 35, pl. 3, f. 2, 2a. Type loc.: Little Conewago Creek, York County, Pennsylvania, in shale of Newark Series, Triassic. See note 6.

NOTES

1 *Diplodon parallelipipedon* extends into the Uruguay River up Rio Grande do Sul (Camaquam and Vacahy rivers). Ortmann (1921: 528) classified specimens from these rivers as *Diplodon berthae* but remarking on the possibility that they might be *aethiops* (the true *berthae*, according to the type lot, is equal to *piceus*). Actually, there is a subspecific form of *parallelipipedon*, typical of the rivers of central and southeastern Uruguay, *D. parallelipipedon aethiops* (it corresponds to fig. 30 in Formica Corsi's 1900); it is always shorter and smaller, entirely black, with characteristic flutings on the dorsal slope which the typical *parallelipipedon* does not have. The subspecies *aethiops* shows a clinal tendency northwards, to become shorter and less angulated posteriorly and somewhat more inflated, corresponding to the form which Ihering called *aethiopiiformis* (in *litteris*); Simpson referred to *aethiopiiformis* as uncertain, Haas included it under *charruanus* and Bo-

netto under *rhuacotus*. I examined the specimens in the M.C.Z. collection labelled by Ihering *aethiopiiformis* from the Camaquam River in Rio Grande do Sul, and I have no doubt that they represent variations of *aethiops*, and show the characteristic flutings on the dorsal slope.

Unio acutirostris Lea was described upon an old and heavy specimen of *parallelipipedon*, having the posterior margin acutely angulated. Such individuals, often striped with light color bands over the black surface are common from Corrientes to La Plata but do not appear in separate populations; the indication, by Lea, that *acutirostris* was larger, does not agree with the given measurements, and size is very variable in any population. *Unio sphenorhynchus* Crossé & Fischer, indicated by Martens (1900: 501) as synonym of *acutirostris*, is a species from Mexico and not a *Diplodon*.

Isolated in northern Brazil is *D. obsolescens* F. Baker, described upon a badly worn specimen. I received a better preserved single valve, of the same dimensions as the type, from the Curuá River near Santarem, in the Amazon drainage. It has a general resemblance with the group of *parallelipipedon*, and especially with *D. fraus* Ihering from the Pliocene of Paraná, Entre Rios. The only specimen known of *D. fraus*, was first described by Borchert in 1901 as *Modiola contorta* and was found by A. Bravard in the mid-nineteenth century with marine fossils of supposed Miocene age, but it is questionable that it was *in situ*; Ihering recognized it as a true *Diplodon*. Since the name *contorta* was preoccupied in *Unio* by Heude for a Chinese species, and *contorta* Borch. was subsequently also referred to *Unio*, Ihering changed the name.

Simpson (1900: 884) mentioned also *Unio bomplandi* which 'according to Lea' was equal to *parallelipipedon*. Lea never indicated any connection between the two names, and merely listed *bomplandi* without other reference but its name. Haas declared not having found any *bomplandi* in Valenciennes's works. On the other hand, Lea in his last 'Synopsis' (1870), said he had received specimens of *parallelipipedon* mislabelled as *cambodjensis*.

2 *Diplodon piceus* (Lea) is the 'black form' which in most collections has been labelled as *charruanus*. It is typical of the Uruguay River system. It includes *berthae*, *hildae*, *aethiopiiformis* (in part) and *hidalgoi*. Ihering distributed many specimens among collectors under the name *aethiops*, but as Ortmann indicated, these certainly are not Lea's *aethiops* (he thought *aethiops* plus *piceus* equal to *charruanus*) and called it *berthae*. There is a slight but apparent northward clinal variation in *piceus*; Rio Grande do Sul specimens - *berthae* and *hildae* - are progressively smaller and less melanic, and those which Ortmann in 1921 mentioned as *charruanus* from Santa Isabel in the Rio

Negro, are actually intermediate between *piceus* s. s. - *berthae*. Also, Haas and Bonetto subordinated *berthae* and *hildae* to *charruanus* but, while Haas places *piceus* under *charruanus*, Bonetto does it under *rhuacoicus*. The type specimens of *hildae* are the smaller, with 'golden-brown' periostracum and hinges rather stronger, an extreme clinal form but there is no doubt that they belong to the same species, *piceus*. Individuals are also variable in any *piceus* population, some being more pointed posteriorly, or with the umbonal ribs stronger, in number of 8-9. The original lots of both, *berthae* and *hildae*, were collected on the same day (Jan. 26, 1909), at the same place Jacuhy River at Cachoeira, Rio Grande do Sul, by the same person, J. D. Haseman; the locality is about 300 miles north of the normal habitat of *piceus* s. s. If new materials show that *hildae-berthae* have a characteristic geographical constituency (in the small drainage emptying into Lago dos Patos), and there is not complete clinal continuity, these might be considered a subspecies. Also, *Diplodon fortis* Marshall is the same as *piceus*.

3 Ortmann's acceptance of *uruguayensis* as a good species was correct. It has been mistaken for *wymanni* but it is perfectly identifiable, although it operates a great deal of hybridization with *wymanni*, *delodontus* and *expansus*, and apparently also with *piceus*. Ortmann had two lots from a same locality, 'Ponds of the Rio Negro at Santa Isabel,' one of which he recognized correctly as *uruguayensis*, and the other as *charruanus* (*piceus*) which includes hybrids; some, short specimens, of these hybrids, correspond to the form Lea described as *U. piger*.

Lea said that his *U. apprimus* has affinities with *uruguayensis*, and I agree with Ortmann that it is actually this species. Haas united *apprimus* with *wymanni*, because he thought also that *wymanni* and *uruguayensis* were the same; *apprimus* is but an oversized *uruguayensis*.

4 *Diplodon variabilis*, like *charruanus*, has been the source of much confusion. It was described upon a young shell (as well as *membranaceus* Hanley and *perfragilis* Marshall), and in any population the young seem to be always more abundant than the adults; if sexual maturity is not premature, then the species must be very prolific to maintain the population level. Adults attain the size indicated by d'Orbigny for *matonianus* (the same as *subquadratus* Marshall) maintaining the suborbicular shape of the young, very inflated near the umbos, surface very rugose, valves extraordinarily thinner compared with other species of the same size, but appearing in variations which almost can be called deformities or abnormally aged; for this Maton named it properly; only the hinge has resemblance with that of *burroughianus*, although more arched, but in general the young as well as the adults are conspicuously different from *burroughianus*; nevertheless there is an alliance between the two species, sharing the same habitat in La Plata River where they probably interbreed; but pure-breed populations are perfectly distinguishable. While *burroughianus* extends its range into the lower portions of the Paraná and Uruguay, *variabilis* seems to be typical of La Plata. Thus, *Diplodon variabilis* is maintained here within the limits and synonymy established by Haas in 1931 (adding *perfragilis* and *subquadratus*) and Castellanos 1960. *Diplodon subquadratus* is neither *solisianus* (Castellanos 1960) nor *funebrialis* (Haas 1931) but the typical adult form of *variabilis* as indicated by Bonetto, and has not alliance, as Marshall suggested, with *g-atus* and *patelloides*.

The proportions given by Marshall describing *D. arcuatus* were L. 39, H. 34, D. 23 mm., but in the caption of the plates the reduction of the figures indicated as one third, actually being). 75, H. 66, D. 45 mm. The shape, hinge with long cardinals, and the almost central inflated umbos, all agree with Lea's *bulloideus*; which is also *variabilis*.

5 *Diplodon hylaeus* is an uncommonly collected species, from the eastern mountain streams of Bolivia in Santa Cruz, running north toward the confluence of the Grande-Marmoré rivers; specimens labelled as such from southeastern localities belong to *guaranianus*. D'Orbigny, who described both species, declared that *hylaeus* is very rare and different from *guaranianus*. *D. hylaeus* is always thinner and slender, with more ovate and less angulated valves, the ribs showing in the inner side which is very iridescent instead of pure white, and the pseudocardinals and muscle scars considerably weaker. On the other hand, it is more closely related to *pazi* from Ecuador.

During the heavy summer rains, the vast area of the Bolivian pampas or sabanas, known as the Pantanal Region, remains covered for several months by an average of a foot of water, making the headwaters of the Paraguay miscible with those of the Guaporé, Madeira, etc. of the Amazon system, and occasionally a temporary invasion of larval forms into the Paraguay-Paraná occur; but even under such conditions *D. hylaeus* is extremely rare, while *guaranianus* is very abundant. The northern form, *pazi*, is distinguished from *hylaeus* by its sculpture reaching the lower ventral margin, while in *guaranianus* and *hylaeus* it reaches only to the middle section of the shell; it is equally scarce.

As for *Diplodon asuncionis* Marshall, it is a synonym of *guaranianus*. The identification by Haas of *D. guaranianus* and *D. guaranianus hasemani* Ortmann is correct, but *hasemani* is known only by its original lot and can be considered an extreme of a clinal series. A more complete comparison of *hylaeus*, *guaranianus*, *pazi*, is given by the author in another paper to be printed promptly.

6 Between 1928 and 1932 Marshall created five generic names for fossil *Diplodon* of North and South America: *Prodiplo-*

don, *Eodiplodon*, *Antediplodon*, *Ecuadorea*, and *Castalioides*. All these were based on variations of the radiating sculpture of the umbos; such characteristics are not consistent, overlapping among the species groups, and defined separation of these genera or subgenera almost impossible. There are, at present, only two subspecific groups recognizable in *Diplodon*, those with parasitic larvae, *Diplodon* s. s. or with the larvae non parasitic but of direct development, *Rhipidodonta* (= *Cyclomya*) and still, such embryological division is not of much practical use when the classification of only adult shells is considered. *Rhipidodonta* also includes as synonyms *Ecuadorea* and *Schelesschiella*, the last proposed by Modell with an heterogeneous assemblage of unrelated species, with or without parasitic glochidia, as *burroughianus*, *rhuacoicus*, and *parallelipedon*.

Fossil species of *Diplodon* are known in South America from as early as the Paleocene of Patagonia and Chile, and up to the Eocene are still only known from the southern region: *D. nordenskjoldi* in Tierra del Fuego. By the middle Tertiary they had reached Ecuador and Colombia in the North, from where they returned southward, through Brazil during the Pliocene. No *Diplodon* are known from the South American Mesozoic, but they existed in the Triassic of Pennsylvania: *borealis*, *pennsylvanicus*, *wanneri*, *carolusimpsoni*, *yorkensis*, and *lewisi*. In other states also *Diplodon*-like Unios were found: from Texas *subplanatus*, *dumbei*, *granulatus*, and *dockumensis* all described by Simpson, and from the Connecticut Valley in Massachusetts, *emersoni* Troxell and *wilbrahamensis* Emerson; but the relationship of these Unios to *Diplodon* is uncertain. There is clear evidence that the genus *Diplodon sensu lato* originated in North America during the early Mesozoic and before becoming extinct in the northern continent migrated to South America at the end of the Cretaceous or very early Paleocene, when the first land communication between the two continental

masses took place, a migration which was coeval with that of the early mammals.

7 *Unio beskeanus*, *garbei*, and *panco* are one and the same species according to Haas who also placed *ellipticus santanus* under *beskeanus*. I think that *santanus* is equal to *suavidicus* = *rhombus*; Bonetto also synonymized *garbei* with *suavidicus* (having the same sculpture when young), but their hinges are very different. *Unio kelseyi* should be also considered a *beskeanus*.

On the other hand, all these names, *beskeanus*, *suavidicus*, *kelseyi*, *panco*, and *garbei*, plus *hartwrighti*, are all of the *Diplodon rhombus* group, *sensu lato*, which may constitute a superspecific unit in northern Brazil from the San Francisco River northward, and well isolated from those species of the Paraná drainage. Although the type lots of *garbei* (= *beskeanus*) and *santanus* (= *rhombus*) are both from the Doce River drainage, in the state of Spirito Santo, the differences observed in their hinges, adductors, umbos and shape, show that they are not likely to belong to the same species. At present it is justified to keep *beskeanus* as a separate species according to Haas, but his *beskeanus nordestinus* is a *suavidicus* (= *rhombus*). See also note 4.

8 Simpson's opinion that *Unio binneyi* belongs to *Diplodon*, but it is neither *dunkerianus* as Simpson thought, nor *rhuacoicus* (after Haas); it is a thinner species within the complex of *D. martensi sensu lato*, which includes *vicarius*, *santamariae*, etc. (See note 9), with a double pseudocardinal in the left valve. Although *martensi* belongs in a broader sense to the large group of *D. ellipticus*, the second species has only a single pseudocardinal in the left valve, and in this it equals *multistriatus*. A comparison of the descriptions of Lea and Spix shows that *multistriatus* (often referred as *granosus*

multistriatus) is identical with *ellipticus*; in all other species observed or described by Simpson, Ortmann, or Marshall, which subsequent authors assimilated to *multistriatus*, have double pseudocardinals. Lea himself found out that his own *multistriatus* was *ellipticus* (last 'Synopsis' 1870: 31): 'I have no doubt of *ellipticum* being the same form with *Unio multistriatum*'; but the specimen figured by Haas (1930, f. 28) as *multistriatus* is actually *martensi*.

9 *Unio firmus boettgeri* was synonymized by most authors under *granosus multistriatus*, but eliminating *multistriatus* as being a form of *ellipticus* (see previous note), *boettgeri* remains as a different form from both *multistriatus* and *firmus* (the last = *delodontus*) and corresponds to the thicker individuals of *martensi*.

Diplodon martensi (sometimes mistaken also for *rhuacoicus*) presents many clinal variations which have been named as species by Simpson and Ortmann: *imitator*, *simillimus*, *vicarius*, *santamariae*, *suppositus*. Ortmann assumed that the type locality of *martensi* was uncertain (and for that described *imitator* on differences of proportions which are not specific), but actually Ihering clearly stated Taquara, near Porto Alegre in NE Rio Grande do Sul as the locality; also about *simillimus* Ortmann said that it is 'much like *martensi* and might fall under this according to Ihering,' but described it as new on account of the 'different dimension,' recognizing nevertheless its closeness to *imitator* and *santamariae*. Haas included all those names under *rhuacoicus*, and Bonetto divided them between *granosus multistriatus* and *charruanus*. The source of so much confusion was perhaps the early Sowerby misidentification of the real *charruanus* as the 'form' *rhuacoicus* which then became a recipient for many uncertain forms; even *aethiops* and *piceus* were subordinated to *rhuacoicus* (Bonetto 1964); see notes 1 and 2.

Figures 12-14 on plate 71 of d'Orbigny's as *rhuacoicus* actually correspond to *faba*, which the author himself reconsidered as being the same as *charruanus* (see d'Orbigny's statement on p. 704); the true *rhuacoicus* is that of figures 4-5 on plate 69, with very elongated shell, sublanceolate in upper view, rounded at both ends but narrower posteriorly, umbo elevated and swollen, and with periostracum of light brown-greenish, very rarely dark-brown but never black; the shell is thick especially on the anterior lowerside and, although the surface is smooth and shiny, the growth marks are very conspicuous. I have identified specimens with these peculiar characteristics of *rhuacoicus* from La Plata River and Lake Potrero at Maldonado (from the second locality comes *D. perplexus* Simpson which is *charruanus*). When Ortmann monographed the *Diplodon* he had no specimens of *rhuacoicus* at his disposal, and he thought (perhaps following Sowerby), that it was the same as *charruanus*.

The name *suppositus* was given by Ihering (1893) without description, to a form indicated by him as close to *martensi*; Simpson in 1914 described it, and although Ortmann afterwards considered it as similar to *paulista*, it differs greatly from this species, and actually is *martensi*.

10 *Diplodon charruanus* is a typical Uruguayan species, with shining brownish green periostracum (not the black form often mistaken for *charruanus* which is *piceus* - see note 2). When Lea described *lepidus* (afterwards changed to *lepidior*) with complete detail, he actually was describing the real *charruanus*, and it also corresponds to figure 505b of Sowerby in Reeve's Conch. Icon.; Sowerby drew the figure himself from d'Orbigny's actual specimen of *charruanus* in the British Museum. But the original figures 8-10 in d'Orbigny as *charruanus* show oversized specimens which do not correspond to the type illustrated by Sowerby. The photograph given by Haas (1930: 186, f. 1) is one of a real

charruanus, showing the weak flutings on the dorsal slope which are not present in *piceus*.

The synonymy usually given for *charruanus* is not only mostly incorrect but also excessive: *funerialis*, *peraeformis*, *berthae*, *piger*, etc., have nothing in common with it; but *Unio parvus* is a *charruanus* by its hinge, color, and umbonal characteristics, as indicated by Haas, although it has been also mistaken for *rhuacoicus*.

As for *trivialoides*, it was described upon a rather small specimen which agrees in all with *lepidior*, that is the typical *charruanus*; Marshall named it on the assumption that it was close to *trivialis* Simpson, but the last is nothing but a hybrid between *uruguayensis* and *expansus* from Rio Grande do Sul and Sao Paulo.

11. If the illustration in Griffith-Cuvier's 'Animal Kingdom' is acceptable as the true *Unio childreni*, then such form cannot be associated to *chilensis* under which it is usually listed, but rather looks like a *delodontus*. But it was not only poorly drawn; the six words in the index of the illustration, 'dark brownish periosteum, teeth small, compressed,' hardly can be taken as a diagnosis for recognition. It is recommendable that *childreni* should be rejected as a *nomen nudum*.

12. *Unio fontaineanus* d'Orbigny is a smaller northern subspecies of *rotundus* (see Bonetto 1964). Typical *rotundus* is from eastern central and southern Brazil, always larger (the same as those figured by Haas as *fontaineanus*). Haas included *rotundus* under *rhombeus*, but the second is from the Amazon and San Francisco drainages, and morphologically different: *rotundus* has a more circular shell (including the subspecies *fontaineanus*), while *rhombeus* is elongated, oval as in *suavidicus* with darker periostacum,

although the very young are greenish and rayed; the hinges are also different.

Ortmann credited *Diplodon fontaineanus* 'var.' *deceptus* Simpson, specific rank, while Haas thought it was a synonym of *paranensis funerialis*, and Bonetto synonymized it under *delodontus expansus*. A revision of the lot from Guahyba River mentioned by Ortmann (received from Ihering), showed that it actually belongs to *gratus*, as Ihering's original label so indicates; the other lot, from Jacuhy River of which Ortmann figured some specimens, contains a mixture; figures 1 and 2 of Ortmann are *uruguayensis*; finally the lot indicated by Ortmann as *gratus* from Uruguayana, is the same thing as *deceptus*; both names, *gratus* and *deceptus* constitute a single subspecies: *Diplodon rotundus gratus*. I agree with Bonetto that also *enno* is a form of *rotundus* not of *delodontus*; it is a northern subspecies in the Grande and San Francisco rivers, while *rotundus rotundus* is the southern form (Spix: 'in fluviis Brasiliae australioris'); but the specimen of '*Diplodon enno*' figured by Castellanos (1960, f. 10-11) from Misiones in NE Argentina, is not this form but *expansus*.

13. Several recognizable species have been included under the name *Diplodon delodontus*: *uruguayensis* (see note 3), *expansus* and *scitisanus*. *D. delodontus* proper is an easily differentiable species, corresponding to what Lea called *rudus* and *lacteolus*; *firmus* is also a synonym; it is common in the lower section of the Paraná River, with a subspecies *wymanni*. The areas of the two subspecific forms overlap greatly with consequent hybridization. *D. delodontus* hybridizes also to a large extent with its monogenetic allied species *uruguayensis* and *scitisanus*. I think that *felipponei* is but another hybrid between *delodontus-wymanni*, in which the characters of the first are dominant, and its author recalled that 'externally it mimics *wymanni*'; it is not a *paranensis* or *funerialis* as indicated by Haas.

Diplodon paraguayensis cannot be distinguished from *delodontus*, and *peculiaris* is very probably *delodontus Xuruguayensis*, and it is not certain that it is from Paraguay as Simpson stated.

Unio fokkesi Dunker was placed by Simpson (1914: 1312) in the list of the uncertain species. It was unfigured until Haas published a photograph of the type in the Senckenberg Museum, as *delodontus* with which it externally agrees, but the pseudocardinal of the right valve is of an intermediary type between *uruguayensis* and *expansus*; the locality is uncertain (Dunker indicated 'Rio de la Plata, Brazil!') but probably it is from southern Brazil.

14 *Unio suavidicus* was described from a young individual which, except for being a little inflated, in all other features corresponds to *rhombus*, characterized by the great reduction of the hinge-teeth, especially the pseudocardinals. *U. browni* Lea and *beskeanus nordestinus* Haas are also the same with *suauidicus-rhombus*; besides these, *rhombus* also includes *hartwrighti*, *kelseyi*, and *demerarensis* Lea (see note 7) and the last one is known only from a single specimen of the Cuming Collection and was illustrated by Sowerby in Reeve's (1865: pl. 22, f. 99); there is still an open question in this group if those from the Guianas and the Amazon are the same.

Of *Unio rufofuscus* Lea and Simpson said that it was similar to *granosus*, but Haas came closer comparing it with *fontaineanus* (= *D. rotundus fontaineanus*); however, it has a simpler dentition and darker colors, as in *gratus*; its correct position should be under *Diplodon rhombus gratus*.

15 Haas recognized that *Diplodon paranensis* is a perfectly identifiable species, not a form of *variabilis* or *burroughianus*. However, its synonymy includes many names which should be segregated; *peraeformis* (see note 22), *funebra-*

lis (plus *disculus*), *fontaineanus* a subspecies of *rotundus*, *nocturnus* (*funebrales X paranensis*), *gratus* (*D. rhombus gratus*) and *felipponei* (*delodontus-wymanni*). Some individuals of *paranensis* become more inflated, especially at the center of the shell, as in Lea's 'lenticular' *patelloides*; for this last name the author gave two localities, Amazon and Rio de La Plata; the three specimens mentioned by Lea were probably different forms, but certainly the one figured under the name *patelloides* is a *paranensis* like those of La Plata River, which extends north as far as the Paraguay; it was probably from the Amazon reference that Haas subordinated *patelloides* to *rhombus*. *U. disculus* is but a young *funebrales*.

Unio funebrales shows a marked difference from *paranensis*. Both are found living together in the same localities of La Plata River, in unmixed populations, although *funebrales* seems more common on the Uruguayan side. *D. funebrales* is always thinner, more depressed, umbonal ribs stronger, prismatic area wider, external color always jet black, but when the periostracum is removed it shows underneath a strong salmon color, and the interior is equally tinted; *paranensis* very seldom shows such color and when it does it is very pale, and never has black periostracum. For all this I agree, with Figueiras (1965: 237, 239), that *paranensis* and *funebrales* are two different species. Nevertheless, being so closely related, and sharing the same area, they must interbreed, resulting in such individuals as those which Lea called *nocturnus*. Although in Lea's figure *paranensis* has an exaggerated rounded point on the basal margin, compared with the original illustration of *funebrales* the differences are obvious: *paranensis* is wider or as wide as high, and *funebrales* is higher than wide, with the distance from the umbonal cavity to the center of the pallial line considerably shorter, and in relation to shell size the pseudocardinals are stronger. On the other hand *funebrales* should not be confused with *rotundus fontaineanus* from northern Brazil (see note 12).

16 The status of *Unio dunkerianus* is still problematic, but definitely it is not *rhuacoicus*, but rather approaches the *parallelipipedon* group, the type being a specimen with well preserved umbonal sculpture similar to that of *parallelipipedon aethiops* I have seen from Camaquam River, which Ortmann called *berthae* (the true *berthae* = *piceus*); this does not necessarily mean that *aethiops* and *dunkerianus* should be the same.

17 Recent authors subordinated *U. expansus* Küster as a subspecies of *delodontus*, but I consider it a very different one, more related to *uruguayensis*. The synonymy of *expansus* includes *effulgens*, *eurhynchus*, '*aethiops piracicabana*' and *mogymirim*, but the following names should be disassociated from *expansus*: *paulista*, *caipira* (probably an abnormal *uruguayensis*), *guahybae* ('in litteris,' hybrid with *paulista*), *fontaineanus deceptus* (= *rotundus gratus*), *semigranosus* (= *ellipticus*), and *decipiens* (= *martensi*).

Diplodon minus Simpson is the same as *mogymirim*, being the most abundant 'form' in the northern part of the species' range. The populations of the variable *expansus* overlap greatly in Sao Paulo, and subspecific consideration is out of the question; the variations are also found near the sea coast, in the rivers which empty directly into the Atlantic, and there is sympatric with *paulista*. Ortmann had synonymized *minus* with *granosus*, and Haas and Bonetto as *granosus multistriatus*.

18 The figure of Lamarck's *granosus* given by Deshayes agrees with that from Haas (1930: f. 10) which is the type of *granuliferus* Dkr., and partly with fig. 9 of *coriaceus* Dkr., but it is uncertain that all these belong to the same species. *Unio granosus* was described from 'rivers of the Guiana' which run independently to the sea, isolated from the Amazon and other Brazilian drainages by the high Sierra of Tumucumaque. All other localities, after-

ward indicated for *granosus* are from river systems 1500 miles south, and it is not likely that such identifications are correct. On this account *Diplodon granosus* stands as a poorly known and isolated species, different from the so-called *multistriatus* (= *ellipticus*), and should not be included in the list of species of the Paraná drainage.

19 The original figure of *greeffeanus*, and the details of its description, agrees well with *Diplodon paulista*; only the altitude of the shell shows slight difference. Both names have been listed as synonyms of *expansus*, which is a sympatric species; *D. paulista* is always thinner, more elongated and compressed, with characteristic dark-green periostracum without radiating lines, the hinge is less developed with small interdentum and the prismatic area is considerably thinner.

Diplodon semigranosus Simpson is also an elongated *paulista*, identical with those mentioned by Ortmann from the Tietê River and Sapina; the types, in the U.S. N.M. do not show the granular sculpture referred to in description. Also *Diplodon lea* Simpson, is *paulista*.

20 *Diplodon wheatleyanus*, *trifidus*, and *parodizi* belong to the superspecific complex of *D. burroughianus*.

D. wheatleyanus was considered by Haas as a good species, although it is rare. There is some confusion regarding its type locality: Lea said La Plata River upon specimens received from d'Orbigny (these are probably *burroughianus*) and also 'Rio Negro' collected by Wheatley which is the one figured; but Lea stated that the last came from 'a distance 1200 miles [south] from the mouth of the Amazon,' and this is about the latitude of the Tietê River in Sao Paulo, not the Negro River in Uruguay which is more than 1800 miles south. Haas mentioned four localities for *wheatleyanus* from the Tietê River, and I have specimens

from the same river near Itapura, collected by Haseman in 1908, which are like *wheatleyanus*, only darker. Any other known references from Uruguay correspond to *burroughianus*, and there is no doubt that there are great similarities between the two, but, unless new materials prove a continuous cline of *burroughianus* north of Sao Paulo, *wheatleyanus* may be considered a subspecies. According to Haas, *rhuacoticus* Dkr. is also *wheatleyanus* of dark color as those mentioned from Tietê.

Prior to the description of *Diplodon parodizi*, Bonetto had referred to it as '*D. charruanus*,' from which it differs by having parasitic instead of directly developed larvae. This is a northern species of the Paraná which d'Orbigny took for *burroughianus*, as that of the figure of Sowerby in Reeve under this name. The distribution is from the lowlands of Bolivia and Paraguayan Chaco, to Corrientes and down to La Plata River, but it becomes less frequent southwards. It also shows resemblance with *trifidus*, but while *parodizi* is a rather abundant form, *trifidus* is a rare one, only known from the northern regions of the Guaporé River, well separated from those of the Paraná-Paraguay drainage (*trifidus* however was described 'from Buenos Aires,' which is a mistake). *Diplodon trifidus* is more lanceolate than *parodizi*, and viewed dorsally it shows a well rounded 'head' and a very acute point at the posterior end (as in *parallelipedon*), and also has stronger teeth, less prominent umbos and a well formed lunule. The areas of *trifidus-parodizi* and *parodizi-burroughianus* overlap considerably as to be classed as subspecies. Pure populations are easy to differentiate, but hybrids occur between the southern forms.

Diplodon itheringi (Clessin ?) is a *nomen nudum* according to Haas who figured Simpson's 'type,' suggesting that it is a small specimen of *burroughianus*.

Unio pfeifferi Dunker is a problematic form; I cannot identify it, with certainty, with any of the species of *Diplodon* I have seen; certainly it is not *granosus*

as mentioned in the literature. The type locality is very close to that of *rhuacoticus* Küster and the descriptions of both have much in common. On such comparison, the closest form to which *pfeifferi* is allied is *Diplodon burroughianus wheatleyanus* (Lea).

21 *Unio limensis* is the same as *atratus* according to Simpson, the *chilensis* of modern authors. From many of the clinal or individual variations of *chilensis*, Küster and Philippi created a large number of superfluous names. The range of *chilensis*, however, with all the forms synonymized under it, extends nearly 3000 miles north to south on the west side of the Andes. It would be reasonable to expect within such long distribution, that some populations at the range extreme might constitute subspecies, and actually *limensis* looks different from the southern forms. In *solidulus* also, the inflation of the valves sets it apart from all the other forms which have been grouped under *chilensis*; the umbo is more acuminate, hinge stronger, and the outline is like a form similar to those of the La Plata region; nevertheless it is closer to *chilensis*, and hybridization must have taken place accounting for the many 'transitional' forms. In the north of Chile, the bodies of water are distinctly separated in transversal valleys and most are small streams running independently to the Pacific, containing local races (clones?) which have been isolated for a long time. A revision is necessary to establish the status of these segregated populations.

22 *Diplodon peraeformis* is a distinct and peculiar species, but surprisingly it took a hundred years after Lea to be newly recognized (see Castellanos 1960: 26). It is not related to *charruanus* (Bonetto 1964) or *funeralis* (Haas 1930); *peraeformis* and *prunoides* are the two more globose species of the genus. *D. peraeformis* has characteristic flutings on the dorsal slope, the hinge is extraordinarily strong for its size, and the color is al-

ways clear brown. It may be found in La Plata River, but it is peculiarly abundant in central Uruguay (Durazno).

The locality of *prunoides* is unknown, and Lea indicated that the single type specimen was 'far from being perfect,' and probably it is but a more inflated *peraeiformis*.

23 *Diplodon subcylindricus* and *yaguaronis* Marshall are forms of *rhuacoicus* according to Haas; the first was described upon an oversized specimen with more inflated umbo, and *yaguaronis* is a smaller one, thinner and poorly developed.

24 D'Orbigny took the name *solisiana* from the Solis River at Piriapolis, near Maldonado, one of the localities indicated by him for the species, although it seems to be scarce nowadays in that area. *Diplodon solisianus* is allied with *delodontus* but remarkably different in shape. Haas recognized the species from paratypes in the Senckenberg Museum and also Castellanos (1960: 27) figured the species on plate 5 (f. 4, 5) but I doubt if that of fig. 8 is the same thing.

Usually, *solisianus* replaces *delodontus*, or vice versa, in certain localities, but it is not uncommon to find the two species living together along the lower Paraná River. I received two abundant lots sent by Bonetto, from Arroyo Malabrigo, near Romang, Santa Fe, Argentina, both labelled as '*delodontus*' but representing well differentiated populations of these two species. As in the case of other related monogenetic species, *solisianus delodontus* and *solisianus* X *delodontus wymani* are found, which in most collections are simply labeled as *delodontus*. *D. solisianus*, however, is less common than *delodontus*. Formica Corsi (1900: 449) gave as '*Unio solisiana*' a figure which is actually *D. funebris*; in fact, within the group of *Diplodon delodontus*, *solisianus* is the species which comes closer to the group of *D. paranensis*.

REFERENCES

BAKER, Fred (1914) Land and Fresh-water Mollusks of the Stanford Expedition to Brazil. -- Proc. A. N.S.P., 65: 618-672.

BONETTO, A. A. (1961) Las formas larvales del género *Diplodon*, etc. -- Publ. Dirección de Recursos Naturales, Santa Fe, Argentina, 48 p.

----- (1961a) Especies nuevas y pocas conocidas de Nayades del Río de la Plata. -- Primera Reunión Ciencias Nturales del Litoral Argentino (Univ. Nac. del Litoral), Santa Fe, p. 213-224.

----- (1964) Especies del género *Diplodon* en la pendiente atlántica del Sur del Brasil. -- Physis, 24: 323-328.

BURCKHARDT, C. (1900) Coupe géologique de la Cordillère entre Las Lajas et Caracutin. Anales Museo La Plata (sect. Geol.), 3: 1-43.

CASTELLANOS, A. Z. J. de (1960) Almejas Nacaríferas de la Rep. Argentina. -- Dirección de Pesca y Conservación (Secretaría de Agricultura) Public. Miscelanea * 421. Buenos Aires. 40 p.

----- (1961) Las especies del género *Diplodon* en Argentina. -- Actas y Trabajos, Primer Congreso Sudamericano de Zoología, 2(3): 85-94.

CORSI, F. A. (1900) Moluscos de la República del Uruguay. -- Anales Museo Montevideo, 2: 295-525.

DOELLO JURADO, M. (1927) Noticia preliminar sobre los Moluscos fósiles de agua dulce mencionados por Wichmann. -- Boletín Acad. Nac. Ciencias Córdoba, Argentina, 7: 457-474.

DUNKER, W. (1848) Diagnosis Molluscorum Novorum. -- Zeitschr. f. Malak., 5: 177-186.

GRAY, J. E. (1828) Spicilegia Zoologica, pl. 6, f. 12.

HAAS, F. (1916) *Nayades del Viaje al Pacífico*. -- *Trabajos, Museo Ciencias Naturales, Madrid (Zool.)*, 25: 1-63.

----- (1929) *Beiträge zur Kenntniss sudamerikanischer Binnenmollusken*. -- *Senckenbergiana* 11: 8-13.

----- (1930-1931) *Versuch einer kritischen Sichtung der sudamerikanischen Najaden*. -- *Senckenbergiana* 12: 175-195. 13: 30-52, 87-110.

----- (1938) *Neue Binnen-Mollusken aus Nordost Brasilien*. -- *Archiv f. Mollusk.*, 70: 46-51.

----- (1966) *On some new non-marine Mollusks from Colombia and Peru*. -- *Fieldiana* 44 (25): 23; 241.

IHERING, H. von (1893) *Najaden von Sao Paulo*. -- *Archiv f. Naturg.*, 1: 45-140.

----- (1903) *Les Mollusques crétaciques de l'Argentine orientale*. -- *Anales Museo Buenos Aires*, 9: 193.

----- (1904) *Nuevas Observaciones sobre Moluscos Cretáceos y Terciarios de Patagonia*. -- *Revista Museo La Plata*, 11: 227-239.

----- (1907) *Mollusques fossiles du Crétacé supérieur et du Tertiaire del'Argentine*. -- *Anales Museo Nacional Buenos Aires*, 14: 1-611.

----- (1910) *Über Brasilianischen Najaden*. -- *Abh. Senckenb. Natur. Ges.*, 32: 11-40.

KÜSTER, H. C. (1842-62) *Die Flussperlmuscheln (Unio & Hyria), in Systematisches Conchylien Cabinet*, 9: 1-318, Nürnberg.

LAMARCK, J. B. P. A. (1835) *Histoire naturelle des Animaux sans Vertèbres*. -- 2d. ed., Deshayes and Milne-Edwards, 6 (*Mulettes-Unio*): 525-560.

LEA, I. (1831-1834) *Observations on the Naiades*. -- *Trans. Am. Phil. Soc.*, 4 (1831): 63-121 5 (1834): 23-119.

----- (1834-1874) *Observations on the Genus Unio*. -- Philadelphia, 1 (1834); 2 (1848); 6 (1857-1858); 7 (1860); 10 (1863); 12 (1869).

----- (1856-1868) *Description of . . . new exotic Unionidae*. -- *Proc. A.N.S.P.*, 8: 92-95 e (1859); 187-190; 4 (1859): 306-9 (1865); 75-76 12 (1868): 150.

----- (1845) *Descriptions of new Fresh-Water and land shells*. -- *Proc. Am. Phil. Soc.*, 4: 162; 168.

----- (1860) *Description of 15 new Uruguayan Unionidae*. -- *Proc. A.N.S.P.* 4: 90-92.

----- (1866) *Description of 12 Unionidae from South America*. -- *Proc. A.N.S.P.*, 10: 33-35.

----- (1870) *A Synopsis of the family Unionidae*. -- 4th ed., Philadelphia, 184 p.

MARSHALL, W. B. (1917) *New and little known species of South American Diplodon*. -- *Proc. U.S. Nat. Mus.*, 53: 381-388.

----- (1922) *New pearly Fresh Water Mussels from South America*. -- *Proc. U.S. Nat. Mus.*, 61: 1-9, Art. 16.

----- (1923) *New pearly Fresh-Water Mussels from Mexico and Uruguay*. -- *Proc. U.S. Nat. Mus.*, 63: 1-4.

----- (1926) *New land and fresh-water Mollusks from Central and South America*. -- *Proc. U.S. Nat. Mus.*, 69: 1-2, Art. 12.

----- (1928) *New fossil fresh-water Mussels from deposits of the Upper Amazon of Peru*. -- *Proc. U.S. Nat. Mus.*, 74 (Art. 3): 1-7.

----- (1928) *New fresh-water and marine*

shells from Brazil and Uruguay. -- Proc. U. S. Nat. Mus., 74 (Art. 17): 1-7.

----- (1930) New land and fresh-water mollusks from South America. -- Proc. U.S. Nat. Mus., 77 (Art. 2): 1-7.

----- (1934) Two new species of pearly fresh-water mussels. -- Jour. Washington Acad. Sci., 24: 78-81.

MARSHALL, W.B. and BOWLES, E.O. (1932) New fossil fresh-water mollusks from Ecuador. -- Proc. U.S. Nat. Mus., 82 (Art. 5): 1-7.

MARTENS, E. von (1895) Mollusken von Paraguay. -- Sitzungsber. Natur. Fr.: 33-35, Berlin.

MATON, W.C. (1811) Description of seven new species of Testacea. -- Trans. Linn. Soc. London, 1811: 325.

MAYER-EYMAR, Ch. (1900) See Burckhardt, 1900, p. 24. Tertiaire - Lamellibranchiata.

MORRISON, J. P. E. (1943) Two new Orinoco Unionids, etc. -- Nautilus, 57: 14-16.

ORBIGNY, A. d' (1835) Synopsis terrestrium et fluviatilium Molluscorum in suo per Americam Meridionalem Itinere. -- Magazin de Zool., 5. Paris

----- (1846) Voyage dans l'Amérique méridionale V (Mollusques), Genre *Unio*: 602-611. Paris. The Mollusca in d'Orbigny's 'Voyage' corresponds to part 3 of v. 5; first pages, p. 1-48, began in 1835 and ran for 6 sections of pages; the last section, p. 489-758, corresponds to 1846.

ORTMANN, A. E. (1921) South American Naiades. -- Memoirs Carnegie Museum, 8: 451-670.

PALMER, K.A.V.W. and Liddle, R.A. (1941) Geology and Paleontology of the Cuenca-Azogue-Bibbian Region, Ecuador. -- Bull. Am. Paleont., 26 (No. 100), 62 p. Systematic description of 'Mutelidae' p. 45-51.

PARODIZ, J. J. (1963) New Fresh-water Mollusca from the Eogene of Chile and Patagonia. -- Nautilus 76: 145-147.

PFEIFFER, L. (1869) Novitates Conchologicae (1) Mollusca extra-marina, III (fasc. 23) *Unio*, p. 477-486.

PHILIPPI, R. A. (1847-1849) Centuria altera Testaceorum novarum. -- Zeitschr.

----- (1869) Bemerkungen über die chilenischen Unionen. -- Malak. Blätt., 1869: 43-49.

PILSBRY, H.A. (1921) Mollusks, in WAGNER, H. E., Faunal remains from the Trias of York County, Pennsylvania. -- Proc. A. N.S.P., 73: 25-37.

PILSBRY, H.A. and OLSSON, A. A. (1935) Tertiary fresh-water Mollusca from the Magdalena Embayment, Colombia. -- Proc. A.N.S.P., 87: 7-39. (Spanish version in Rev. Acad. Colombiana Ciencias, 4: 400-417).

RICHARDS, H. G. (1948) Fossil Mollusks from the Triassic of Pennsylvania. -- Notulae Naturae (A.N.S.P.) No. 206: 1-5.

SIMPSON, C. T. (1914) A descriptive Catalogue of the Naiades. -- Bryant Walker ed., Detroit, Part 3 (*Diplodon*, p. 1224-1312).

SOWERBY, G.B. the 1st (1839) A Conchological Manual. -- London, 338 p., 600 figs., 4th ed., 1852.

SOWERBY, G.B. the 2d, in Reeves (1868) *Conchologia Iconica*, London 16 (the different parts of *Unio* began in 1864); pages not numbered, 525 illustrations.

STEINMANN, G. and WILCKENS, O. (1908) Kreide- und Tertiärfossilien aus dem Magellanslanderns. -- Arch. f. Zool. (Stockholm), 4: 6.

STROBEL, P. (1874) Materiali per una Malacostatica de Terre e di acqua dolce dell'Argentina. -- Pisa, Biblioteca malacologica, v. 4.

WAGNER, J. A. (1827) [Descriptions] in SPIX, J.B., Testacea Fluviatilia - Brasiliam. 36 p., Leipzig.

ZILCH, A. (1966) Die Typen und Typoiden des Natur-Museum Senckenberg 39: Mollusca, Unionacea. -- Archiv f. Molluskenkunde, 97: 45.

A COLONY OF *EUGLANDINA ROSEA* AT BEAUFORT, NORTH CAROLINA

DOUGLAS A. WOLFE AND JERALDINE H. BROOKS

Bureau of Commercial Fisheries
Radiobiological Laboratory¹
Beaufort, North Carolina 28516

The range of the carnivorous land snail *Euglandina rosea* (Férussac) was reported by Pilsbry (1946) to extend from the vicinity of Yemassee, South Carolina, along the coastal plain south and west into Louisiana, including all of Florida. Burch (1962) gave the range as South Carolina, Florida, Alabama, Mississippi, and Louisiana. The northernmost record is Charleston, South Carolina (Mazyck 1913). The present report concerns a colony of living *Euglandina rosea* at Beaufort, North Carolina, some 260 miles north and east of Mazyck's Charleston record.

On March 1, 1968, we found nine live specimens of *E. rosea* along the north side of Highway 70 at the extreme western edge of Beaufort. The snails were crawling within the perimeters of two adjacent old foundations from which buildings had been moved 2 or 3 days earlier. Nine additional

.....

¹ The Radiobiological Laboratory is jointly supported by the Bureau of Commercial Fisheries and the Atomic Energy Commission.

shells of *E. rosea* were found at the same time and place; eight contained intact dead snails and the other was empty. We speculate that these specimens might have died because of the abrupt exposure to the cold wind blowing at the time (about 2° C; 25 m.p.h.).

Three other gastropod species were abundant at the collecting site: a slug, *Limax flavus* Linné, and two snails, *Triodopsis hopetonensis* (Shuttleworth) and *Helicella caperata* (Montagu). Whereas most of the shells of *Triodopsis* and *Helicella* were empty, living slugs were under and around nearly every piece of rubble moved (boards, tin cans, and cement blocks). We tested these and other gastropods as food sources for *Euglandina* as follows. Three large *E. rosea* were confined in a 1-gallon jar with seven *Limax flavus*, one *Triodopsis albolabris* (Say), and one *Mesomphix rugeli* (Binney). *Euglandina* occasionally attacked the slugs but they responded immediately with a hasty retreat and the carnivore never pressed the attack. After 3 days, three *Triodopsis hopetonensis* were added to the jar. Between

the fifth and sixth days, the three *Euglandina* consumed all the animals except the slugs. After the sixth day, the seven slugs were removed unscathed. Four *Helicella caperata* were introduced on the morning of the tenth day; one was consumed within 24 hours, two more after 24 hours, and the last after 31 hours. Thus, this localized colony of *E. rosea* was apparently surviving on *Triodopsis hopetonensis* and *Helicella caperata* and probably not on the slugs. We did not notice any particular food preference; all four species of snails offered were eaten. Feeding was usually at night. Ingram and Heming (1942) reported that a single captive *E. rosea* had selected only *Mesomphix inornatus* and *Anguispira alternata* from a variety of snails offered, including *Triodopsis albolabris*.

Although the range of *Euglandina rosea* obviously extends as far north as Beaufort, North Carolina, its distribution must be discontinuous and confined to small colonies occurring here and there. A single dead specimen, reportedly found in a yard on the east side of Beaufort, came to the attention of one of the authors (DAW) du-

ring the summer of 1967, but an intensive search of the adjoining area failed to reveal additional specimens. Perhaps *E. rosea* can survive the North Carolina winters only with the protection afforded by buildings or other similar cover.

LITERATURE CITED

BURCH, John B. (1962) How to know the eastern land snails. -- W.C. Brown Co., Dubuque, Iowa, p. 122.

INGRAM, William Marcus and HEMING, Walter Edward (1942) Food, eggs and young of the carnivorous snail *Euglandina rosea* (Férussac). -- *Zoologica* 27: 81-84.

MAZYCK, William Gaillard (1913) Catalogue of Mollusca of South Carolina. -- *Contrib. Charleston Mus.*, No. 2, p. 6.

PILSBRY, Henry A. (1946) Land Mollusca of North America (north of Mexico). -- *Acad. Nat. Sci. Philadelphia, Monogr.* 3, v. 2, pt. 1: 188-195.

ACCEPTED FOR PUBLICATION APRIL 16, 1968

CHECKLIST OF FRESHWATER AND LAND MOLLUSKS OF TEXAS

HAROLD D. MURRAY AND EDWARD C. ROY, Jr.

Trinity University, San Antonio, Texas

The following checklist of freshwater and land mollusks of Texas was prepared with the hope that it will stimulate additional publication on the mollusks of Texas. Every attempt has been made to list all species and subspecies recorded for the State of Texas; however, we apologize in advance for any omissions from this listing.

A total of 374 species and subspecies are herein recorded for Texas. The number of species and subspecies for each group is as follows:

- 88 Pelecypods
 - 78 Naiades
 - 1 Corbiculid
 - 9 Sphaeriids
- 296 Gastropods
 - 64 Freshwater pulmonates
 - 32 Freshwater operculates
 - 190 Land gastropods

For each species and subspecies, we have listed one or more references that have cited the species in Texas. The reference is listed with the date of publication followed by the page on which the species is listed. The lists of references for each species are from the oldest

to the most recent record. Question marks preceding the scientific name indicate our doubt in the validity of its occurrence in Texas, and question marks following an author reflect that author's doubt of the validity of the Texas record. A question mark following the generic name denotes our doubt in assigning the species to that genus. It is our hope that errors in this checklist will be brought to our attention for future correction.

We are particularly indebted to Dr. Aurèle La Rocque, Department of Geology, Ohio State University, for supplying much of the information in this checklist and for his critical evaluation. We also thank the Biology and Geology Departments of Trinity University for aid in preparation of this checklist.

NAIADES

1. AMBLEMA COSTATA Rafinesque 1820. Singley 1893: 317 (*Unio latecostatus* Lea); Dall 1905: 133 (*Quadrula undulata* Barnes); Simpson 1914: 819 (*Quadrula undulata latecostata* Lea); Strecker 1931: 32 (*A. plicata costata* Rafinesque).

2. AMBLEMA PERPLICATA (Conrad) 1841. Singley 1893: 318 (*Unio*), 318 (*U. brazosensis* Lea), 318 (*U. lincecumii* Lea), 318 (*U. pauciplicatus* Lea), 318 (*U. elliottii* Lea); Simpson 1914: 817 (*Quadrula*); Strecker 1931: 33 (*A. plicata perplicata* Conrad).
3. ANODONTA CORPULENTA Cooper 1834. Simpson 1914: 430?; Baker 1928: 168.
4. ANODONTA GRANDIS Say 1829. Singley 1893: 316, 316 (*A. stewartiana* Lea), 316 (*A. virens* Lea); Dall 1905: 129; Simpson 1914: 418, 429 (*A. stewartiana* Lea); Baker 1928: 152; Strecker 1931: 8.
5. ANODONTA GRANDIS BEALEI Lea 1863. Singley 1893: 316; Simpson 1914: 426.
6. ANODONTA GRANDIS LUGUBRIS Say 1829. Singley 1893: 316 (*A. texasensis* Lea), 316 (*A. leonensis* Lea), 316 (*A. micans* Anthony); Simpson 1914: 423 (*A. grandis leonensis* Lea), 427 (*A. texasensis* Lea), 434 (*A. micans* Anthony); Strecker 1931: 10.
7. ANODONTA IMBECILLIS Say 1829. Singley 1893: 316; Ortmann 1919: 162 (*A. ohioensis* Rafinesque).
8. ANODONTA IMBECILLIS HORDA Gould 1855. Simpson 1914: 396 (*A. henryana* Lea); Strecker 1931: 12.
9. ANODONTA LINNEANA Lea 1852. Simpson 1914: 431.
10. ARCIDENS CONFRAGOSUS (Say) 1829. Singley 1893: 317 (*Margaritana*); Simpson 1914: 475; Baker 1928: 196; Strecker 1931: 12.
11. CARUNCULINA PARVA COMPRESSA Simpson 1900. Simpson 1915: 150 (*Lampsilis*); Strecker 1931: 47.
12. CARUNCULINA PARVA MEARNSI Simpson 1900. Simpson 1914: 150 (*Lampsilis*); Strecker 1931: 47.
13. CARUNCULINA PARVA TEXASENSIS (Lea) 1857. Singley 1893: 321 (*Unio parva* Barnes), 321 (*U. texasensis*, *U. bairdianus* Lea, and *U. bealii* Lea); Simpson 1914: 148 (*Lampsilis texasensis*), 151 (*L. parva*), 152 (*L. haleiana* Lea); Ortmann 1919: 258 (*Toxolasma parva*); Baker 1928: 251; Strecker 1931: 45.
14. CYCLONAIAS TUBERCULATA (Rafinesque) 1820. Simpson 1914: 903 (*Quadrula*).
15. ELLIPTIO DILATATUS (Rafinesque) 1820. Simpson 1914: 597 (*Unio gibbosus* Barnes); Ortmann 1919: 95; Baker 1928: 124.
16. ELLIPTIO? POPEI (Lea) 1857. Singley 1893: 322 (*Unio*); Simpson 1914: 700 (*Unio*); Strecker 1931: 17.
17. ELLIPTIO? TAMAULIPASENSIS (Conrad) 1855. Simpson 1914: 622 (*Unio mitchelli* Simpson), 622 (*U. mitchelli iheringi* B.H. Wright); Strecker 1931: 18.
18. ELLIPTIO? TAMAULIPASENSIS ELONGATUS (Simpson) 1914. Simpson 1914: 623 (*Unio*); Strecker 1931: 19.
19. FUSCONAIA ASKEWI (Marsh) 1896. Simpson 1914: 869 (*Quadrula askewi*); Strecker 1931: 31 (*Q. askewi*). Although both Simpson and Strecker place this species in the genus *Quadrula*, Simpson 1914 does place it in the section *Fusconaia*. Since Simpson 1914: 871 indicates *Q. askewi* and *Q. lananensis* are closely related and since *Q. lananensis* is placed in the genus *Fusconaia* by Ortmann 1912: 244, I place both *Q. askewi* and *Q. lananensis* in the genus *Fusconaia*. H. Murray.
20. FUSCONAIA BEADLEIANA (Lea) 1861. Simpson 1914: 869 (*Quadrula beadleiana*). Simpson places this species in the section *Fusconaia*; however, Ortmann 1912: 268 places it in the genus *Elliptio*. I have placed it in this genus for lack of a better place. H. Murray.
21. FUSCONAIA CERINA (Conrad) 1838. Singley 1893: 321 (*Unio*); Simpson 1914: 873 (*Quadrula*). I am unable to determine if *F. cerina* is in the genus *Quadrula*, a synonym of *F. flava*, or a valid species. H. Murray.

22. FUSCONAIA EBENUS (Lea) 1831. Simpson 1914: 897?
23. FUSCONAIA FLAVA (Rafinesque) 1820. Singley 1893: 323 (*Unio rubiginosus* Lea); Simpson 1914: 872 (*Quadrula rubiginosa* Lea); Strecker 1931: 30 (*Q. flava nasuta* Simpson).
24. FUSCONAIA LANANENSIS (Frierson) 1901. Simpson 1914: 870 (*Quadrula lananensis*); Strecker 1931: 31 (*Q. lananensis*). See note under *F. askewi* (Marsh).
25. FUSCONAIA UNDATA (Barnes) 1823. Strecker 1931: 30 (*Quadrula undata chunii* Lea). Simpson 1914: 876 recognizes *Q. chunii* as a species; however, Strecker places *Q. chunii* as a synonym of *Q. undata* (Barnes).
26. GLEBULA SUBORBICULATA (Lamarck) 1819. Singley 1893: 320 (*Unio glebulus* Say); Simpson 1914: 286 (*G. rotundata* Lamarck); Strecker 1931: 49.
27. LAMPSILIS ANODONTOIDES (Lea) 1834. Singley 1893: 321 (*Unio*); Simpson 1914: 90; Baker 1928: 266; Strecker 1931: 37 (*L. teres* Rafinesque).
28. LAMPSILIS ANODONTOIDES FLORIDENSIS (Lea) 1852. Simpson 1914: 91.
29. LAMPSILIS APPROXIMA (Lea) 1845. Singley 1893: 322 (*Unio*); Simpson 1914: 68.
30. LAMPSILIS BERLANDIERI (Lea) 1857. Singley 1893: 319 (*Unio*); Simpson 1914: 172; Strecker 1931: 42 (*L. tampicoensis berlandieri* Lea).
31. LAMPSILIS BRACTEATA (Gould) 1855. Singley 1893: 322 (*Unio*); Simpson 1914: 73; Strecker 1931: 39.
32. LAMPSILIS HYDIANA (Lea) 1838. Singley 1893: 322 (*Unio*); Simpson 1914: 66; Strecker 1931: 38 (*L. fasciata hydiana*).
33. LAMPSILIS LIENOSA (Conrad) 1834. Strecker 1931: 40. Strecker (1931) places the following in synonymy with *L. lienosa* (Conrad): *L. nigerrimus* (Lea) 1852; Singley 1893: 322 (*Unio*); Simpson 1914: 113. *Lampsilis concestator* (Lea) 1857. Simpson 1914: 102?
34. LAMPSILIS OVATA VENTRICOSA (Barnes) 1823. Singley 1893: 320 (*Unio satura* Lea); Simpson 1914: 41 (*L. ventricosa satura* Lea); Strecker 1931: 36 (*L. cardium satura*).
35. LAMPSILIS POWELLII (Lea) 1852. Simpson 1914: 75. Simpson indicates this species may be a synonym of *L. reeviana* (Lea).
36. LAMPSILIS RADIATA SILIQUOIDEA (Barnes) 1823. Simpson 1914: 60 (*L. luteola* Lamarck); Clarke and Berg 1959: 60.
37. LAMPSILIS REEVIANA (Lea) 1852. Singley 1893: 321 (*Unio*); Simpson 1914: 74; Strecker 1931: 40 (*L. streckeri* Frierson).
38. LAMPSILIS TAMPICOENSIS (Lea) 1838. Singley 1893: 320 (*Unio*); Simpson 1914: 172; Strecker 1931: 41.
39. LAMPSILIS TAMPICOENSIS HEERMANI (Lea) 1861. Singley 1893: 322 (*Unio*); Simpson 1914: 172 (*L. tampicoensis* Lea); Strecker 1931: 42.
40. LASMIGONA COSTATA (Rafinesque) 1820. Simpson 1914: 488?
41. LEPTODEA FRAGILIS (Rafinesque) 1822. Singley 1893: 321 (*Unio gracilis* Barnes); Dall 1905: 127 (*Lampsilis gracilis*); Baker 1928: 234; Simpson 1914: 181 (*Lampsilis gracilis*); Strecker 1931: 41 (*Lampsilis fragilis*).
42. LEPTODEA LAEVISSIMA (Lea) 1830. Singley 1893: 321 (*Unio*); Simpson 1914: 183 (*Lampsilis laevisissima*); Baker 1928: 247 (*Proptera*); Strecker 1931: 43 (*Proptera*).
43. LIGUMIA RECTA (Lamarck) 1819. Sing-

ley 1893: 322 (*Unio*). Strecker (1931) questions the occurrence of this species in Texas.

44. *LIGUMIA SUBROSTRATA* (Say) 1831. Singley 1893: 320 (*Unio*), 320 (*U. rutersvillensis* Lea); Simpson 1914: 99 (*Lampsilis*); Strecker 1931: 43 (*Lampsilis*).

45. *MEGALONAIAS GIGANTEA* (BARNES) 1823. Singley 1893: 322 (*Unio eightsii* Lea), 318 (*U. multiplicatus* Lea), 317 (*U. undulatus* Barnes); Simpson 1914: 825 (*Quadrula heros* Say); Strecker 1931: 34 (*Amblema gigantea* Barnes).

46. *OBLIQUARIA REFLEXA* Rafinesque 1820. Singley 1893: 319 (*Unio cornutus* Barnes); Simpson 1914: 330; Ortmann 1919: 214; Baker 1928: 210; Strecker 1931: 36.

47. *OBOVARIA CASTANEA* (Lea) 1831. Singley 1893: 320 (*Unio*); Simpson 1914: 300; Strecker 1931: 49.

48. *PLECTOMERUS TRAPEZOIDES* (Lea) 1831. Singley 1893: 318 (*Unio*); Simpson 1914: 830 (*Quadrula*); Strecker 1931: 35 (*Amblema dombeyana* Valenciennes).

49. *PLEUROBEMA BIGBYENSE* (Lea) 1841. Simpson 1914: 765 ? This species may be part of the *Pleurobema clava* complex since Simpson places it in the group of *P. clava* (p. 735). Simpson places a question mark after the locality cited for Texas, questioning its presence in Texas.

50. *PLEUROBEMA RIDELLII* (Lea) 1861. Singley 1893: 322 (*Unio*); Ortmann 1912: 262 (*Pleurobema*); Simpson 1914: 879 (*Quadrula*); Strecker 1931: 29 (*Quadrula*).

51. *PROPTERA ALATA* (Say) 1817. Singley 1893: 323 (*Unio*).

52. *PROPTERA AMPHICHAENA* (Frierson) 1898. Simpson 1914: 186 (*Lampsilis*); Strecker 1931: 45.

53. *PROPTERA PURPURATA* (Lamarck) 1819. Singley 1893: 320 (*Unio*), 320 (*Unio colo-*

radoensis Lea); Simpson 1914: 166 (*Lampsilis*), 164 (*L. coloradoensis* Lea); Strecker 1931: 44.

54. *PSORONAIAS SEMIGRANOSUS* (Philippi) 1845. Singley 1893: 323 (*Unio*). Strecker (1931: 6) states this record by Singley is an error and that the shells labeled 'Texas' actually came from Yucatan.

55. *QUADRULA AUREA* (Lea) 1859. Singley 1893: 320 (*Unio*); Simpson 1914: 861; Strecker 1931: 25.

56. *QUADRULA COUCHIANA* (Lea) 1860. Simpson 1914: 843; Strecker 1931: 28. Strecker expresses the opinion that this may be an aberrant form of *Q. quadrula*.

57. *QUADRULA CUNEUS* (Conrad) 1840. 1896. Simpson 1914: 897;

58. *QUADRULA FRIERSONI* (B. H. Wright) 1896. Simpson 1914: 879; Strecker 1931: 29. I am unable to determine if this species belongs in the genus *Quadrula*. H. Murray.

59. *QUADRULA HOUSTONENSIS* (Lea) 1859. Singley 1893: 319 (*Unio*); Simpson 1914: 859; Strecker 1931: 27.

60. *QUADRULA NODIFERA* (Conrad) 1841. Singley 1893: 319 (*Unio*); Simpson 1914: 857; Strecker 1931: 25. Strecker places this species as a synonym of *Q. pustulosa mortoni* (Conrad).

61. *QUADRULA NODULATA* Rafinesque 1820. Strecker 1931: 28.

62. *QUADRULA PETRINA* (Gould) 1855. Singley 1893: 319 (*Unio*); Simpson 1914: 860; Strecker 1931: 27.

63. *QUADRULA PUSTULOSA* (Lea) 1831. Singley 1893: 323 (*Unio*), 323 (*Unio dorfeuillianus* Lea), 322 (*U. kienerianus* Lea); Simpson 1914: 848; Strecker 1931: 24. Strecker places *U. dorfeuillianus* and *U. kienerianus* as synonyms of *Q. pustulosa*.

64. QUADRULA PUSTULOSA MORTONI (Conrad) 1836. Singley 1893: 322 (*Unio*); Simpson 1914: 853 (*Q. mortoni* Conrad); Strecker 1931: 25. Strecker places *Q. sphaerica* (Lea) as a synonym of *Q. pustulosa mortoni* (Conrad).

65. QUADRULA QUADRULA Rafinesque 1820. Singley 1893: 319 (*Unio apiculata* Say), 319 (*U. aspera* Lea), 319 (*U. forsheyi* Lea), 319 (*U. speciosa* Lea); Simpson 1914: 840 (*Q. aspera* Lea), 841 (*Q. lachrymosa* Lea), 844 (*Q. forsheyi* Lea), 845 (*Q. speciosa* Lea), 846 (*Q. apiculata* Say); Strecker 1931: 19 (*Q. quadrula apiculata* Say), 20 (*Q. quadrula forsheyi* Lea), 21 (*Q. quadrula speciosa* Lea), 21 (*Q. quadrula aspera* Lea). Because Strecker 1931 lists *Q. apiculata*, *Q. forsheyi*, *Q. speciosa*, and *Q. aspera* of Simpson 1914 as subspecies of *Q. quadrula*, a conservative approach is here used in listing each as a synonym of *Q. quadrula* until the specific or subspecific rank of each in Texas is verified.

66. STROPHITUS SUBVEXUS (Conrad) 1834. Strecker 1931: 14.

67. STROPHITUS UNDULATUS (Say) 1817. Simpson 1914: 345 (*S. edentulus* Say); Strecker 1931: 13.

68. TRITOGONIA NOBILIS (Conrad) 1854. Simpson 1914: 321. This probably belongs in the genus *Quadrula*.

69. TRITOGONIA VERRUCOSA (Rafinesque) 1820. Singley 1893: 318 (*Unio tuberculatus* Barnes); Simpson 1914: 318; Strecker 1931: 23 (*Quadrula*).

70. TRITOGONIA VERRUCOSA OBESA Simpson 1900. Simpson 1900: 609.

71. TRUNCILLA DONACIFORMIS (Lea) 1828. Singley 1893: 322 (*Unio*); Ortmann 1919: 241 (*Amygdalonaias*); Baker 1928: 224; Simpson 1914: 308 (*Plagiola*); Strecker 1931: 48.

72. TRUNCILLA MACRODON (Lea) 1859.

Singley 1893: 320 (*Unio*); Simpson 1914: 309 (*Plagiola*); Strecker 1931: 48.

73. TRUNCILLA TRUNCATA Rafinesque 1820. Singley 1893: 319 (*Unio elegans* Lea); Baker 1928: 224; Simpson 1914: 306 (*Plagiola elegans* Lea); Strecker 1931: 47.

74. UNIOMERUS TETRALASMUS (Say) 1830. Singley 1893: 317 (*Unio*), 317 (*Unio jamesianus* Lea), 317 (*Unio symmetricus* Lea); Simpson 1914: 705; Strecker 1931: 14 (*Elliptio tetralasmus*).

75. UNIOMERUS TETRALASMUS CAMPTODON (Say) 1832. Singley 1893: 317 (*Unio camptodon*); Simpson 1914: 706; Strecker 1931: 14 (*Elliptio tetralasmus*).

76. UNIOMERUS TETRALASMUS DECLIVIS (Say) 1831. Singley 1893: 317 (*Unio declivis*); Simpson 1914: 708; Strecker 1931: 16 (*Elliptio declivis*).

77. UNIOMERUS TETRALASMUS MANUBIUS (Gould) 1856. Singley 1893: 317 (*Unio manubius*); Simpson 1914: 707; Strecker 1931: 16 (*Elliptio tetralasmus manubius*).

78. ? VILLOSA IRIS (Lea) 1829. Baker 1898: 105; Ortmann 1919: 265?

CORBICULIDAE

79. CORBICULA MANILENSIS (Philippi) 1841. Metcalf 1966: 16.

SPHAERIIDAE

80. PISIDIUM CASERTANUM (Poli) 1791. Sterki 1916: 456 (*P. friersoni* Sterki), 456 (*P. atlanticum* Sterki); Herrington 1962: 33.

81. PISIDIUM COMPRESSUM Prime 1851. Singley 1893: 316; Herrington 1962: 35.

82. PISIDIUM NITIDUM Jenyns 1832. Herrington 1962: 45.

83. PISIDIUM PUNCTIFERUM (Guppy) 1867. Singley 1893: 315 (*Sphaerium singleyi* Pilsbry); Sterki 1916: 446 (*Eupera singleyi* Pilsbry), 451 (*Pisidium limatum* Sterki), 470 (*P. singleyi* Sterki); Herrington 1962: 47.

84. PISIDIUM VARIABILE Prime 1851. Singley 1893: 316.

85. SPHAERIUM PARTUMEIUM (Say) 1822. Singley 1893: 315 (*S. elevata* Haldeman); Sterki 1916: 439 (*Musculium elevatum* Haldeman), 439 (*M. orbiculare* Sterki); Herrington 1962: 23.

86. SPHAERIUM SECURIS (Prime) 1851. Herrington 1962: 26.

87. SPHAERIUM STRIATINUM (Lamarck) 1818. Singley 1893: 315; Sterki 1916: 433 (*S. stamineum* Conrad), 437 (*S. jalapense* Pilsbry; Baker 1928: 399 (*S. notatum* Sterki); Herrington 1962: 29.

88. SPHAERIUM TRANSVERSUM (Say) 1829. Singley 1893: 315 (*S. subtransversum* Prime); Herrington 1962: 29.

FRESHWATER PULMONATES

89. APLEXA HYPNORUM (Linnaeus) 1758. Slaughter *et al.* 1962: 44.

90. BULINUS BERLANDIERIANUS W. G. Binney 1865. Singley 1893: 313; Strecker 1935: 37 (*Bulinus*).

91. DREPANOTREMA CULTRATUM (d'Orbigny). Singley 1893: 314 (*Planorbis*); Walker 1918: 98 (*Planorbis*); Strecker 1935: 34 (*Planorbis*). Baker 1945: 118.

92. DREPANOTREMA CULTRATUM LABROSUM Pilsbry 1934. Baker 1945: 492.

93. FERRISSIA EXCENTRICA (Morelet) 1891. Singley 1893: 315 (*Ancylus*); Walker 1918: 120; Strecker 1935: 38; Wurtz 1951: 125.

94. FERRISSIA KIRKLANDI (Walker) 1903. Strecker 1935: 38.

95. FERRISSIA PARALLELA (Haldeman) 1841. Singley 1893: 315 (*Ancylus*); Strecker 1935: 37; Leonard and Frye 1962: 22.

96. FERRISSIA RIVULARIS (Say) 1819. Leonard and Frye 1962: 22.

97. FERRISSIA SHIMEKI (Pilsbry) 1890. Leonard and Frye 1962: 23.

98. FERRISSIA TARDA (Say) 1830. Singley 1893: 315 (*Ancylus*); Strecker 1935: 37.

99. FOSSARIA CUBENSIS (Pfeiffer). Baker 1911: 204 (*Galba*); Strecker 1935: 31 (*Galba*).

100. FOSSARIA DALLI (Baker) 1906. Strecker 1935: 31 (*Lymnaea*).

101. FOSSARIA HUMILIS (Say) 1822. Singley 1893: 313 (*Limnaea*).

102. FOSSARIA MODICELLA (Say) 1825. Singley 1893: 313 (*Limnaea*); Baker 1911: 259 (*Galba humilis m.*); Baker 1928: 289; Strecker 1935: 33.

103. FOSSARIA OBRUSSA (Say) 1825. Strecker 1933: 33 (*Galba*).

104. FOSSARIA PARVA (Lea) 1841. Strecker 1935: 32 (*Galba*); Leonard and Frye 1962: 20 (*Lymnaea*).

105. GUNDLACHIA HJALMARSONI Pfeiffer. Walker 1918: 121; Strecker 1935: 38.

106. GYRAULUS ARIZONENSIS (Pilsbry and Ferriss) 1915. Branson 1960: 37.

107. GYRAULUS (?TORQUIS) CARUS (Pilsbry and Ferriss) 1906. Walker 1918: 97; Strecker 1935: 34 (*Planorbis*).

108. GYRAULUS CIRCUMSTRIATUS (Tryon) 1866. Frye and Leonard 1964: 19.

109. GYRAULUS LABIATUS Leonard 1948. Leonard 1948: 45.

110. GYRAULUS PARVUS (Say) 1817. Singley 1893: 314 (*Planorbis*); Walker 1915: 6;

Strecker 1935: 35; Leonard and Frye 1962: 22.

111. HELISOMA ANCEPS (MENKE) 1830. Singley 1893: 314 (*Planorbis bicarinatus*); Strecker 1935: 33 (*P. antrosus*); Leonard and Frye 1962: 21 (*H. antrosa*).

112. HELISOMA TENUE SINUOSUM (Bonnet). Baker 1945: 432.

113. HELISOMA TRIVOLVIS (Say) 1817. Singley 1893: 314 (*Planorbis*); Hanna 1923: 25 (*Planorbis*); Strecker 1935: 35 (*Planorbis*); Leonard and Frye 1962: 21.

114. HELISOMA TRIVOLVIS TURGIDUM (Jeffreys). Baker 1945: 414 (*H. trivolvis intertextum*).

115. HELISOMA TRIVOLVIS LENTUM (Say) 1834. Singley 1893: 314 (*Planorbis lentus*); Walker 1915: 6 (*Planorbis lentus* var.); Strecker 1935: 34 (*P. lentus*); Baker 1945: 414.

116. MENETUS DILATATUS (Gould) 1841. Singley 1893: 314; Strecker 1935: 34.

117. MENETUS PEARLETTEI Leonard 1948. Leonard 1948: 46.

118. MENETUS SAMPSONI (ANCEY). Baker 1945: 24.

119. PHYSA AMYGDALUS Sowerby. Walker 1918: 107; Strecker 1935: 36.

120. PHYSA ANATINA Lea 1869. Strecker 1935: 36; Leonard and Frye 1962: 23.

121. PHYSA CRANDALLI Baker. Strecker 1935: 36.

122. PHYSA ELLIPTICA Lea 1837. Stricklin 1961: 31.

123. PHYSA FORSHEYI Lea. Singley 1893: 312; Walker 1915: 6; Walker 1918: 110; Strecker 1935: 36.

124. PHYSA GYRINA Say 1821. Walker 1915: 6; Baker 1928: 449; Strecker 1935: 36; Wurtz 1949: 21.

125. PHYSA HALEI Lea. Singley 1893: 312; Strecker 1935: 36.

126. PHYSA HETEROSTROPHA Say 1817. Singley 1893: 312; Strecker 1935: 36.

127. PHYSA INTEGRAL Haldeman 1841. Wurtz 1949: 21.

128. PHYSA MEXICANA Philippi. Singley 1893: 312; Strecker 1935: 37.

129. PHYSA MEXICANA CONOIDEA Fischer and Crosse. Walker 1918: 112; Strecker 1935: 37.

130. PHYSA OSCULANS Haldeman. Singley 1893: 313; Strecker 1935: 37.

131. PHYSA SAYII Tappan 1839. Singley 1893: 312; Strecker 1935: 37.

132. 'PLANORBIS TUMIDUS' Pfeiffer 1839. Singley 1893: 314; Strecker 1935: 35.

133. PLANORBULA ARMIGERA (Say) 1818. Singley 1893: 315 (*Segmentina*); Leonard and Frye 1962: 21.

134. PLANORBULA CRASSILABRIS (Walker) 1907. Leonard and Frye 1962: 21.

135. PROMENETUS EXACUOUS (Say) 1821. Singley 1893: 314; Strecker 1935: 34.

136. PROMENETUS UMBILICATELLUS (Cockerell) 1887. Leonard and Frye 1962: 21.

137. PSEUDOSUCCINEA COLUMELLA (Say) 1817. Singley 1893: 313; Baker 1911: 163; Baker 1928: 272; Strecker 1935: 31.

138. PSEUDOSUCCINEA COLUMELLA CHALYBEA (Gould) 1840. Strecker 1935: 31.

139. STAGNICOLA BULIMOIDES (Lea) 1841. Singley 1893: 313 (*Limnaea*); Dall 1905: 79; Leonard and Frye 1962: 20; (*Lymnaea*).

140. STAGNICOLA BULIMOIDES COCKERELLI (Pilsbry and Ferriss) 1906. Baker 1911: 217; Strecker 1935: 32; Leonard and Frye 1962: 20 (*Lymnaea*).

141. STAGNICOLA BULIMOIDES TEHELLA (Haldeman) 1867. Walker 1915: 7 (*Lymnaea*); Baker 1911: 214 (*Galba*); Strecker 1935: 32 (*Galba*).

142. STAGNICOLA CAPERATA (Say) 1829. Singley 1893: 313 (*Limnaea*); Walker 1915: 8; Strecker 1935: 32 (*Galba*); Leonard and Frye 1962: 20 (*Lymnaea*).

143. STAGNICOLA CATASCOPIUM (Say) 1816. Hanna 1923: 25.

144. STAGNICOLA DESIDIOSA (Say) 1821. Singley 1893: 313 (*Limnaea*).

145. STAGNICOLA PALUSTRIS (Müller) 1776. Singley 1893: 313 (*Limnaea*); Baker 1911: 298 (*Galba*); Hanna 1923: 25; Strecker 1935: 33 (*Galba*).

146. STAGNICOLA REFLEXA (Say) 1821. Singley 1893: 313 (*Limnaea*); Strecker 1935: 33 (*Galba*).

147. STAGNICOLA TRYONIANA (Lea). Singley 1893: 314 (*Limnaea*).

148. TROPICORBIS GRACILENTUS (Gould) 1855. Baker 1945: 496; Jacobson 1925: 111.

149. TROPICORBIS HAVANENSIS (Pfeiffer) 1839. Singley 1893: 315 (*Planorbis*); Strecker 1935: 35 (*Segmentina*); Baker 1945: 496.

150. TROPICORBIS ? LIEBMANNI (Dunker). Singley 1893: 314 (*Planorbis*); Strecker 1935: 34.

151. TROPICORBIS OBSTRUCTUS (Morelet). Walker 1915: 6 (*Segmentina*); Walker 1918: 105 (*Segmentina*); Strecker 1935: 35 (*Segmentina*); Jacobson 1952: 111; Leonard and Frye 1962: 22.

152. TROPICORBIS OBSTRUCTUS DONBILLI (Tristram). Baker 1945: 494, 498.

FRESHWATER OPERCULATES

153. AMNICOLA COMALENSIS PILSBRY and Ferriss 1906. Walker 1918: 133; Strecker 1935: 38.

154. AMNICOLA INTEGRAL (Say) 1821. Baker 1928: 122 (*Cincinnatia cincinnatiensis* Anthony); Cheatum and Allen 1963: 174.

155. AMNICOLA LIMOSA (Say) 1817. Baker 1928: 93.

156. AMNICOLA LIMOSA PORATA (Say) 1821. Baker 1928: 98 (considered a synonym of *limosa* by Berry).

157. AMNICOLA PERACUTA Pilsbry and Walker 1889. Singley 1893: 312; Walker 1918: 136; Strecker 1935: 39.

158. AMPULLARIA CALIGINOSA Reeve. Singley 1893: 323.

159. AMPULLARIA DEPRESSA Say. Singley 1893: 323.

160. CALIPYRGULA CIRCUMSTRIATA Leonard and Ho 1960. Leonard and Frye 1962: 19.

161. CALIPYRGULA PECOSENSIS Leonard and Ho 1960. Leonard and Frye 1962: 18.

162. CAMPELOMA DECISUM Say 1817. Singley 1893: 311.

163. CAMPELOMA LEWISII Walker. Strecker 1935: 38.

164. CAMPELOMA PONDEROSUM Say 1821. Baker 1898: 357.

165. COCHLIOPA RIOGRANDENSIS Pilsbry and Ferriss 1906. Walker 1918: 141; Strecker 1935: 39; Leonard and Frye 1962: 19.

166. COCHLIOPA TEXANA Pilsbry 1935. Strecker 1935: 39.

167. GONIOBASIS COMALENSIS Pilsbry 1886. Singley 1893: 312; Walker 1918: 156; Strecker 1935: 40.

168. GONIOBASIS COMALENSIS FONTINALIS
Pilsbry and Ferriss 1906. Walker 1918:
157; Strecker 1935: 40.

169. GONIOBASIS PLEURISTRIATA Say.
Singley 1893: 311.

170. HORATIA MICRA (Pilsbry and Ferriss)
1906. Walker 1918: 148; Strecker 1935:
40.

171. HORATIA MICRA NUGAX (Pilsbry and
Ferriss) 1906. Walker 1918: 148; Strecker
1935: 40.

172. HYDROBIA TEXANA Pilsbry 1887.
Singley 1893: 312.

173. MELANOIDES TUBERCULATA (Müller).
Murray 1964: 15.

174. PALUDESTRINA DIABOLI Pilsbry and
Ferriss 1906. Walker 1918: 137; Strecker
1935: 39.

175. PALUDESTRINA PROTEA (Gould) 1855.
Strecker 1935: 39.

176. PALUDESTRINA SEEMANNI (Frauenfeld).
Strecker 1935: 39.

177. POMATIOPSIS LAPIDARIA (Say) 1817.
Hanna 1923: 25.

178. POTAMOPYRGUS CHEATUMI Pilsbry
1935. Strecker 1935: 39.

179. POTAMOPYRGUS SPINOSUS (Call and
Pilsbry) 1886. Singley 1893: 312; Walker
1918: 140; Strecker 1935: 39.

180. TAREBIA GRANIFERA (Lamarck) 1816.
Murray 1964: 15.

181. VALVATA TRICARINATA Say 1817. Sing-
ley 1893: 312; Strecker 1935: 38.

182. VALVATA GUATEMALENSIS Morelet.
Strecker 1935: 38.

183. VIVIPARUS SUBPURPUREUS (Say) 1829.
Singley 1893: 311; Strecker 1935: 38.

184. VIVIPARUS TEXANUS Tryon. Baker
1928: 44.

LAND GASTROPODA

185. ANGUISPIRA ALTERNATA (Say) 1816.
Singley 1893: 303; Strecker 1935: 27.

186. ANGUISPIRA ALTERNATA CARINATA
(Pilsbry and Rhoads) 1896. Strecker 1935:
27.

187. ANGUISPIRA ALTERNATA CRASSA Walk-
er. Pratt 1964: 31.

188. ANGUISPIRA ALTERNATA STRONGYLODES
(Pfeiffer) 1854. Strecker 1935: 27 (A.
alternata rarinotata Pilsbry); Pilsbry
1948: 577.

189. ASHMUNELLA ADITHAE Pilsbry and
Cheatum 1951. Pilsbry and Cheatum 1951:
88.

190. BULIMULUS ALTERNATUS (Say) 1830.
Singley 1893: 309. Pilsbry 1946: 15 states
that typical *B. alternatus* is not found
in Texas.

191. BULIMULUS ALTERNATUS MARIAE (Al-
bers) 1850. Strecker 1935: 16, 16 (*B. al-
ternatus albida* Taylor), 16 (*B. alterna-
tus intermedia* Singley); Pilsbry 1946: 14;
Simmons 1954: 23.

192. BULIMULUS DEALBATUS (Say) 1821.
Singley 1893: 309; Strecker 1935: 15, 15
(*B. dealbatus liquabilis* Reeve); Pilsbry
1946: 7.

193. BULIMULUS DEALBATUS DEALBATUS (Say)
1821. Leonard and Frye 1962: 23.

194. BULIMULUS DEALBATUS MOOREANUS
(Pfeiffer) 1868. Singley 1893: 309 (*B. s-
chiedeanus mooreanus*); Strecker 1935: 15;
Pilsbry 1946: 12; Wheeler 1949: 7; Jacob-
son 1952: 110; Simmons 1954: 21.

195. BULIMULUS DEALBATUS RAGSDALEI
(Pilsbry) 1890. Singley 1893: 309 (*B.*

- ragsdalei*); Strecker 1935: 15; Pilsbry 1946: 11.
196. BULIMULUS PASONIS Pilsbry 1902. Strecker 1935: 16 (*B. dealbatus pasonis*); Pilsbry 1946: 18.
197. BULIMULUS PILSBRYI Ferriss 1925. Strecker 1935: 17; Pilsbry 1946: 20.
198. BULIMULUS SCHIEDEANUS (Pfeiffer) 1841. Singley 1893: 309, 309 (*B. patriarcha* Binney); Strecker 1935: 14 (*B. patriarcha*), 17 (*B. alternatus hesperia* Pilsbry and Ferriss); Pilsbry 1946: 16.
199. BULIMULUS SCHIEDEANUS PECOSENSIS Pilsbry and Ferriss 1906. Strecker 1935: 16, 16 (*B. dealbatus schiediana* Pfeiffer); Pilsbry 1946: 17; Simmons 1954: 22.
200. CARYCHIUM EXIGUUM (Say) 1822. Singley 1893: 311; Strecker 1935: 31; Wheeler 1949: 8.
201. CARYCHIUM EXILE H. C. Lea 1842. Singley 1893: 311; Strecker 1935: 31; Pilsbry 1948: 1058; Wheeler 1949: 8.
202. CATINELLA TEXANA Hubricht 1961. Hubricht 1961: 61.
203. CECILIOIDEA APERTA (Swainson) 1840. Pilsbry 1950: 57. Pleistocene wash?
204. COLUMELLA EDENTULA (Draparnaud) 1805. Strecker 1935: 29.
205. CIONELLA LUBRICA (Müller) 1774. Pilsbry 1950: 58.
206. DEROCERAS AENIGMA Leonard. Leonard and Frye 1962: 24.
207. DEROCERAS LAEVE (Müller) 1774. Strecker 1935: 27; (*Agriolimax campestris* Binney); Wheeler 1949: 7.
208. DEROCERAS RETICULATUM (Müller) 1774. Strecker 1935: 26 (*Agriolimax agrestis* Leidy).
209. DISCUS CRONKHITEI (Newcomb) 1865. Singley 1893: 303 (*Patula striatella* Anthony); Strecker 1935: 27 (*Gonyodiscus striatella*) 28 (*G. cronkhitei anthonyi* Henderson); Pilsbry 1948: 600.
210. DISCUS PATULUS (Deshayes) 1830. Singley 1893: 303 (*Patula perspectiva* Say); Strecker 1935: 27 (*Gonyodiscus perspectivus*).
211. DRYMAEUS SERPERASTRUM (Say). Singley 1893: 309; Strecker 1935: 17 (*Bulimulus*); Pilsbry 1946: 22 doubts the occurrence of this species in Texas.
212. EUCONULUS CHERSINUS (Say) 1821. Strecker 1935: 25.
213. EUCONULUS CHERSINUS TROCHULUS (Reinhardt) 1883. Strecker 1935: 24; Pilsbry 1946: 241; Wheeler 1949: 7.
214. EUCONULUS FULVUS (Müller) 1774. Singley 1893: 303 (*Zonites*); Strecker 1935: 25; Pilsbry 1946: 235.
215. EUGLANDINA EXESA Cockerell 1930. Strecker 1935: 23; Pilsbry 1946: 196.
216. EUGLANDINA IMMORATA Pilsbry 1907. Pilsbry 1946: 197.
217. EUGLANDINA ROSEA (Férussac) 1821. Strecker 1935: 23 (*E. truncata* Gmelin?). Doubtful record for Texas.
218. EUGLANDINA SINGLEYANA (Binney) 1892. Singley 1893: 301 (*Glandina truncata* De Kay), 302 (*G. decussata singleyana* Binney), 303 (*Zonites*); Strecker 1935: 23; Pilsbry 1946: 197; Wheeler 1949: 7.
219. EUGLANDINA TEXASIANA (Pfeiffer) 1857. Singley 1893: 301 (*Glandina*); Strecker 1935: 23; Pilsbry 1946: 195.
220. ?EUGLANDINA VANUXEMENSIS (Lea). Singley 1893: 302; Strecker 1935: 23. Pilsbry 1946: 189 states this is a species found in Mexico.
221. GASTROCOPTA ARMIFERA (Say) 1821. Singley 1893: 308 (*Pupa*); Strecker 1935: 19; Pilsbry 1948: 874.

222. GASTROCOPTA ARMIFERA ABBREVIATA (Sterki) 1909. Pilsbry 1948: 877.
223. GASTROCOPTA CONTRACTA (Say) 1822. Singley 1893: 308 (*Pupa*); Strecker 1935: 19; Pilsbry 1948: 880.
224. GASTROCOPTA CONTRACTA CLIMEANA (Vanatta) 1911. Strecker 1935: 20; Pilsbry 1948: 881.
225. GASTROCOPTA CORTICARIA (Say) 1816. Singley 1893: 307 (*Pupa*); Strecker 1935: 21.
226. GASTROCOPTA CRISTATA (Pilsbry and Vanatta) 1900. Strecker 1935: 20; Pilsbry 1944: 69; Pilsbry 1948: 911.
227. GASTROCOPTA HOLZINGERI (Sterki) 1899. Singley 1893: 308 (*Pupa*); Strecker 1935: 20; Wheeler 1949: 8.
228. GASTROCOPTA HOLZINGERI STERKII Pilsbry 1944. Pilsbry 1944: 69.
229. GASTROCOPTA PELLUCIDA HORDEACELLA (Pilsbry) 1890. Singley 1893: 308 (*Pupa*); Strecker 1935: 20; Pilsbry 1944: 69; Pilsbry 1948: 913.
230. GASTROCOPTA PENTODON (Say) 1821. Singley 1893: 308 (*Pupa pentodon* and *P. curvidens* Gould); Strecker 1935: 21, 21 (*G. curvidens*), 21 (*G. pentodon floridana* Dall); Pilsbry 1944: 69; Pilsbry 1948: 886.
231. GASTROCOPTA PROCERA (Gould) 1840. Singley 1893: 308 (*Pupa*); Strecker 1935: 20; Pilsbry 1948: 907.
232. GASTROCOPTA PROCERA MCCLUNGI (Hanna and Johnston) 1913. Pilsbry 1944: 69; Pilsbry 1948: 910.
233. GASTROCOPTA PROCERA STERKIANA Pilsbry 1917. Strecker 1935: 21 (*G. duplicata* Sterki); Pilsbry 1944: 69; Pilsbry 1948: 908.
234. GASTROCOPTA RIOGRANDENSIS (Pilsbry and Vanatta) 1900. Singley 1893: 308 (*Pupa*); Strecker 1935: 21; Pilsbry 1948: 891.
235. GASTROCOPTA RUPICOLA (Say) 1821. Strecker 1935: 21; Pilsbry 1948: 905.
236. GASTROCOPTA TAPPANIANA (C. B. Adams) 1842. Strecker 1935: 22, 22 (*G. tapaniana curta* Sterki); Pilsbry 1948: 889; Wheeler 1949: 8.
237. GUPPYA GUNDLACHI (Pfeiffer) 1840. Singley 1893: 303 (*Zonites*); Strecker 1935: 25; Pilsbry 1946: 244.
238. HAPLOTREMA CONCAVUM (Say) 1821. Strecker 1935: 23; Pratt 1964: 31.
239. HAWAIIA MINUSCULA (Binney) 1840. Singley 1893: 303 (*Zonites*); Strecker 1935: 25.
240. HAWAIIA MINUSCULA ALACHUANA Dall 1885. Wheeler 1949: 7.
241. HAWAIIA MINUSCULA NEOMEXICANA (Cockerell and Pilsbry) 1900. Pilsbry 1946: 24.
242. HELICINA CHRYSOCHEILA Binney 1851. Singley 1893: 311; Strecker 1935: 5; Pilsbry 1948: 1081.
243. HELICINA ORBICULATA (Say) 1818. Singley 1893: 311; Strecker 1935: 5.
244. HELICINA ORBICULATA TROPICA Pfeiffer 1852. Pilsbry 1948: 1082; Wheeler 1949: 8; Jacobson 1952: 111.
245. HELICODISCUS EIGENMANNI Pilsbry 1900. Strecker 1935: 29; Pilsbry 1948: 630; Wheeler 1949: 7.
246. HELICODISCUS EIGENMANNI ARIZONENSIS Pilsbry and Ferriss 1906. Pilsbry 1948: 632.
247. HELICODISCUS PARALLELUS (Say) 1821. Singley 1893: 304; Strecker 1935: 28.
248. HELICODISCUS SINGLEYANUS (Pilsbry) 1890. Singley 1893: 303 (*Zonites* and *Z. laeviuscula*); Strecker 1935: 28; Pilsbry 1948: 636.

249. *HELICODISCUS NUMMUS* (Vanatta) 1899. Strecker 1935: 28; Pilsbry 1948: 639.
250. *HELIX ASPERSA* (Müller 1774 Strecker 1935: 6; Harry 1948: 21.
251. *HOLOSPIRA GOLDFUSSI* (Menke) 1847. Singley 1893: 309; Strecker 1935: 17; Pilsbry 1946: 155; Wheeler 1949: 7.
252. *HOLOSPIRA GOLDFUSSI ANACACHENSIS* Bartsch 1906. Strecker 1935: 17; Pilsbry 1946: 117.
253. *HOLOSPIRA HAMILTONI* Dall 1897. Strecker 1935: 18; Pilsbry 1946: 118.
254. *HOLOSPIRA MESOLIA* Pilsbry 1912. Strecker 1935: 18; Pilsbry 1946: 119.
255. *HOLOSPIRA ORITIS* Pilsbry and Cheatum 1951. Pilsbry and Cheatum 1951: 89.
256. *HOLOSPIRA PASONIS* Dall 1895. Strecker 1935: 18; Pilsbry 1946: 121.
257. *HOLOSPIRA PITYIS* Pilsbry and Cheatum 1951. Pilsbry and Cheatum 1951: 89.
258. *HOLOSPIRA RIOGRANDENSIS* Pilsbry 1946. Pilsbry 1946: 118.
259. *HOLOSPIRA ROEMERI* (Pfeiffer) 1848. Singley 1893: 309; Strecker 1935: 18; Pilsbry 1946: 114; Wheeler 1949: 7.
260. *HOLOSPIRA ROEMERI BREVISSIMA* Pilsbry 1950. Pilsbry 1950: 56.
261. *HOLOSPIRA YUCATANENSIS* Bartsch. Pilsbry 1952: 69.
262. *HUMBOLDTIANA CHEATUMI* Pilsbry 1935. Strecker 1935: 7; Pilsbry 1939: 402.
263. *HUMBOLDTIANA CHISOSENSIS* Pilsbry 1927. Strecker 1935: 6; Pilsbry 1939: 399.
264. *HUMBOLDTIANA EDITHAE* Parodiz 1954. Parodiz 1954: 107.
265. *HUMBOLDTIANA FERRISSIANA* Pilsbry 1928. Strecker 1935: 6; Pilsbry 1939: 400.
266. *HUMBOLDTIANA HÖGEANA PRAESIDIUM* Pilsbry 1939. Pilsbry 1939: 402.
267. *HUMBOLDTIANA PALMERI* Clench and Rehder 1930. Strecker 1935: 7; Pilsbry 1939: 403.
268. *HUMBOLDTIANA TEXANA* Pilsbry 1927. Singley 1893: 304. (*Helix humboldtiana* Valenciennes, Stearns); Strecker 1935: 6. (*H. humboldtiana* Val.), 7; Pilsbry 1939: 404.
269. *HUMBOLDTIANA ULTIMA* Pilsbry 1927. Strecker 1935: 7; Pilsbry 1939: 408.
270. *LIMAX FLAVUS* Linnaeus 1758. Strecker 1935: 26; Pilsbry 1948: 528; Wheeler 1949: 7.
271. *LIMAX MARGINATUS* Müller 1774. Murray and Wiley 1968: 105.
272. *LIMAX MAXIMUS* Linnaeus 1758. Singley 1893: 302; Strecker 1935: 26; Pilsbry 1948: 524; Wheeler 1949: 7.
273. *MESODON CLAUSUS* (Say) 1821. Strecker 1935: 13 (*Polygyra*).
274. *MESODON INFLECTUS* (Say) 1821. Singley 1893: 305 (*Helix*); Strecker 1935: 13 (*Polygyra*).
275. *MESODON ROEMERI* (Pfeiffer) 1848. Singley 1893: 305 (*Helix*); Strecker 1935: 13 (*Polygyra*); Pilsbry 1940: 745; Wheeler 1949: 7; Jacobson 1952: 111.
276. *MESODON THYROIDUS* (Say) 1816. Singley 1893: 304 (*Helix*); Strecker 1935: 13 (*Polygyra*); Pilsbry 1940: 706; Wheeler 1949: 7.
277. *MESODON THYROIDUS BUCCULENTA* (Gould) 1848. Singley 1893: 304 (*Helix*); Strecker 1935: 13 (*Polygyra*); Pilsbry 1940: 711 (mentioned as possible species by Gould with Texas record but Pilsbry considers it a subspecies of *thyroidus*.)
278. *MESOMPHIX FRIABILIS* (Binney) 1857. Singley 1893: 302 (*Zonites*); Strecker 1935: 24 (*Omphalina*); Pilsbry 1946: 328.

279. MICRO CERAMUS TEXANUS (Pilsbry) 1898. Singley 1893: 310 (*M. gossei* Pfeiffer); Strecker 1935: 17; Pilsbry 1946: 110.
280. OTALA LACTEA (Müller) 1774. Strecker 1935: 6.
281. OTALA VERMICULATA (Müller) 1774. Strecker 1935: 6 (*Helix*); Jackson 1944: 105; Harry 1948: 20.
282. OXYLOMA SALLEANA (Pfeiffer) 1849. Strecker 1935: 29.
283. PHILOMYCUS CAROLINIANUS FLEXUOLARIS Rafinesque. Pratt 1965: 142.
284. PILSBRYNA TRIDENS Morrison 1935. Pilsbry 1946: 393.
285. POLYGYRA ARIADNAE (Pfeiffer) 1848. Singley 1893: 307 (*Helix*); Strecker 1935: 12; Pilsbry and Hubricht 1956: 94.
286. POLYGYRA AURIFORMIS (Bland) 1859. Pilsbry 1940: 599; Singley 1893: 306 (*Helix*); Strecker 1935: 8; Pilsbry and Hubricht 1956: 94.
287. POLYGYRA CEREOLUS (Mühlfeld) 1818. Pilsbry and Hubricht 1956: 94.
288. POLYGYRA CEREOLUS FEBIGERI (Bland). Singley 1893: 307 (*Helix*); Strecker 1935: 8; Pilsbry and Hubricht 1956: 94.
289. POLYGYRA CHISOSENSIS Pilsbry 1936. Pilsbry 1940: 620.
290. POLYGYRA CHISOSENSIS DISCOBOLUS Pilsbry 1936. Pilsbry 1940: 621.
291. POLYGYRA DORFEUILLIANA Lea 1838. Singley 1893: 306 (*Helix*); Strecker 1935: 9; Pilsbry 1940: 634; Pilsbry and Hubricht 1956: 96.
292. POLYGYRA DORFEUILLIANA SAMPSONI Wetherby 1881. Strecker 1935: 9; Pilsbry and Hubricht 1956: 96.
293. POLYGYRA GRACILIS Hubricht 1961. Hubricht 1961: 26.
294. POLYGYRA HIPPOCREPIS (Pfeiffer) 1848. Singley 1893: 307; Strecker 1935: 12; Pilsbry 1940: 638; Wheeler 1949: 1-9, 48-58.
295. POLYGYRA IMPLICATA (Martens). Pilsbry and Hubricht 1956: 94.
296. POLYGYRA LATISPIRA Pilsbry 1896. Strecker 1935: 12; Pilsbry 1940: 622.
297. POLYGYRA LEPORINA (Gould) 1848. Singley 1893: 306 (*Helix*); Strecker 1935: 9; Pilsbry 1940: 611; Pilsbry and Hubricht 1956: 94.
298. ? POLYGYRA MATERMONTANA Pilsbry 1896. Strecker 1935: 10; (Pilsbry 1940: 615 'occurrence in Texas . . . practically impossible').
299. POLYGYRA MOOREANA (W. G. Binney) 1857. Singley 1893: 306 (*Helix*); Strecker 1935: 9; Pilsbry 1949: 622; Wheeler 1949: 7; Pilsbry and Hubricht 1956: 96.
300. POLYGYRA TAMAULIPASENSIS Lea. Hubricht 1961: 27.
301. POLYGYRA OPPILATA (Morelet) 1849. Pilsbry and Hubricht 1956: 94.
302. POLYGYRA POSTELLIANA ESPILOCA (Bland) 1860. Singley 1893: 306 (*Helix*); Strecker 1935: 9; (Pilsbry 1940: 605, thinks that *espioca* is probably restricted to the coastal plain and sea islands of North Carolina to Georgia.)
303. POLYGYRA PUSTULA (Férussac) 1822. Singley 1893: 306 (*Helix*); Strecker 1935: 9; (Pilsbry 1940: 608, records it only for South Carolina, Georgia, Florida, and Alabama).
304. POLYGYRA RHOADSI Pilsbry 1899. Pilsbry and Hubricht 1956: 94.

305. ? POLYGYRA RICHARDSONI von Martens. Strecker 1935: 10. (Questionable record, not listed by Pilsbry 1940).
306. POLYGYRA SCINTILLA Pilsbry and Hubricht 1956. Pilsbry and Hubricht 1956: 94.
307. POLYGYRA SEPTEMVOLVA FEBIGERI (Bland) 1866. Pilsbry 1940: 591.
308. POLYGYRA TEXASIANA (Moriciand) 1833. Singley 1893: 306 (*Helix*); Strecker 1935: 10; Pilsbry 1940: 617; Wheeler 1949: 7; Jacobson 1852: 111; Pilsbry and Hubricht 1956: 93-95.
309. POLYGYRA TEXASIANA TAMAUlipASENSIS Lea. Pilsbry and Hubricht 1956: 96.
310. POLYGYRA TEXASIANA TEXASENSIS Pilsbry 1902. Strecker 1935: 11; Pilsbry 1940: 619; Pilsbry and Hubricht 1956: 94.
311. POLYGYRA THOLUS (W. G. Binney). Singley 1893: 306 (*Helix mooreana t.*); Strecker 1935: 10 (*P. mooreana t.*); Pilsbry 1940: 624.
312. POLYGYRA TRIODONTOIDES (Bland) 1861. Singley 1893: 306 (*Helix*); Strecker 1935: 11; Pilsbry 1940: 616.
313. ?POLYGYRA UVULIFERA (Shuttleworth) 1852. Singley 1893: 305 (*Helix*); Strecker 1935: 8 (Doubtful record, Singley never found it himself, but reported a record from Corpus Christi by Binney).
314. ?POLYGYRA VENTROSULA (Pfeiffer). Singley 1893: 307 (*Helix*); Strecker 1935: 10. (Pilsbry 1940: 614; U.S. record doubtful).
315. ?POLYGYRA VENTROSULA HINDSI (Pfeiffer). Singley 1893: 307 (*Helix*); Strecker 1935: 10. (Pilsbry 1940: 614, Mexico).
316. PRATICOLELLA BERLANDIERIANA (Moriciand) 1833. Singley 1893: 304 (*Helix*); Strecker 1935: 8; Pilsbry 1940: 694; Jacobson 1952: 111; Pilsbry and Hubricht 1956: 96.
317. PRATICOLELLA BERLANDIERIANA PACHYLOMA ('Menke' Pfeiffer) 1847. Pilsbry 1940: 697; Pilsbry and Hubricht 1956: 96 (as a full species).
318. PRATICOLELLA BERLANDIERIANA TAEINIATA Pilsbry 1940. Pilsbry 1940: 696.
319. PRATICOLELLA CAMPI Clapp and Ferriss 1919. Pilsbry 1940: 693.
320. PRATICOLELLA GRISEOLA (Pfeiffer). Singley 1893: 304 (*Helix*); Strecker 1935: 8; Pilsbry 1940: 690; Pilsbry and Hubricht 1956: 96.
321. PUNCTUM MINUTISSIMUM (Lea) 1841. Singley 1893: 304; Strecker 1935: 29; Wheeler 1949: 7.
322. PUNCTUM VITREUM H. B. Baker 1930. Pilsbry 1948: 649.
323. PUPILLA BLANDI Morse 1865. Singley 1893: 307 (*Pupa*); Strecker 1935: 22 (*Pupa muscorum b.*); Pilsbry 1948: 929; Wheeler 1949: 8.
324. PUPILLA SYNGENES (Pilsbry) 1890. Singley 1893: 308 (*Pupa*); Strecker 1935: 22 (*Pupa*); Pilsbry 1948: 939; Wheeler 1949: 8.
325. PUPISOMA DIOSCORICOLA (C. B. Adams) 1845. Singley 1893: 304 (*Patula caeca* Guppy); Strecker 1935: 14; Pilsbry 1948: 1007.
326. PUPISOMA DIOSCORICOLA INSIGNIS Pilsbry 1920. Strecker 1935: 14; Pilsbry 1948: 1007.
327. PUPISOMA MACNEILLI (Clapp) 1918. Strecker 1935: 14.
328. PUPOIDES ALBILABRIS (C. B. Adams) 1841. Singley 1893: 307 (*Pupa fallax* Say); Strecker 1935: 19 (*P. marginatus* Say); Pilsbry 1944: 69 (*P. marginatus*); Wheeler 1949: 8.
329. PUPOIDES HORDACEUS (Gabb) 1866. Singley 1893: 308 (*Pupa*); Strecker 1935: 20 (*Gastrocopta*).

330. RETINELLA CRYPTOMPHALA (Clapp) 1915. Strecker 1935: 25.
331. RETINELLA ELECTRINA (Gould) 1841. Strecker 1935: 24 (*R. hammonis electrina*).
332. RETINELLA INDENTATA (Say) 1823. Singley 1893: 303 (*Zonites*); Strecker 1935: 24; Pilsbry 1944: 69.
333. RETINELLA INDENTATA PAUCILIRATA (Morelet) 1851. Strecker 1935: 24, 24 (*R. indentata umbilicata* Binney); Pilsbry 1946: 291; Wheeler 1949: 7.
334. RETINELLA ROEMERI (Pilsbry and Ferriss) 1906. Strecker 1935: 24 (*R. dalliana roemeri*); Pilsbry 1946: 277; Wheeler 1949: 7.
335. RETINELLA SCULPTILIS (Bland) 1858. Singley 1893: 302 (*Zonites*); Strecker 1935: 24.
336. RUMINA DECOLLATA (Linnaeus) 1758. Strecker 1935: 23; Pilsbry 1946: 170; Wheeler 1949: 7; Jacobson 1952: 111; Branson 1959: 37.
337. SONORELLA HACHITANA ORIENTIS Pilsbry 1936. Pilsbry 1939: 277.
338. STENOTREMA MONODON ALICIAE (Pilsbry) 1893. Singley 1893: 305 (*Helix monodon fraterna* Say); Strecker 1935: 14 (*Polygyra fraterna*); Pilsbry 1940: 679; Pilsbry and Hubricht 1956: 96.
339. STRIATURA MERIDIONALIS (Pilsbry and Ferriss) 1906. Singley 1893: 303 (*Zonites milium* Singley); Strecker 1935: 26; Pilsbry 1946: 493; Wheeler 1949: 7.
340. STROBILOPS AENEA Pilsbry 1926. Hubricht 1964: 27.
341. STROBILOPS AFFINIS Pilsbry 1893. Strecker 1935: 19.
342. STROBILOPS HUBBARDI A. D. Brown 1861. Singley 1893: 307 (*Helix*); Strecker 1935: 19; Pilsbry 1948: 865.
343. ? STROBILOPS LABYRINTHICA (Say) 1817. Singley 1893: 307 (*Helix*).
344. STROBILOPS TEXASIANA (Pilsbry and Ferriss) 1906. Strecker 1935: 18; Pilsbry 1948: 856; Wheeler 1949: 8.
345. SUCCINEA AVARA (Say) 1824. Singley 1893: 310; Strecker 1935: 30; Pilsbry 1948: 837.
346. SUCCINEA CAMPESTRIS Say 1817. Singley 1893: 311; Strecker 1935: 30; Pilsbry 1948: 826 (cites no Texas record).
347. SUCCINEA CONCORDIALIS Gould 1848. Singley 1893: 310; Strecker 1935: 30; Pilsbry 1948: 833; Wheeler 1949: 8.
348. SUCCINEA GROSVENORI Lea 1864. Singley 1893: 311, 311 (*S. lineata* Binney); Strecker 1935: 30; Pilsbry 1948: 819.
349. SUCCINEA LUTEOLA Gould 1848. Singley 1893: 310; Strecker 1935: 30; Pilsbry 1948: 828; Wheeler 1949: 7.
350. SUCCINEA SOLASTRA Hubricht 1961. Hubricht 1961: 30.
351. SUCCINEA UNICOLOR Tryon 1866. Pilsbry 1948: 817.
352. TRIODOPSIS ALBOLABRIS (Say) 1816. Singley 1893: 305 (*Helix*); Strecker 1935: 13 (*Polygyra*); Pilsbry 1940: 835 (no Texas records).
353. TRIODOPSIS CRAGINI Call 1886. Singley 1893: 305 (*Helix vultuosa* c.); Strecker 1935: 12 (*Polygyra vultuosa cragini*); Pilsbry 1940: 804 (no Texas record).
354. TRIODOPSIS FRAUDULENTA VULGATA Pilsbry 1940. Singley 1893: 305 (*Helix fallax*); Pilsbry 1940: 804.
355. TRIODOPSIS VULTUOSA (Gould) 1848. Singley 1893: 305; Strecker 1935: 12; Pilsbry 1940: 818.
356. TRIODOPSIS VULTUOSA COPEI (Wetherby) 1878. Singley 1893: 305; Strecker 1935: 12; Pilsbry 1940: 820.

357. *TRIODOPSIS VULTUOSA HENRIETTAE* (Mazyck) 1877. Singley 1893: 305; Strecker 1935: 12; Pilsbry 1940: 821.
358. *TRUNCATELLA PULCHELLA* Pfeiffer 1839. Pilsbry 1948: 1070.
359. *VALLONIA COSTATA* (Müller) 1774. Strecker 1935: 7.
360. *VALLONIA CYCLOPHORELLA* Sterki 1892. Pilsbry 1948: 1035.
361. *VALLONIA EXCENTRICA* Sterki 1883. Strecker 1935: 7.
362. *VALLONIA GRACILICOSTA* Reinhardt 1883. Singley 1893: 307 (*Helix*); Strecker 1935: 7.
363. *VALLONIA PARVULA* Sterki 1893. Pilsbry 1948: 1027.
364. *VALLONIA PERSPECTIVA* Sterki 1893. Strecker 1935: 7; Pilsbry 1944: 69; Pilsbry 1948: 1033.
365. *VALLONIA PULCHELLA* (Müller) 1774. Strecker 1935: 7; Pilsbry 1948: 1023.
366. *VENTRIDENS DEMISSUS BRITTSI* (Pilsbry) 1892. Singley 1893: 302 (*Zonites demissus* Binney); Strecker 1935: 26 (*V. demissus* Binney); Pilsbry 1946: 460.
367. *VENTRIDENS INTERTEXTUS* (Binney) 1841. Singley 1893: 302 (*Zonites*) Strecker 1935: 26; Pilsbry 1946: 468.
368. *VERTIGO MILIUM* Gould 1840. Singley 1893: 308 (*Pupa*); Strecker 1935: 22; Wheeler 1949: 8.
369. *VERTIGO OSCARIANA* Sterki 1890. Singley 1893: 309; Strecker 1935: 22; Pilsbry 1948: 946; Wheeler 1949: 8.
370. *VERTIGO OVATA* Say 1822. Singley 1893: 308; Strecker 1935: 22; Pilsbry 1944: 69; Pilsbry 1948: 952.
371. *VERTIGO RUGOSULA* Sterki 1890. Singley 1893: 308; Strecker 1935: 22; Pilsbry 1948: 948; Wheeler 1949: 8.
372. *VERTIGO TRIDENTATA* Wolf 1870. Singley 1893: 309; Strecker 1935: 22; Pilsbry 1948: 965; Wheeler 1949: 8.
373. *ZONITES CADUCUS* (Pfeiffer). Singley 1893: 302. We are unable to assign this species to the proper genus.
374. *ZONITOIDES ARBOREUS* (Say) 1816. Singley 1893: 302 (*Zonites*); Strecker 1935: 25; Pilsbry 1944: 69; Pilsbry 1946: 480; Wheeler 1949: 7.

LITERATURE CITED

BAKER, F. C. 1898. The Mollusca of the Chicago area. The Pelecypoda. -- Chicago Acad. Sci., Bull. III, Part I: 130 p., 27 pls.

----- 1911. The Lymnaeidae of North and Middle America, Recent and Fossil. Chicago Acad. Sci., Spec. Publ. No. 3: 539 p., 58 pls., 51 text figs.

----- 1928. The Fresh Water Mollusca of Wisconsin. -- Wis. Geol. and Nat. Hist. Survey, Bull. 70, Part I, Gastropoda, 507 p., pls. 1-28.

----- 1928. *Ibid.*, Part II, Pelecypoda. 495 p., 26 pls., 96 figs.

----- 1945. The Molluscan Family Planorbidae (with collation, revision and additions by Harley Jones Van Cleave). xxxvi + 530 p., 141 pls., text figs.

BRANSON, B. A. 1959. *Rumina decollata* in Oklahoma. -- Nautilus 73(1): 37.

----- 1960. *Gyraulus arizonensis* in Texas. -- Nautilus 74(1): 37.

CHEATUM, E. P. and ALLEN, Don. 1963. An ecological comparison of the Ben Franklin and Clear Creek local molluscan faunas in

Texas. -- Jour. Grad. Res. Center, Southern Methodist Univ., v. 31, no. 3, p. 174-179.

CLARKE, A.H. and BERG, C.O. 1959. The freshwater mussels of central New York. -- Agric. Exp. Station, Cornell Univ., New York, 79 p.

DALL, W. H. 1905. Land and freshwater mollusks. -- Harriman Alaska Exped., XIII, p. 1-171, pls. i-ii, 118 text figs.

FRYE, John C. and LEONARD, A. Byron. 1964. Relation of Ogallala Formation to the Southern High Plains in Texas. -- Univ. Texas, Bur. Econ. Geol., Rept. Inv. No. 51, 25 p., 1 pl., 3 figs.

HANNA, G. D. 1923. Pleistocene freshwater mollusks from north central Texas. -- Nautilus 37(1): 25-26.

HARRY, H. W. 1948. Notes on the foreign land snails of Louisiana. -- Nautilus 62(1): 20-24.

HERRINGTON, H. B. 1962. A revision of the Sphaeriidae of North America (Mollusca: Pelecypoda). -- Mus. Zool., Univ. Michigan, Misc. Publ. No. 118, 74 p., 7 pls.

HUBRICHT, Leslie. 1961. Eight new species of land snails from the southern United States. -- Nautilus 75(1): 26-33; 75(2): 60-64.

JACKSON, R. W. 1944. *Otala vermiculata* Müller and *O. lactea* Müller in Texas. -- Nautilus 57(3): 105.

JACOBSON, M. K. 1952. Some interesting localities on a collecting trip to Mexico. -- Nautilus 65(4): 109-114.

LEONARD, A. B. 1948. Five new Yarmouthian Planorbis snails. -- Nautilus 62(2): 41-47.

----- and FRYE, J.C. 1962. Pleistocene molluscan faunas and physiographic history

of Pecos Valley in Texas. -- Univ. Texas, Bur. Econ. Geol., Rept. Inv. No. 45, 29 p., 4 pls.

METCALF, A.L. 1966. *Corbicula manilensis* in the Mesillo Valley of Texas and New Mexico. -- Nautilus 80(1): 16-20.

MURRAY, H. D. 1964. *Tarebia granifera* and *Melanoides tuberculata* in Texas (Abs.) Ann. Repts. for 1964, Amer. Malacol. Union, p. 15-16.

----- and WILEY, S. 1968. New locality for *Limax marginatus*. -- Nautilus 81(3): 105-106.

ORTMANN, A.E. 1919. A monograph of the Najades of Pennsylvania. Part III. Systematic account of the genera and species. -- Mem. Carnegie Mus., v. 8, no. 1, p. 1-384, 21 pls.

----- 1912. Notes upon the families and genera of the Najades. -- Mem. Carnegie Mus., v. 8, p. 222-365, 20 pls.

PARODIZ, J. J. 1954. A new species of *Humboldtiana* from Texas. -- Nautilus 67(4): 107-108.

PILSBRY, H. A. 1939. Land Mollusca of North America (North of Mexico), v. 1, pt. 1. -- Acad. Nat. Sci. Phila., Monogr. 3, p. vii + 1-573.

----- 1940. *Ibid.*, v. 1, pt. 2, p. vi + 575-994.

----- 1944. Snails of Taylor County, Texas. -- Nautilus 58(2): 69.

----- 1946. Land Mollusca of North America (North of Mexico), v. 2, pt. 1. -- Acad. Nat. Sci. Phila., Monogr. 3, p. vi + 1-520.

----- 1948. *Ibid.*, v. 2, pt. 2, p. 521-1113.

----- 1950. Notes on land snails of Texas. -- Nautilus 64(2): 56-58.

- 1952. A *Holospira* new to the United States. -- Nautilus 66(2): 69-70.
- and CHEATUM, E. P. 1951. Land snails from the Guadalupe Range, Texas. -- Nautilus 64(3): 87-90.
- and HUBRICHT, L. 1956. Beach drift Polygyridae from Southern Texas. -- Nautilus 69(3): 93-96.
- PRATT, W. L. 1964. Two eastern land snails new to Texas. -- Nautilus 78(1): 31.
- 1965. Notes on land snail distribution in Texas. -- Nautilus 78(4): 142.
- SIMMONS, F. L. 1954. Notes on Texas *Bulimulus*. -- Nautilus 68(1): 20-23.
- SIMPSON, C. T. 1900. Synopsis of the Naiades, or pearly fresh-water mussels. -- Proc. U. S. Natl. Mus., v. 22, no. 1205, p. 501-1044.
- 1914. A descriptive catalogue of the Naiades or pearly fresh-water mussels. -- Detroit, Bryant Walker, 1540 p.
- SINGLEY, J. A. 1893. Contributions to the natural history of Texas; pt. I, Texas Mollusca. -- Geol. Survey Texas, Fourth Ann. Rept., p. 297-343.
- SLAUGHTER, B. H., GROOK, W. J., HARRIS, R. K., ALLEN, D. C., and SEIFERT, M. 1962. The Hill-Shuler local faunas of the upper Trinity River in Dallas and Denton counties, Texas. -- Univ. Texas, Bur. Econ. Geol., Rept. Inv. 48, 75 p.
- STERKI, V. 1916. A preliminary catalogue of the North American Sphaeriidae. -- Ann. Carnegie Mus., v. 10, nos. 3 and 4, p. 429-474.
- STRECKER, J. K. 1931. The distribution of the Naiades or pearly fresh-water mussels of Texas. -- Baylor Univ. Mus., Special Bull. no. 2, 69 p.
- 1935. Land and fresh-water snails of Texas. -- Trans. Texas Acad. Sci., 17:
- STRICKLIN, Fred L., Jr. 1961. Degradational stream deposits of the Brazos River, Central Texas. -- Geol. Soc. Amer., Bull., v. 72, no. 1, p. 19-36.
- WALKER, B. 1915. A list of shells collected in Arizona, New Mexico, Texas and Oklahoma by Dr. E. C. Case. -- Occ. Papers Mus. Zool., Univ. Michigan, no. 15, p. 1-11.
- 1918. A synopsis of the classification of the freshwater Mollusca of North America, north of Mexico, and a catalogue of the more recently described species, with notes. -- Misc. Publ. No. 6, Mus. Zool., Univ. Michigan, 213 p., 1 pl., 233 text figs.
- WHEELER, H. E. 1949. *Polygyrathippocne* (pis.) and its author: Louis Pfeiffer. -- Nautilus 63(2): 1-9.
- WURTZ, C. B. 1949. *Physa heterostropha* (Say). Nautilus 63(1): 20-33.
- 1951. Catalogue of Ancyliidae of South and Central America and West Indies, with description of a new species. -- Nautilus 64(3): 123-131.

MANUSCRIPT RECEIVED AND ACCEPTED
FOR PUBLICATION
MAY, 1968.

AUTHOR INDEX TO STERKIANA NOS. 21-30

- ANDERSON, Barbara Estel (1966) Studies on the molluscan genus *Campeloma* Rafinesque, 1819. -- 23: 9-18, 3 figs.
- BALDY, Mark B. (1968) Molluscan faunas of the Lower Flagstaff Formation, Fairview Canyon, Sanpete County, Utah. -- 29: 1-8, 8 figs.
- BICKEL, DAVID (1966) A hand sieve net for small aquatic mollusks. -- 22: 1-2, 1 fig.
- (1966) Ecology of *Corbicula manilensis* Philippi in the Ohio River at Louisville, Kentucky. -- 23: 19-24, 2 figs.
- (1967) Recent Publications. -- 25: 38.
- (1967) Preliminary checklist of Recent and Pleistocene Mollusca of Kentucky. -- 28: 7-20.
- BINNEY, W. G. (1865, reprinted 1966) Land and Freshwater Shells of North America, Part II, Pulmonata Limnophila and Thalassophila. (Conclusion). -- 21: 3-40.
- (1865, reprinted 1966, 1967) Land and Fresh-Water Shells of North America, Part III. -- 22: 3-30, June; 23: 25-49, 2 pls., September; 24: 7-31, 2 pls., December, 1966; 3 plates, March 1967.
- BRANSON, Branley A. (1966) Unionid records from Kansas, Arkansas and Louisiana. -- 23: 7-8.
- BROOKS, Jeraldine H. -- see WOLFE, Douglas A.
- BRUNSON, R. B. -- see RUSSELL, R. H.
- CLOWERS, Stanley R. (1966) Pleistocene Mollusca of the Box Marsh Deposit, Adamston Township, Renfrew County, Ontario, Canada. -- 22: 31-59, 11 figs.
- DEXTER, Ralph W. (1966) A colony of the introduced European snail, *Cepaea nemoralis*, at Lynn, Massachusetts. -- 21: 41-43.
- (1967) Dr. Victor Sterki as a malacologist. -- 26: 6-8.
- (1967) Addenda on Mussel vs. Muscle. 27: 1-2.
- DUNDEE, Dee S. -- see HERMANN, Pat Watt
- GIBSON, Gail Guy (1967) Pleistocene non-marine Mollusca of the Richardson Lake Deposit, Clarendon Township, Pontiac County, Quebec, Canada. -- 25: 1-36, 16 figs.
- HERMANN, Pat Watt and DUNDEE, Dee Saunders (1967) Notes on *Omalonyx*. -- 28: 1-6, 9 figs.
- La ROCQUE, Aurele (1966) Alcide-Charles-Victor Dessalines d'Orbigny (1802- 1857). -- 24: 1-6, 59, 1 pl. (portrait).
- (1967) Thirty-third annual meeting American Malacological Union, Ottawa, Ontario, Canada July 31-August 4, 1967.
- MURRAY, Harold D. and ROY, Edward C., Jr. (1968) Checklist of freshwater and land mollusks of Texas. -- 30: 25-42.
- PALMER, Katherine van Winkle (1966) Who were the Sowerbys? -- 23: 1-6, 1 pl. (portrait).
- PARODIZ, Juan J. (1967) Types of North American Unionidae in the collection of the Carnegie Museum. -- 28: 21-30.
- (1968) Annotated Catalogue of the genus *Diplodon* (Unionacea-Hyriidae). -- 30: 1-22.
- ROY, E. C. -- see MURRAY, H. D.
- RUSSELL, Richard H. and BRUNSON, Royal Bruce (1967) A check-list of Molluscs of Glacier National Park, Montana. -- 26: 1-5, 1 map.
- SMITH, Allyn G. (1966) Harold Hannibal 1889-1965. -- 21: 1.
- TRYON, GEORGE W., Jr. (1873, reprinted 1966) Land and Fresh-Water Shells of North America. Part IV. Strepomatidae (American Melanians). -- 24: 33-58, December 1967; 26: 9-50, June; 27: 5-50, September; 28: 31-50, December 1967; 29: 9-50 March 1968.
- WOLFE, Douglas A. and BROOKS, Jeraldine H. (1968) A colony of *Euglandina rosea* at Beaufort, North Carolina. -- 30: 23-24.

SPECIES INDEX, NOS. 21-30

- Acella haldemani* 22:56, 57
Acroloxus coloradensis 26: 3, 5
Actinonaias 28:27
 calamitarum 28:27
 calamitarum ortmanni 28:27
 carinata 23: 8; 28:8
 carinata gibba 28:8
 ellipsiformis 28:8
 flucki 28:27
 ligamentina 28: 8
 ligamentina gibba 28:8
 pectorosa 28:8
 yzabalensis 28:27
Agriolimax agrestis 30:34
 campestris 30:34
Alasmidonta 28:21
 calceolus 28:8
 deltoidea 28:8
 marginata 28:8, 26
 marginata susquehanna 28:
 26, 27
 minor 28:8
 rugosa 28:10
 truncata 28:8
Allogona profunda 28:14
 profunda pleistocenica 28:14
Amblema 28:22, 30
 costata 28:8; 30:25
 costata rariplicata 28:8
 dombeyana 30: 28
 gigantea 30: 28
 perplicata 30:26
 peruviana 28:8
 (*Crenodonta*) *peruviana* 23:7
 plicata 28: 8
 plicata costata 30:25
 plicata perplicata 30:26
Amnicola cincinnatiensis 28:12
 comalensis 30:32
 emarginata 28:12
 integra 23: 20; 28:12; 30:32
 limosa 22: 31, 41, 42, 48, 49,
 50, 52, 55, 53; 25: 13, 14,
 26, 32
 limosa porata 30:32
 lustrica 22: 31, 41, 42, 48, 49,
 50, 52, 53, 55
 peracuta 30:32
Ampullaria 28:2
 caliginosa 30:32
 crassa 23: 11
 depressa 30:32
Amygdaloniaias 28:12; 30:29
Ancillaria 23:4, 5
Anculosa praerosa 28:12
Ancylus 30:30
 parallelus 22:46; 25:18
Anguispira alternata 30:24,
 33
 alternata carinata 30: 33
 alternata crassa 30:33
 alternata rarinotata 30:33
 alternata strongylodes
 30:33
 knoxensis 28: 14
 kochi 28: 14
Anodonta brooksiana 28: 26
 cataracta 28: 26
 corpulenta 30: 26
 grandis 23: 8; 28:8, 21, 25,
 26; 30: 26
 grandis bealei 30:26
 grandis lugubris 30:26
 henryana 30: 26
 imbecillis 28: 8, 26; 30:26
 imbecillis horda 30:26
 leonensis 30: 26
 linneana 30: 26
 marginata 28:26
 micans 30:26
 nordenskjoldi 30:8
 ohioensis 28:8; 30:26
 showalteri 28:26
 stewartiana 30:26
 subinflata 28: 25, 26
 texasensis 30: 26
 virens 30:26
Anodontites ferussacianus 28: 26
Anodontoides ferussacianus 28: 8
Antediplodon 30:14
 lewisi 30:7
Antroselates spiralis 28: 12
Aplexa hypnorum 26: 4; 30:30
Aporrhais 27: 51
Architeuthis 27: 4
Arcidens 28: 25
 confragosus 28: 8; 30:26
Arinia inexpectans 25: 38
Arkansia 28: 25
 wheeleri 28: 25
Armiger crista 25: 15, 26
 imbricatus 25: 15
Ashmunella adishae 30: 33

Bithynia tentaculata 26: 8
Bulimnea megasoma 22: 56, 57
Bulimulus 30: 34, 42
 alternatus 30: 33
 alternatus albida 30:33
 alternatus hesperia 30: 34
 alternatus intermedia 30:33
 alternatus mariae 30:33
 dealbatus 28: 14; 30: 33
 dealbatus dealbatus 30: 33
 dealbatus liquabilis 30:33
 dealbatus mooreanus 30:33
 dealbatus ragsdalei 30:33
 dealbatus schiediana 30:34
 parsonis 30:34
 patriarcha 30:34
 pilsbryi 30:34
 schiedeanus 30:34
 schiedeanus pecosensis 30:34
Bulimus 30: 30
Bulinus 27: 51
 berlandierianus 30:30
Busycon canaliculatum 23:15

Calipyrghula circumstriata 30:32
 pecosensis 30:32

- Campeloma* 23: 10, 11, 12, 17, 18
crassula 23: 11, 20; 28: 12
crassulum 23: 10, 11
decisum 23: 10, 11, 12, 13, 17, 18, 30: 32
lewisii 30: 32
ponderosa 28: 12
ponderosum 23: 11, 32
ponderosum coarctatum 23: 9, 11, 17
rufum 23: 9, 12, 14, 17, 18
Cardium casertanum 22: 38; 25: 10
Carinifex 27: 51
Carunculina glans 28: 8
moesta 28: 8
parva 28: 8
parva compressa 30: 26
parva mearnsi 30: 26
parva texasensis 30: 26
Carychium exiguum 28: 14, 19; 30: 34
exile 28: 14, 19; 30: 34
stygium 28: 14; 28: 19
Castalia pazi 30: 9
Castalioides 30: 14
laddi 30: 7
Catinella texana 30: 34
Cecilioides aperta 30: 34
Cepaea 21: 42, 43
hortensis 21: 41, 42
nemoralis 21: 41, 42, 43; 28: 14, 18, 19
nemoralis v. libellula 21: 41
nemoralis v. rubella 21: 41
Chaetopleura apiculata 27: 4
Chara 22: 41; 25: 13
Cincinnatia 28: 12
cincinnatiensis 30: 32
Cionella lubrica 30: 34
lubrica morseana 28: 14
Cochliopa riograndensis 30: 32
texana 30: 32
Columella alticola 28: 14
edentula 26: 4; 28: 14; 30: 34
Conoteuthis 24: 5
Conus 23: 5; 23: 6
Corbicula 23: 21; 22; 24; 28: 20
fluminea 23: 19, 24; 28: 12, 18
manilensis 23: 19, 20, 21, 22, 24; 28: 12, 18, 19; 30: 29, 41
Crenodonta 28: 8, 10, 30
Cumberlandia
monodonta 28: 8
Cyclas jayensis 22: 36
rosaceum 25: 6
sulcata 22: 37; 25: 10
tenuis 25: 9
Cyclomya 30: 14
Cyclonaias tuber-
culata 28: 8; 30: 26
tuberculata granifera 28: 8
Cyclostoma
tricarinata 22: 40; 25: 12
Cyprogenia aberti 23: 8
irrorata 28: 8
stegaria 28: 8
Deroceas 25: 22, 26
aenigma 28: 14; 30: 34
laeve 28: 14; 30: 34
reticulatum 28: 14 30: 34
Diplodon 30: 1, 2, 4, 5, 7, 10, 11, 13-15, 19, 20, 21, 22
aethiops 30: 11, 12, 15, 18
aethiopiiformis 30: 11, 12
arcuatus 30: 3, 13
asuncionis 30: 3, 13
aureatus 30: 3
aureus 30: 3
bassleri 30: 3
berthae 30: 3, 11, 12, 16, 18
beskeanus 30: 3, 6, 7, 8
bondenbenderi 30: 3
borealis 30: 3, 14
bulloideus 30: 13
burckhardti 30: 4
burroughianus 30: 2, 4, 6, 7, 10, 13, 14, 17, 18, 19
burroughianus wheat-
leyanus 30: 9, 11, 19
caipira 30: 18
carolusimpsoni 30: 4, 14
caudatum 30: 7
Diplodon caudatum 30: 7
charruanus 30: 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 19
chilensis 30: 3-8, 10, 11, 16
chilensis limensis 30: 7
chilensis patagonicus 30: 3; 5 28: 27; 30: 6, 8
colhuapiensis 30: 9, 4
decepiens 30: 4, 18
delodontus 30: 4, 5, 7, 8, 12, 15, 16-18, 20
delodontus delodontus 30: 7, 10
delodontus expansus 30: 16
delodontus wymani 30: 11, 16, 17, 20
delodontus X uruguayensis 30: 9, 17
diluvi 30: 4
disculus 30: 17
dockumensis 30: 14
dumbei 30: 14
dunkerianus 30: 14
ellipticum 30: 5
ellipticus 30: 5, 6, 8, 11, 14, 15, 18
ellipticus santanus 30: 10
emersoni 30: 14
enno 30: 5, 16
expansus 30: 5, 6, 8, 9, 12, 16, 17, 18
faba 30: 15
felipponei 30: 5, 16, 17
firmus 30: 15
flucki 30: 5
fontaineanus 30: 10
fontaineanus "var." deceptus 30: 4, 16, 18
fortis 30: 5, 12
fraus 30: 5, 12
funeralis 30: 5, 6, 13, 16, 17, 19, 20
funeralis X paranensis 30: 8, 17
furcatum 30: 7
garbei 30: 6
gardnerae 30: 6, 9
granosus 30: 4, 6, 9, 18, 19
granosus multistriatus 30: 14, 15, 18

- Diplodon granulatus* 30:14
gratus 30:13, 16, 17
greeffeanus 30:18
guahybae 30:18
guarianianus 30:3, 6, 7, 13
guarianianus biblianus 30:3, 7
guarianianus hasemani 30:13
guayanensis 30:6
hartwrighti 30:6
hasemani 30:6
hidalgoi 30:12
hildae 30:12, 30:6
huapensis 28:27; 30:6
hylaesus 30:6, 13,
iheringi 30:17
imitator 30:6, 15
jacksoni 30:6
kelseyi 30:7
latouri 30:7
leai 30:7, 18
lepidior 30:15, 18
lepidus 30:15
lewisi 30:7, 14
liddlei 30:7
losadae 30:7
martensi 30:4, 6, 7, 10, 11,
 14, 15, 18
matonianus 30:13
membranaceus 30:13
mimus 30:8, 18
modestus 30:7
mogymirim 30:8, 18
multistriatus 30:14, 15, 18
nocturnus 30:17
nordenskjoldi 30:8, 14
nordestinus 30:8
obsolescens 30:8, 12
oponcitonis 30:8
panco 30:8
paraguayensis 30:17
parallelipipidon 30:2, 11, 12,
 14, 18, 19
parallelipipidon aethiops 30:
 3, 11, 18
parallelipipidon parallelipipidon
 30:8
paranensis 30:2, 8, 16, 17, 20
- Diplodon* (cont.)
paranensis funebris 30:16
parodizi 30:8, 18, 19
patelloides 30:13, 17
paulista 30:6, 7, 10, 15, 18
pazi 30:9, 13
peculiaris 30:17
pehuenchensis 30:9
pennsylvanicus 30:9, 14
peraeformis 30:9, 16, 17,
 19, 20
perfragilis 30:9, 13
perplexus 30:9, 15
piceus 30:3, 5, 6, 7, 9, 11,
 12, 15, 16, 18
piger 30:16
pilsbryi 30:9
podagrosus 30:9
prunoides 30:19, 20
rhombeus 30:4, 5, 6, 7, 8, 10,
 14, 16, 17
rhuacoicus 30:7, 9, 10, 11, 12,
 14, 15, 16, 18, 19, 20
rothi 30:9
rotundus 30:9, 10, 16
rotundus enno 30:5
rotundus fontaineanus
 30:5, 17
rotundus gratus 30:4, 6, 10,
 16, 17, 18
santamariae 30:10, 14, 15
semigranosus 30:10, 18
simillimus 30:10, 15
singewaldi 30:9
solidulus 30:10
solisiana 30:20
solisianus 30:10, 13, 16, 20
solisianus delodontus 30:20
solisianus X delodontus wy-
manni 30:20
suavidicus 30:5, 16
subcylindricus 30:10, 20
subquadratus 30:10, 13
suppositus 30:10, 15
transandinus 30:10
trifidus 30:10, 18, 19
trivialoides 30:10, 16
- Diplodon* (cont.)
trivialis 30:10
uruguayensis 30:3, 9, 11, 12, 17,
 18
uruguayensis X expansus 30:4, 5,
 10
variabilis 30:3, 4, 7, 9, 10, 11, 13,
 17
vicarius 30:14, 15
wagnerianum 30:11
wanneri 30:11, 14
wheatleyanus 30:10, 18, 19
wilbrahamensis 30:14
wymanni 30:12
yaguaronis 30:11, 20
yorkensis 30:11, 14
- Diplodontus delodontus wymanni*
 30:5
- Discus cronkhitei* 26:4; 28:14;
 30:34
cronkhitei catskillensis 28:14
patulus 28:14; 30:34
- Drepanotrema cultratum* 30:30
cultratum labrosum 30:30
- Dromus dromus* 28:8
- Drymaeus serperastrum* 30:34
- Dysnomia* 28:29, 30
arcaeformis 28:8
capsaeformis 28:9, 29
brevidens 28:8
flexuosa 28:9
florentina 28:9, 29
florentina walkeri 28:29
foliata-flexuosa 28:29
haysiana 28:9
lewisi 28:9
personata 28:9
rangiana 28:29
sulcata 28:9
torulosa 28:9
torulosa cincinnatiensis 28:9
torulosa rangiana 28:9
triquetra 28:9
walkeri 28:29
- Ecuadorea* 30:14
bibliana 30:3

- Eichornia crassipes* 28:2, 5
Ellipsaria 28:11
Elliptio 28:21, 22, 27; 30:5, 26
 aheneus 28:25
 crassidens 28:9
 cupreus 28:24
 declivis 30:29
 dilatatus 23:7; 28:9, 25; 30:26
 dilatatus sterkii 26:8; 28:25
 gibbosus sterkii 26:8
 haricoti 28:27
 hazelhurstianus 28:25
 niger 28:9
 ortmanni 28:27
 oscari 28:25
 popei 30:26
 productus 28:24, 25
 sayanus 28:27
 tamaulipasensis 30:26
 tamaulipasensis elongatus
 30:26
 tetralasmus 30:29
 tetralasmus manubius 30:29
 waltoni 28:24, 25
Elodea 22:41; 25:13
Eodiplodon 30:14
 gardnerae 30:6
 pebasensis 30:9
Epioblasma 28:29, 30
 biloba 28:29
Euconulus chersinus 28:14; 30:34
 chersinus dentatus 28:14
 chersinus trochulus 30:34
 fulvus 25: 21, 26; 26:5; 28:14;
 30:34
 fulvus alaskensis 26:5
 sterkii 26:8
Euglandina 30:23, 24
 exesa 30:34
 immemorata 30:34
 rosea 30:23, 24
 singleyana 30:34
 texasiana 30:34
 truncata 30:34
 vanuxemensis 30:34
Eupera singleyi 30:30
Euryntia 28:10, 12
Ferrissia 22:48, 49; 25:38
 excentrica 30:30
 fragilis 28:13
 fusca 26:3
 japonica 25:38
 kirklandi 30:30
 parallela 22:46, 50; 25:2, 9,
 18, 25, 26, 31; 26:3; 30:30
 rivularis 25:38; 28:13; 30:
 30
 shimeki 30:30
 tarda 30:30
Ficus 28: 5
Fossaria cubensis 30:30
 dalli 28:13; 30:30
 humilis 28:13; 30:30
 modicella 28:13; 30:30
 obrussa 25:15; 22:31, 42, 43,
 49, 50, 53, 55; 25:15; 28:13;
 30:30
 obrussa decampi 22:31, 43,
 48, 49, 50, 52, 53, 55; 25:2,
 9, 14, 15, 24, 25, 26, 29,
 30, 31
 parva 28:13; 30:30
Friersonia 28:29
Fusconia 28:22; 30:26
 askewi 30:26, 27
 beadleiana 30:26
 cerina 30:26
 cor analoga 28:23
 cuneolus 28:23
 cuneolus appressa 28:23
 ebenus 28:9; 30:27
 edgariana 28:23
 edgariana analoga 28:23
 edgariana appressa 28:23
 escambia 28:24
 flava 23:7; 28:9, 23; 30:
 26, 27
 flava parvula 28:23
 flava undata-trigona 28:23
 lananensis 28:24; 30:27
 selecta 28:22
 subrotunda 28:9, 23, 24
 subrotunda kirtlandiana 28:
 23, 24
Fusconia (cont.)
 subrotunda leucogona 28:
 23, 24
 undata 28:9; 30:27
 undata trigona 28:9
Galba 30:30, 32
 humilis modicella 30:30
 obrussa decampi 22:43; 25:14
Gastrocopta 30:38
 armifera 28:14; 30:34
 armifera abbreviata 28:14;
 30:35
 contracta 25:20, 26; 28:14;
 30:35
 contracta climeana 30:35
 corticaria 28:14; 30:35
 cristata 30:35
 duplicata 30:35
 holzingeri 30:35
 holzingeri sterkii 30:35
 pellucida hordeacella 30:35
 pentodon 28:14; 30:35
 pentodon floridana 30:35
 procera 28:14; 30:35
 procera mcclungi 30:35
 procera sterkiana 26:8; 30:35
 riograndensis 30:35
 rupicola 30:35
 tappaniana 28:14; 30:35
 tappaniana curta 30:35
Glandina 30:34
 truncata 30:34
Glebula rotundata 30:27
 suborbiculata 30:27
Glyphyalinia 28:16
Goniobasis comalensis 30:32
 comalensis fontinalis 30:33, 32
 costifera 28:12
 curreyana 28:13
 ebenum 28:13
 ebenum emeryensis 28:13
 laqueata costulata 28:13
 livescens 28:18
 pleuristriata 30:33
 plicata-striata 28:13
 semicarinata 28:13

- Gonyodiscus striatella* 30:34
cronkhitei anthonyi 30:34
perspectivus 30:34
Gundlachia hjalmarsoni 30:30
Guppya gundlachi 30:35
sterkii 26:8; 28:14
Gyraulus 25:16
altissimus 22:44; 25:16
arizonensis 30:30;40
 (?*Torquis*) *carus* 30:30
circumstriatus 30:30
crista ♂ 25:15
 (Armiger) *crista* 25:15
labiatus 30:30
militaris 29:5, 6, 7
parvus 22:31, 44, 48, 49, 50, 52,
 53, 55; 25:2, 6, 15, 24, 25, 26,
 29, 30, 31, 33; 26:3; 28:13;
 30:30

Haliotis 27:51
Hamulina 24:6
Haplotrema concavum 28:14;
 30:35
Hastula 27:51
Hawailia minuscula 28:15; 30:35
minuscula alachuana 30:35
minuscula neomexicana 30:35
Helicella 30:23
caperata 30:23, 24
Chrysocheila 30:35
orbiculata 30:35
orbiculata tropica 30:35
Helicodiscus 28:19
barri 28:15
eigenmanhi 30:35
eigenmanni arizonensis 30:35
hadenoecus 28:15
inermis 28:15
notius 28:15
notius specus 28:15
nummus 30:36
parallelus 22:55; 28:15;
 30:35
punctatellus 28:15
singleyanus 28:15; 30:35
singleyanus inermis 28:15

Helisoma anceps 28:13; 30:31
anceps striatum 25:24; 22:
 56, 50, 31
anceps 22:45, 55; 26:3
anceps striatum 22:44, 45,
 48, 49, 52, 53, 54, 55, 57;
 25:2, 9, 16, 17, 26, 29-31,
 34
antrosa 26:3; 30:31
antrosa striata 22:44; 25:16
campanulata 22:45,
campanulatum 22:45, 49,
 50, 53, 55; 25:2, 9, 17,
 30, 34
tenu sinuosum 30:31
trivolis 22:42, 56, 57; 26:3;
 28:13; 30:31
trivolis intertextum 30:31
trivolis lentum 30:31
trivolis turgidum 30:31
Helix 21:41; 30:36, 37, 38, 39, 40
aspersa 30:36
fallax 30:39
fulva 25:21
indentata 25:21
monodon fraterna 30:39
mooreana tholus 30:38
nemorialis 21:41, 42, 43
nitida 25:22
stagnalis 25:13; 22:42
vultuosa cragini 30:39
Hemilastena 28:11
Hendersonia occulta 28:15
Holopus 24:5
Holospira 30:42
goldfussi 30:36
goldfussi anacachensis
 30:36
hamiltoni 30:36
mesolia 30:36
ortis 30:36
pasonis 30:36
pityis 30:36
riograndensis 30:36
roemeri 30:36
roemeri brevissima 30:36
yucatanensis 30:36

Horatia micra 30:33
micra nugax 30:33
Humboldtiana 30:41
cheatumi 30:36
chisosensis 30:36
edithae 30:36
ferrissiana 30:36
høgeana praesidii 30:36
palmeri 30:36
texana 30:36
ultima 30:36
Hydrobia 29:7
texana 30:33
utahensis 29:2, 6, 7, 8
Hymenachne 28:5
donacifolia 28:2, 5
Hypotrema 24:6
Hyria 30:21
Hyriidae 30:1

Ischnochiton floridanus 27:4

Justicia americana 23:13

Lampsilis 28:8, 10, 11, 27; 30:5, 8,
 26, 28
Lampsilis (Proptera) 28:28
Lampsilis anodontoides 23:8, 9;
 30:27
anodontoides fallaciosa 28:9
anodontoides floridensis 30:27
approxima 30:27
berlandieri 30:27
bracteata 30:27
cardium 30:27
coloradoensis 30:28
concestator 30:27
cumberlandicus 28:12
fasciata hydiana 30:27
fasciola 28:9
fimbriata 28:28
fragilis 30:27
gracilis 28:10; 30:27
haleiana 30:26
hydiana 30:27
iridella 28:29
laevissima 30:27

- Lampsilis* (cont.)
lienosa 30:27
luteola 30:27
luteolus 23:8; 28:9, 10
multiradiata 28:9
nigerrimus 30:27
orbiculata 28:9
ovata 28:9, 28
ovata ventricosa 28:9, 28
 30:27
parva 30:26
perdix 28:8
powellii 30:27
radiata 28:28
radiata siliquoidea 28:9;
 30:27
reeviana 30:27
 (Proptera) *salinasensis*
 28:28
streckeri 30:27
tampicoensis 30:27
tampicoensis berlandieri 30:27
tampicoensis heermani 30:27
teres 30:27
texasensis 30:26
ventricosa 23:8; 27:51; 28:28
ventricosa cohongoronta 28:28
ventricosa satura 30:27
Lasmigona complanata 23:8; 28:10
compressa 28:10
costata 23:8, 28:10, 26; 30:27
costata eriganensis 28:26
costata eriganensis 28:26
viridis 28:10
Lasmonos 28:28
Lastena lata 28:10
Leptodea 28:28
 fimbriata 28:29
 fragilis 23:8; 28:10, 28; 30:27
 laevissima 30:27
 leptodon 28:10
Leucozonia nassa 27:4
Ligumia 28:8
 recta 30:27
 recta latissima 28:10
 subrostrata 23:8; 28:10; 30:28
Limax flavus 28:15; 30:23, 36
Limax marginatus 30:36, 41
 maximus 26:5; 30:36
Limnaea 30:30, 31, 32
 desidiosa decampi 22:43
Lioplacodes mariana 29:6
Lioplax 28:18
 sulculosa 28:13
Lithasia geniculata 28:13
 obovata 28:13
 obovata consanguinea 28:13
 obovata curvilabris 28:13
 obovata depygis 28:13
 obovata microlineata
 28:13
 obovata planospira 28:13
 obovata sordida 28:13
 obovata undosa 28:13
 plicata 28:13
 salebrosa 28:13
 verrucosa 28:13
Lymnaea 23: 10; 28:13, 14;
 30:30, 31, 32
 columella 22:42
 desidiosa decampi 25:14
Lymneus obrussus 22:43
Lymnaea parva sterkii 26:8
 stagnalis 22:42, 49, 56,
 57; 25:13, 14, 26; 26:3
 stagnalis appressa 26:3
 stagnalis jugularis 22:42
Macoma 22:54; 25:4
Margaritana 28:8; 30:26
 monodonta 28:20
Margaritifera margariti-
 fera 26:1
Margaron (Unio) lepidior
 30:7
Medionidus conradicus 28:10
Megaloniais gigantea 28:10;
 30:28
Melanoides tuberculata 30:33
Melantho 23:10; 23:11
 ponderosum 23:11
Melo 23:6
Menetus dilatatus 30:31
 exacuous 25:17
Menetus pearlettei 30:31
 sampsoni 30:31
 (Promenetus) *exacuous* 26:3
Mesodon andrewsae normalis 28:15,
 19
 appressus 28:15
 clausus 28:15; 30:36
 derochetus 28:15
 downieanus 28:15
 elevatus 28:15
 friabilis 28:15
 inflectus 28:15; 30:36
 inornatus 28:15
 latior 28:15
 latior monticola 28:15
 mittchellianus 28:15
 perlaevis 28:15
 roemeri 30:36
 rugeli 28:15
 ruidus 28:15
 sayanus 28:15
 thyroidus 28:15; 30:36
 thyroidus bucculenta 30:36
 vulgatus 28:15
 wetherbyi 28:15
 zaletus 28:15
Mesomphix anurus 28:15
 cupreus 28:15
 cupreus miktus 28:15
 friabilis 30:36
 inornatus 30:24
 rugeli 30:23
 vulgatus 28:19
Microceramus gosseii 30:37
 texanus 30:37
Micromya 28:12; 28:20, 29
 lapillus 28:12
 ortmanni 28:29
Microphysula ingersolli 26:5
Micropyrgus minutulus 29:6
Modiola contorta 30:5; 30:12
Musculium elevatum 30:30
 jayense 25:6
 lacustre 22:36
 lacustre ryckholti 26:3
 orbiculare 30:30
 rosaceum 22:36; 25:6

- Musculium ryckholti* 22:36;
 25:6
Mya variabilis 30:11
Myllita 24:6
Mytilus edulis 27:4

Naia atrata 30:33
Nautilus crista 25:15
Nephronaias 28:27
 flucki 28:27
Nitocris trilineata 28:13
Nodularia 5

Obliquaria 28:10
 reflexa 28:10; 30:28
Obovaria 28:27
 castanea 30:28
 circula 28:10
 circularis 28:10
 ellipsis 28:10
 olivaria 28:10
 subrotunda 28:10
 subrotunda lens 28:10
 subrotunda levigata 28:10
Odstomia 27:4
Omalonyx 28:1-5
 felina 28:1, 3-5
 guadeloupensis 28:1, 4
 patera 28:1, 4, 6
 unguis 28:1, 2, 4-6
Omphalina 30:36
Opisthostoma halli 25:38
Oreohelix cooperi apiarium 26:5
 subrudis apiarium 26:5
Otala lactea 30:37; 30:41
 vermiculata 30:37, 41
Ovulum 23:4, 5
Oxyloma decampi gouldi 28:15
 decampi peccariensis 28:15
 retusa 22:46, 49, 55; 28:15
 salleana 30:37

Pallifera wetherbyi 28:15
Paludestrina diaboli 30:33
 Protea 30:33
 seemani 30:33

Paludina 23:10
 limosa 22:41
 ponderosa 23:11
Pandora 23:4, 5
Parapholix 27:51
Paraptera 28:28
 gracilis 28:10
Paravitrea 28:19
 capsella 28:15
 multidentata 28:15
 petrophila 28:15
 placentula lithodora
 28:16
 tantilla 28:16
Paula caeca 30:38
 perspectiva 30:34
 striatella 30:34
Pegias fabula 28:10
Philomycus carolinianus
 28:16
 carolinianus flexuolaris
 28:16; 30:37
Physa amygdalus 30:31
 anatina 28:13; 30:31
 bridgerensis 29:2, 6, 7
 crandalli 30:31
 elliptica 30:31
 forsheyi 30:31
 gyrina 22:31, 43, 46, 49,
 50, 53, 55; 25:2, 9, 18,
 19, 25, 26, 31, 33; 26:4;
 28:13; 30:31
halei 30:31
 heterostropha 28:13; 30:31,
 42
 integra 23:20; 28:14, 17,
 30:31
 mexicana 30:31
 mexicana conoidea 30:31
 osculans 30:31
 pomilia 28:14
 sayii 30:31
Physella gyrina 22:46;
 25:18
Physunio superbus 30:7
Pilsbryna tridens 30:37

Pisidium 22:39
 abditum 22:38; 25:10; 26:1
 atlanticum 30:29
 casertanum 22:31, 38, 39, 49, 50,
 52, 55; 23:20; 25:2, 9, 10, 11, 24,
 25, 26, 29-32; 26:1; 28:12; 30:29
 compressum 22:31, 37, 38, 39, 48,
 49, 50, 52, 53, 55; 25:2, 9, 10, 11,
 12, 26, 30, 31, 32; 30:29
 dubium 28:12
 ferrugineum 22:39, 50, 49, 53, 55,
 56, 57
 fraudulentum 28:12
 friersoni 30:29
 idahoense 26:3
 lilljeborgi 26:3
 limatum 30:30
 neglectum 22:38; 25:10, 34; 30:29
 obtusale rotundatum 26:3
 politum 22:38; 25:10
 punctiferum 30:30
 roperi 22:38; 25:10
 singleyi 30:30
 superius 22:38
 variabile 26:3; 30:30
Plagiola 28:12; 30:29
 elegans 28:12; 30:29
 lineolata 28:10
 securis 28:10
Planorbis 28:13; 30:30, 32
 antrosus 30:31
 antrosus striatus 25:16
 bicarinatus 30:31
 bicarinatus striatus 22:44; 25:16
 campanulatus 22:45; 25:17
 exacuus 22:45; 25:17
 lentus 30:31
 parvus 22:44
 "tumidus" 30:31
Planorbula armigera 26:4; 30:31
 crassilabris 30:31
Plectomerus trapezoides 30:28
Plethobasus cicatricosus 28:10
 cyphus 28:10
Pleurobema 28:10, 21, 22; 30:28
 aesopus 28:10

- Pleuroberna bigbyense* 30:28
clava 28:10; 30:28
cordatum 23:7; 28:11
cordatum catillus 28:11
cordatum coccineum 28:11
cordatum plenum 28:11
cordatum pyramidatum 28:11
edgariana 28: 11
obliquum coccineum 28:11
obliquum rubrum 28:11
obliquus catillus 28:11
oviforme 28:11
patula 28: 11
ridellii 30:28
Pleurocera acuta 28:18
acutum 28:13
alveare 28:13
canaliculatum 28:13
canaliculatum excuratum 28:13
canaliculatum filum 28:13
canaliculatum undulatum
 23:20; 28:13
curtum 28:13
Pleurolimnaea tenuicosta 29:5-7
Polita binneyana 26:4
chersinella 26:4
Polygyra 30:36, 39
ariadnae 30:37
auriformis 30:37
cereolus 30:37
cereolus febigeri 30:37
chisosensis 30:37
chisosensis discobolus 30:37
dorfeuilliana 30:37
dorfeuilliana sampsoni 30:37
fatigiata 28:16
fraterna 30:39
gracilis 30:37
hippocrepis 30:37, 42
implicata 30:37
latispira 30:37
leporina 28: 16; 30:37
matermontana 30:37
mooreana 30:37
mooreana tholus 30:38
opplata 30:37
plicata 28:16
Polygyra postelliana espiloca
 30:37
pustula 30:37
rhoadsii 30:37
richardsoni 30:38
scintilla 30:38
septemvolva febigeri
 30:38
tamaulipasensis 30:37
texasiana 30:38
texasiana tamaulipasensis
 30:38
texasiana texasensis 30:38
tholus 30:38
triodontoides 30:38
uvulifera 30:38
ventrosula 30:38
ventrosula hindsii 30:38
vultuosa cragini 30:39
Pomatiopsis lapidaria 28:13
 30:33
Pontederia 28:2, 5
Potamogoton (err. pro Potamo-
geton) 22:41
Potamogeton 22:41; 25:13
Potamopyrgus cheatumi 30:33
spinosus 30:33
Praticolella berlandieriana 30:38
berlandieriana pachyloma
 30:38
berlandieriana taeniata 30:38
griseola 30:38
Prisodon obliquus 30:7
Pristiloma wascoense 26:4
Prodiplodon 30:13
bassleri 30:3
paucarpatisensis 30:9
singewaldi 30:10
Promenetus 22: 48
exacuus 22:45, 46, 49; 25:2,
 9, 10, 17, 25, 26, 30, 31,
 34; 28:14; 30:31
umbilicatellus 30:31
Proptera 28:28; 30:27
alata 23:8; 28: 11; 30:28
amphichaena 30:28
capax 23:8; 28: 11
Proptera laevissima 28: 11
purpurata 23:8; 30:28
Pseudosuccinea 22:48
columella 22:42, 43, 49; 28:14;
 30:31
columella chalybea 30:31
Psoroniais semigranosus 30:28
Ptychobranchus fasciolare 28:11
phaseolus 28:11
subtentum 28:11
Punctum californicum 26:4
minutissimum 28:16; 30:38
smithi 28:16
vitreum 28:16; 30:38
Pupa 30:35, 38, 40
contracta 25:20
curvidens 30:35
fallax 30:38
pentodon 30:35
Pupilla blandi 30:38
syngenes 30:38
Pupisoma dioscoricola 30:38
dioscoricola insignis 30:38
macneilli 30:38
Pupoides albilabris 28:16; 30:38
marginatus 30:38
Quadrula 28:8-11; 21, 22; 30:26,
 28, 29
apiculata 30:29
askewi 30:26
aspera 30:29
aurea 30:28
beadleiana 30:26
chunii 30:27
couchiana 30:28
cuneus 30:28
cylindrica 28:11
flava nasuta 30:27
forsheyi 30:29
fragosa 28:11
friersoni 30:28
heros 28:10; 30:28
houstonensis 30:28
kirtlandiana 28:9
lachrymosa 28:11, 24; 30:29
lananensis 28:24; 30:26, 27

- Quadrula metanevra* 28:24
metanevra wardii 28:24
mortoni 30:29
nodifera 30:28
nodulata 28:11; 30:28
perina 30:28
plicata 28:8
pustulata 28:11
pustulosa 28:11; 30:28
pustulosa mortoni 30:28, 29
quadrula 28:11, 24; 30:29
quadrula aspera 30:29
quadrula contraryensis 28:24
rubiginosa 28:23; 30:27; 28:9
solida 28:11
speciosa 30:29
sphaerica 30:29
tritogonia 28:8
tuberculata 28:11
undata 30:27
undata chunii 30:27
undata parvula 28:23
undata trigona 28:23
undulata 28:8; 30:25
undulata latecostata 30:25
Quickella vermeta 28:19
Quincuncina 28:25
burkei 28:25
Retinella binneyana 28:16
binneyana occidentalis 26:4
cryptomphala 30:39
cryptomphala solida 28:16
cumberlandiana 28:16
cumberlandiana roanensis
 28:16
dalliana roemeri 30:39
electrina 28:16; 30:39
hammonis electrina 30:39
indentata 25:21, 22, 26; 28:16;
 30:39
indentata paucilirata 30:39
indentata umbilicata 30:39
paucilirata 28:16
praecox 28:16
rhoadsi 25:21, 26
(Glyphyalops) rhoadsi 25:21
roemeri 30:39
Retinella sculptilis 28:16;
 30:39
wheatleyi 28:16
Rhipidodonta 30:14
Rhodacmea elatior 28:14
hinkleyi 28:14
Rotundaria 28:8, 21, 22
Rumina decollata 30:39, 40
Schelesschiella 30:14
Segmentina 30:31, 32
Semisulcospira 27:51
Simonaias 28:27
Simpsoniconcha ambigua 28:11
Somatogyrus integer 28:13
subglobosus 23:20
subglobosus isogonus 28:13
trothis 28:13
Sonorella hachitana orientis 30:39
Spengleria 27:4
Sphaerium crassum 25:10
elevata 30:30
fabale 28:12
jalapense 30:30
lacustre 22:36, 49, 50, 55; 25:
 2, 6, 9, 26, 30, 31
lineatum 25:10
modestum 28:12
nitidum 22:31, 35, 249, 50, 53, 55,
 56, 57; 25:2, 6, 9, 10, 25, 26, 31;
 26:3
notatum 30:30
occidentale 26:3
partumeium 28:12; 30:30
ryckholti 25:9
securis 26:3; 30:30
simile 22:37
singleyi 30:30
solidulum 28:12
stamineum 30:30
striatinum 28:12; 30:30
subtransversum 30:30
sulcatum 22:31, 37, 49, 50, 52, 53,
 55; 25:10, 26, 30, 31; 28:12
tenuis 22:35; 25:9
transversum 28:12; 30:30
walkeri 22:35; 25:9
Spirulirostra 24:5
Stagnicola 25:26, 31, 30
bulimoides 30:31
bulimoides cockerelli 30:31
bulimoides techella 30:32
caperata 26:3; 30:32
catascopium 30:32
desidiosa 28:14; 30:32
cf. elrodiana 26:3
palustris 22:42; 25:14; 26:3; 30:
 32
palustris elodes 22:42
reflexa 30:32
tryoniana 30:32
Stenotrema angellum 28:16
barbatum 28:16
edwardsi 28:16
fraternum 28:16
hirsutum 28:16
leai 28:16
leai aliciae 28:16
monodon 28:16
monodon aliciae 30:39
stenotrema 28:16
Striatura ferrea 28:16
meridionalis 30:39
milium 28:16
milium pugetensis 26:5
pugetensis 26:5
Strobilops aenea 28:16; 30:39
aenea spiralis 28:16
affinis 28:16; 30:39
hubbardi 30:39
labyrinthica 28:16; 30:39
texasiana 30:39
Strophitus 28:26
edentulus 28:11; 28:26; 30:29
rugosus 23:8; 28:11
showalteri 28:26
subvexus 30:29
undulatus 28:11; 30:29
Succinea 22:42
aurea 28:16
avara 26:4; 28:16; 30:39
campestris 30:39
concordialis 30:39
greeri 25:19
grosvenori 25:19, 26; 28:16;
 30:39

- Succinea grosvenori gelida* 28:16
indiana 28:19
lineata 25:19; 30:39
ovalis 25:19, 20, 26
ovalis optima 28:16
retusa 22:46
solastra 30:39
unicolor 30:39
Symphynota 28:10
- Tachea* 21:41
Tarebia granifera 30:33;41
Tellina lacustris 22:36; 25:6
Terebrirostra 24:6
Thysanophora ingersolli 26:5
Toxolasma 28:8
parva 30:26
Triodopsis 30:23
albolabris 30:23, 24, 39
cragini 30:39
denotata 28:17
fosteri 28:17
fraudulenta 28:17
fraudulenta vulgata 28:17;
 30:39
hopetonensis 30:23, 24
multilineata 28:17
multilineata algonquinensis
 28:17
obstricta 28:17
rugosa anteridon 28:17
tridentata 28:17
tridentata tennesseensis 28:17
vulgata 28:17
vultuosa 30:39
vultuosa copei 30:39
vultuosa henriettae 30:40
Tripodon latouri 30:7
Tritogonia 28:8
nobilis 30:29
verrucosa 23:7; 28:11; 30:29
Tropicorbis gracilentus 30:32
havanensis 30:32
liebmanni 30:32
obstructus 30:32
obstructus donbilli 30:32
Truncatella pulchella 30:40
- Truncilla* 28:8, 9
donaciformis 28:11; 30:29
foliata 28:9
macrodon 30:29
perplexa 28:9
truncata 28:12; 30:29
walkeri 28:29
Turbo 23:6
- Unio* 23:6; 28:8, 9; 30:1, 4,
 14, 21, 22, 26, 27-29
acutirostris 30:2, 11
aethiopiiformis 30:3
aethiops 30:3
aethiops piracicabana 30:18
 30:9
ampullaceus 30:3
apiculata 30:29
aplatus 30:3
apprimus 30:3, 12
araucanus 30:3
askewi 28:24
aspera 30:29
atratus 30:3, 19
bairdianus 30:26
bealii 30:26
beskeanus 30:3, 14
beskeanus nordestinus 30:14,
 17
binneyi 30:3, 14
bischoffi 30:3
bomplandi 30:3, 12
borealis 28:28
brazosensis 30:26
browni 30:3, 17
bulloideus 30:4
burckhardti 30:4
burroughianus 30:4
caipira 30:4
calamitarum 28:27
cambodjensis 30:12
camptodon 30:29
casablancae 30:4
charruanus 30:4
charruanus lujanensis 30:7
childreni 30:4, 16
chilensis 30:4, 19
- Unio colchaguensis* 30:4
coloradoensis 30:28
contorta 30:5, 12
cor 28:23
coriaceus 30:4, 18
cornutus 30:28
cultelliformis 30:4
cuprinus 28:27; 30:4
declivis 30:29
delodon 30:4
delodonta 30:4
demerarensis 30:4, 17
depressa 30:4
diluvii 30:4
disculus 30:5, 17
divaricatus 30:5
dorfeuillianus 30:28
dunkerianus 30:5, 18
effulgens 30:5, 18
eightsii 30:28
elegans 30:29
elliortii 30:26
ellipticus 30:5
ellipticus santanus 30:14
eurhynchus 30:5, 18
expansus 30:18
faba 30:5
firmus 30:5, 16
firmus boettgeri 30:15
firmus "var." boettgeri 30:3
flava 28:22
fluctiger 30:5
fokkesi 30:5, 17
foncki 30:5
fontaineana 30:5
fontaineanus 30:16, 17
fragilis 30:4, 5
fragosus 28:24
frenzelli 30:5
frenzelli "var." andina 30:3
funeralis 30:6, 17
garbei 30:14
gassiesi 30:6
gibbosus 28:9, 25; 30:26
glebulus 30:27
gracilis 30:3, 27
granadensis 28:19

- Unio granosa* 30:6
granosus 30:17, 18
granuliferus 30:6, 18
gratus 30:6
greeffianus 30:6
guahybae 30:6
guaranianus 30:6
hartwrighti 30:14, 17
hylaea 30:6
iheringi 30:6
jacobaeus 30:6
jamesianus 30:29
janthinus 30:7
kelseyi 30:14, 17
keresetzi 30:7
kienerianus 30:28
lacteolus 30:7, 16
landbecki 30:7
latecostatus 30:25
leai 30:8
leptodon 28:28
limensis 30: 7, 19
lincecumii 30:26
locellus 30:7
longus 30:7
macropterus 30:7
manubius 30:29
martensi 30:7
matoniana 30:7
membranacea 30:7
metallicus 28:27
mittelli 30:26
mittelli iheringi 30:26
modestus 30:8
mogymirim 30:18
molinae 30:8
montanus 30:8
multiplicatus 30:28
multistriatum 30:15
multistriatus 30:8
nocturnus 30:8, 17
obtusa 30:8
obtusus 30:8
(Nephronaias) ortmanni 28:27
oscari 28:25
panco 30:14
paraguayanus 30:8
- Unio paraguayensis* 30:8
parallelipipedon 30:8
paranensis 30:8
parcus 30:8, 16
parva 30:26
patagonicus 30:8
patelloides 30:8
patulus 28:19
pauciplicatus 30:26
paulista 30:8, 9
peculiaris 30:9
peraeformis 30:9
pfeifferi 30:9, 19
piceus 30:9
piger 30:9, 12
plicatulus 28:27
prunoides 30:9
psammaticus 30:9
quadrans 30:9
rhombeus 30:9, 14
rhuacoica 30:9
rhuaconicus 30:10
rotundus 30:10
rubiginosa 28:23
rubiginosus 30:27
rudus 30:10, 16
rufofuscus 30:10, 17
rutersvillensis 30:28
satura 30:27
schenederi 30:10
sebastiani 30:10
smithi 30:10
solidulus 30:10, 19
solisiana 30:10, 20
solisianus 30:20
sphenorhynchus 30:11
suavidicus 30:10, 14, 17
subplanatus 30:14
subtrapezius 30:10
symmetricus 30:29
texasensis 30:26
trifidus 30:10
trigona 28: 22, 23
tuberculatus 30:29
undata 28:23
undulata 28:23
undulatus 30:28
- Unio uruguayensis* 30:11
valdivianus 30:11
villosa 28:29
virginica 27:2
wardii 28:24
wheatleyanus 30:11
wymani 30:11
Unionomerus tetralasmus 23:8, 12, 29
tetralasmus camptodon 30:29
tetralasmus declivis 30:29
tetralasmus manubius 30:29
Unionacea 30:1
Utterbackia 28:8
- Vallisneria* 22:41; 25:13
Vallonia albula 28:17
costata 30:40
cyclophorella 28:17; 30:40
excentrica 30:40
gracilicosta 30:40
parvula 30:40
perspectiva 28:17; 30:40
pulchella 28: 17; 30:40
Valvata 25:13
guatemalensis 30:33
lewisi 25:2, 9, 12, 26, 30, 31
sincera 22:31, 40, 49, 50, 52, 53, 55;
striata 25:12
tricarinata 22:31, 40, 41, 48, 49, 50,
 52, 53, 55; 30:33; 25:2, 9, 12, 13,
 24, 25, 26, 30, 31, 33
Veronicella portoricensis 25:37
Ventridens 28:19
acerra 28:17
demissus 28:17; 30:40
demissus brittsi 30:40
elliotti 28:17
gularis 28:17
intertextus 28:17; 30:40
lawae 28:17
ligera 28:17
pilsbryi 28:17
suppressus divisidens 28:17
suppressus virginicus 28:17
theloides 28:17
Vertigo bollesiana 28:17
gouldi 28:17

- Vertigo gouldi paradoxa* 28:17
milium 28:17; 30:40
modesta 28:17
modesta corpulenta 26:4
modesta parietalis 26:4
nylanderi 28:17
oscariana 30:40
ovata 22:49
ovata 22:55; 25:20, 26;
28:17; 30:40
rugosula 30:40
tridentata 30:40
- Villosa* 28:29
fabalis 28:12
(Friersonia) iridella 28:29
iris 28:12, 29; 30:29
lienesa 28:12
nebulosa 28:12
- Villosa ortmanni* 28:12
picta 28:12
trabalis 28:12
vanuxemensis 28:12
- Vitrea indentata* 25:21
rhoadsi 25:21
- Vitrina alaskana* 26:4
limpida alaskana 26:4
- Vivipara* 23:10
- Viviparus* 23:10
georgianus 28:13, 18
japonicus 23:14
subpurpureus 30:33
texanus 30:33
trochiformis 29:5-7
- Voluta* 23:6
largillertiana 24:5
- Xylophaga* 27:51
- Zonites* 30:34, 35, 36, 39, 40
caducus 30:40
demissus 30:40
laeviuscula 30:35
milium 30:39
- Zonitoides arboreus* 26:5; 28:17;
30:40
lateumbilicatus 28:17
nitidus 25:22; 25:26; 28:17