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A List of Records of Freshwater Aspidogastrids (Trematoda) and Their Hosts in North America

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ABSTRACT: Published records for the six species of North American freshwater aspidogastrid trematodes from molluscs and vertebrates have been compiled, listing both hosts and localities for state or province. Seventeen new unionid mussel hosts (Bivalvia) are reported for *Aspidogaster conchicola* along with new state records for Arkansas, Connecticut, Delaware, Maryland, Mississippi, North Carolina, New York, Virginia, and San Luis Potosi (Mexico); 12 new unionid host species for *Cotylaspis insignis*, with new state records for Arkansas, Delaware, Massachusetts, Mississippi, New Jersey, Rhode Island, and Wisconsin; five new unionid hosts for *Cotylogaster occidentalis*, with new state records for Connecticut, Delaware, Florida, and Texas; and a new unionid host record for *Lophotaspis interiora*. No new records are given for *Cotylaspis cokeri* nor for *C. stunkardi* from turtles.

In North America, aspidogastrid trematodes are common parasites of freshwater unionid mussels (Bivalvia). They occur less often in gastropods, fishes, and turtles (Dollfus, 1958; Rohde, 1972). *Aspidogaster conchicola* von Baer, 1826, *Cotylaspis insignis* Leidy, 1857 (=*Platyaspis anodontae* Osborn, 1898 and *C. reelfootensis* Najarian, 1961), and *Cotylogaster occidentalis* Nickerson, 1902 (=*C. barrowi* Huehner and Etges, 1972) are widely distributed, but distributional limits have not been established, particularly at the northern and western boundaries of their ranges. Information on *Cotylaspis cokeri* Barker and Parsons, 1914, *C. stunkardi* Rumbold, 1928, and *Lophotaspis interiora* Ward and Hopkins, 1931 are based on from one to five reports each, and the distributions are poorly known.

Distribution and host records are scattered in the literature; the nomenclature of unionid mussels has been unstable and changing; and recent surveys have almost consistently recorded declines in mussel species, diversity, and ranges as habitats are modified by human activities (Sullóway, 1981; Havlik, 1983). To create a checklist of locality records for North American aspidogastrids, we reviewed and numbered 74 publications (Appendix 1) (note that the numbers are also cited in the checklist).

The checklist (Appendix 2) includes previously unpublished host and locality data from the authors' collections of *A. conchicola*, *C. insignis*, *C. occidentalis*, and *L. interiora*. To conserve space in the checklist, we are listing the stations as given in Appendix B of Vidrine (1980), in parentheses. Photocopies of this Appendix have been deposited at the U.S. National Parasite Colection, USDA, ARS, BARC-East No. 1180, Beltsville, Maryland 20705; the Harold W. Manter Laboratory, University of Nebraska State Museum, Lincoln, Nebraska 68588-0514; and the Biology Department of Gettysburg College. Localities for our new state records are listed in Table 1. Two additional localities from Pennsylvania (§7 and §8, are included in this table but are not new state records. Mussel names are based on the works of many authors, especially Burch (1975), but the higher taxa are based on Davis and Fuller (1981); gastropod names are based on Burch and Tottenham (1980) and Burch (1982); turtle names are based on Ernst and Ernst (1977). Junior synonyms of host names are included when those names have been used by authors reporting aspidogastrids.

Mussels were collected by hand, with a modified quahog clamming rake, by snorkeling, or with a crowfoot apparatus. The soft parts were dissected in a manner similar to that of Hendrix and Short (1965, 1972), but the visceral mass was also cut open to locate any *C. occidentalis* that might be in the intestine. The worms were collected, fixed, and identified using standard parasitological techniques. Voucher specimens have been deposited in the USNM Helminthological Collection, USDA, Beltsville, Maryland 20705, Nos. 78804–78810.

Table 1. Localities of new state records for aspidogastrids.

*Locality no.	Species	Location
279	†A.c./C.i.	Lake Chicot, junct. of US 82 and US 65, ca. 5 mi east of Lake Village, Chicot Co., AR
391	C.i.	Saline River at AR 160, east of Johnsville, Ashley and Bradley cos., AR
396	A.c./C.i.	North Cadron Cr., US 65, north of Greenbriar, Faulkner Co., AR
398	C.i.	Saline River at US 167, Grant and Dallas cos., AR
400	C.i.	Ouachita River at AR 270, Rocky Shoals Park, Montgomery Co., AR
404	A.c./C.i.	Ouachita River, 6 mi southeast of Ink, Polk Co., AR
406	C.i.	Strawberry River at US 167, 2 mi north of Evening Shade, Sharp Co., AR
§1	A.c.	Carlson's Pond, junct. of CT 207 and Pond Rd., North Franklin, New London Co., CT
§2	A.c./C.o.	Williams Pond, off CT 207, Amston, New London Co., CT
3	A.c./C.i./C.o.	Deep Cr. at Nanticoke Acres, DE 20, Seaford, Sussex Co., DE
§3	A.c./C.i.	Mashpee Pond, Mashpee Twp., Barnstable Co., MA
§4	A.c./C.i.	Sargo Lake, Town landing, Dennis, Barnstable Co., MA
§5	A.c./C.i.	Upper Mill Pond, Brewster, Barnstable Co., MA
74	C.o.	Little Withlacooche River, at US 301, south of Bushnell, Sumter and Hernando cos., FL
9	A.c.	Chester River, east of junct. of MD 297 and MD 313, Millington, Kent Co., MD
110	A.c./C.i.	Tombigbee River at US 82, Columbus, Lowndes Co., MS
111	A.c.	Tombigbee River at MS 50, ca. 6 mi northwest of Columbus, Lowndes and Clay cos., MS
133	C.i.	Tickfaw River at MS 584, east of Gilsburg, Amite Co., MS
134	C.i.	East Fork of Amite River, ca. 4 mi north of LA state line, Amite Co., MS
135	C.i.	East Fork of Amite River at MS 584, Amite Co., MS
138	C.i.	Leaf River at US 98, Greene Co., MS
139	C.i.	Yokanookany River at MS 429, Leake Co., MS
140	C.i.	Bogue Chitto River at US 84, Bogue Chitto, Lincoln Co., MS
142	A.c.	Pearl River at US 98, Marion Co., MS
143	A.c./C.i.	Hobolochitto Cr. at MS 11, Pearl River Co., MS
144	C.i.	Wolf River at MS 26, Pearl River Co., MS
145	C.i.	Bogue Chitto River at US 98, Pike Co., MS
146	C.i.	Tangipahoa River at US 51, Pike Co., MS
386	A.c.	Big Black River at MS 12, Holmes and Attala cos., MS
388	C.i.	Sunflower River at MS 14, ca. 3 mi east of Anguilla, Sharkey Co., MS
45	A.c.	Chowan River at Raye's Beach Fishing Club, Gates Co., NC
14	A.c./C.i.	Delaware River at Kinkora Island, Roebling, Burlington Co., NJ
§6	A.c.	Susquehanna River at Recreation Park, off NY 7, Conklin, NY
§7	C.i.	Schuylkill River at Hawes Ave. Park, Norristown, Montgomery Co., PA
§8	A.c./C.i.	Susquehanna River at Selinsgrove, Snyder Co., PA
§9	C.i.	30 Acre Pond, off RI 138 and RI 110, Univ. of Rhode Island, Kingston, Washington Co., RI
174	C.o.	Village Cr. at US 96, south of Silsbee, Hardin Co., TX
446	A.c.	Possum Cr., near Gate City, Scott Co., VA
231	C.i.	Mississippi River at DeSoto, above Indian Camp Light, Vernon Co., WI
462	A.c.	Valles River below RR station in Micos, San Luis Potosi, MEX

* Localities of Vidrine (1980) unless marked § (see checklist).
† A.c. = *A. conchicola*, C.i. = *C. insignis*, C.o. = *C. occidentalis*.

Discussion

Although the checklist includes numerous unionid mussel and other hosts, there are large gaps in the known host range and geographic distribution of these freshwater aspidogastrids. Burch (1975) lists 227 species of unionacean mussels north of Mexico, only a fraction of which are reported to have aspidogastrids. For example, there may be no North American records of aspidogastrids from the more primitive subfamily Margaritiferinae because few specimens and localities have been examined. Aspidogastrids are presently reported from only 30 states, one Canadian province, and one Mexican state. *A. conchicola* is the only aspidogastrid reported from

the western third of the continent (Pauley and Becker, 1968); the remaining records come from the midwestern, southern, and eastern regions of North America, primarily the United States. The northern boundary of the aspidogastrid range is uncertain because, although unionid mussels have migrated into previously glaciated areas of North America, it appears that the aspidogastrids have not necessarily accompanied them. Several mussel collections in Washington County, Maine yielded no aspidogastrids, yet we report them in Connecticut, Rhode Island, and Massachusetts. Further, Dr. M. D. B. Burt (pers. comm.) has examined numerous unionids in New Brunswick, Canada without finding these helminths. No aspidogastrids were found upon examination of numerous mussels in the Canadian National Museum collection by M.F.V. (*C. occidentalis* was not sought). Gaps in known host and geographic distribution probably reflect more the interests of workers in various laboratories and the availability of host material than true gaps. In drainages where these helminths have been reported, usually not all of the potential host species from those drainages have been examined.

Both *A. conchicola* and *C. insignis* have rather low unionid host specificity and a large distributional range which suggests an ancient coevolutionary relationship between mussels and these two aspidogastrids. This specificity may however, be limited primarily by habitat preferences of the hosts rather than physiological preferences of the parasites. As yet, too little is known about the ecology, life histories and host–parasite relationships of these species in mussels to make generalizations.

The host and geographic ranges of *C. occidentalis* and *L. interiora* also are known incompletely, perhaps because they utilize vertebrate hosts as well as molluscs. *Lophotaspis interiora* appears to have a two-host life cycle; adults are known only from a single turtle originally from Arkansas (Ward and Hopkins, 1931), whereas juveniles are known only from Florida mussels (Hendrix and Short, 1972). The availability of a fish host, *A. grunniens* Raf., may partially explain the fairly wide geographic range of *C. occidentalis*. The fact that the mussel visceral mass must be dissected in order to locate these worms in the intestine may contribute to the relatively few reports of this species.

We report in the checklist an additional 17 new mussel hosts for *A. conchicola*, 12 for *C. insignis*, 5 for *C. occidentalis*, and 1 for *L. interiora*. New state records (Table 1) are given for all of these except *L. interiora* which has yet to be reported from mussels outside of Florida. The range of *A. conchicola* is extended to Arkansas, Connecticut, Delaware, Maryland, Mississippi, New York, North Carolina, Virginia, and San Luis Potosi (Mexico); that of *C. insignis* to Arkansas, Delaware, Massachusetts, Mississippi, New Jersey, Rhode Island, and Wisconsin; that of *C. occidentalis* to Connecticut, Delaware, Florida, and Texas.

Both *A. conchicola* and *C. insignis* are found in Mexico. *A. conchicola* is found in a number of the Atlantic drainages in the northern portion of the country whereas *C. insignis* occurs in the more southern ones (Vidrine et al., 1983). The taxonomy of Mexican mussels is being revised, and the best availabile names are in the checklist.

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Appendix 1

Publications Containing Locality Information on North American Aspidogastrids

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Appendix 2

Checklist of State and Province Records of Known Molluscan and Vertebrate Hosts of Freshwater Aspidogastrids in North America

CLASS GASTROPODA, Subclass Prosobranchia, Family Pleuroceridae: ***Elimia livescens*** (Menke) as *Goniobiasis livescens, A. conchicola* †OH 28, 31; ***Elimia virginica*** (Say) as *Goniobiasis virginica, A. conchicola* NJ 33; ***Elimia*** sp. as *Goniobiasis* sp., *C. occidentalis* KY 69, OH 12; ***Pleurocera acuta*** Rafinesque, *C. occidentalis* IN 8, *C. cokeri* IN 8. Family Viviparidae: ***Campleoma decisum*** (Say) as *Paludina decisa, A. conchicola* PA? 43; ***Cipangopaludina japonica*** (Martens) as *Viviparous japonicus, A. conchicola* MA 47; ***Cipangopaludina chinensis malleata*** (Reeve) as *Viviparous malleatus, A. conchicola* MA 47, OH 28, 29, 31.

CLASS BIVALVIA, Superfamily Unionacea, Family Unionidae: ***Actinonaias carinata*** (Barnes) as *A. ligamentina carinata, A. l. ligamentina, Lampsilis ligamentinus,* and *Unio ligamentinus, A. conchicola* MO 27, OH 32, *C. insignis* IA 37, IL 37, 39, MO 27, *C. occidentalis* MO 27; ***Actinonaias ellipsiformis*** (Conrad) as *Venustaconchia ellipsiformis ellipsiformis* and *V. e. pleasii, A. conchicola* MO 27, *C. insignis* ‡AR(406), MO 27; ***Alasmidonta marginata*** Say, *A. conchicola* OH 60, PA 37; ***Amblema dombeyana*** (Val.) as *Plectomerus dombeyana, A. conchicola* LA(289, 294, 302, 305, 320, 335, 341, 346, 347, 363, 369) 66, 67, *C. insignis* LA(304), ‡MS(138); ***Amblema gigantea*** (Barnes) as *Megalonaias gigantea, Magnoniais nervosa,* and *Quadrula undulata, A. conchicola* IN 61,

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* = New host record.
‡( ) = New state and locality record (see Table 1).
( ) = Vidrine (1980) locality.
(§) = Locality listed in Table 1, not in Vidrine (1980).
† State codes: AL—Alabama, AR—Arkansas, CT—Connecticut, DE—Delaware, FL—Florida, GA—Georgia, IA—Iowa, IL—Illinois, IN—Indiana, KY—Kentucky, LA—Louisiana, MA—Massachusetts, MD—Maryland, MI—Michigan, MN—Minnesota, MO—Missouri, MS—Mississippi, NC—North Carolina, NJ—New Jersey, NY—New York, OH—Ohio, OK—Oklahoma, ONT—Ontario (Canada), PA—Pennsylvania, RI—Rhode Island, SLP—San Luis Potosi (Mexico), TN—Tennessee, TX—Texas, VA—Virginia, WA—Washington, WI—Wisconsin, WV—West Virginia.

LA(302, 368), 67, MO 27, *C. insignis* IN 73; ***Amblema neisleri*** Lea as *Carunculina neisleri, A. conchicola* FL 25; ***Amblema plicata*** (Say) as *A. costata, A. perplicata, A. peruviana, Crenodonta rariplicata,* and *Quadrula plicata, A. conchicola* ‡AR(404), IA 37, IL 37, 65, LA(151, 168, 293, 294, 302, 303, 304, 341, 345, 349, 363, 369, 370) 67, MO 27, OH 6, 60, OK 50, TN 24, TX(175, 183) 13, 18, 19, WI 71, WV 11, *C. insignis* MO 27, OH 60, TX 18; ***Anodonta californiensis*** Lea, *A. conchicola* WA 55; ***Anodonta cataracta*** Say as *Anodonta fluviatilus, A. lacustris,* and *A. marginata, A. conchicola* ‡CT (§1, §2), ‡DE(3), MA(§3, §4, §5), NJ(14), OH 32, PA? 40, 41, 44, *C. insignis* ‡DE(3), ‡MA(§3, §4), ‡NJ(14), PA(§7) 41, 42, ‡RI(§9), **C. occidentalis* ‡CT(§2); ***Anodonta cowperiana*** Lea, *C. insignis* FL 25; ***Anodonta gibbosa*** Say, *A. conchicola* FL 25, *C. insignis* FL 25; ***Anodonta grandis*** Say as *A. g. corpulenta, A. corpulenta, A. ovata,* and *A. plana, A. conchicola* ‡AR(404), IA 37, IL 22, 23, 37, 61, IN 72, 73, LA(154, 288, 289, 294, 304, 305, 318, 335, 341, 345, 361, 363, 366, 367, 370, 373) 66, 67, MO 27, OH 6, 32, 60, OK(389) 3, 50, TX(176) 2, 13, 18, 19, WI 70, WV 11, *C. insignis* ‡AR(404), IA 37, IL 37, 39, 61, IN 72, 73, LA(288, 289, 303, 304, 305, 316, 317, 318, 319, 334, 335, 361, 366, 367, 370, 376) 10, 66, 67, MN 45, MO 27, 64, NY 53, 54, OH(207, 201) 60, OK(389) 50, TN 48, 49, TX 1, 13, 18, 19, WV 11, *C. occidentalis* MI 15, 74; ***Anodonta hallenbecki*** Lea, *A. conchicola* AL 25, FL(96), *C. insignis* AL 25, FL(96); ***Anodonta imbecillus*** Say, *A. conchicola* AL 25, ‡AR(404), FL 25, IL 22, 23, LA(287, 322, 323, 363) 67, ‡NC(45), OH 60, OK 50, PA(22), WI 71, *C. insignis* AL 25, ‡AR(404), FL(95) 25, IL 37, 61, LA(113, 314, 322, 380, 381) 67, OH 60, OK 50, ‡PA(§7); ***Anodonta implicata*** Say, **A. conchicola* MA(§3, §5), ‡MD(9), PA(22), **C. insignis* ‡MA(§3, §5), ‡RI(§9); ***Anodonta oregonensis*** Lea, *A. conchicola* WA 55; ***Anodonta peggyae*** Johnson, **A. conchicola* FL(98), **C. insignis* FL(98); ***Anodonta suborbiculata*** Say, *C. insignis* IL 37; ***Anodonta*** sp., *A. conchicola* OK 62, 63; ***Anodontoides ferussacianus*** (Lea) as *Anodonta ferrus, C. insignis* IL 61; ***Arcidens confragosus*** (Say) as *Alasmidonta confragosus* and *Unio confragosus, C. insignis* IL 37, 39; ***Carunculina parva*** (Barnes) as *C. minor,* and *Lampsilis parvus, A. conchicola* LA(289, 322, 335, 341, 363) 67, TX(178), *C. insignis* FL 25, IL 37, LA(289, 297, 312, 317, 322, 326, 333, 338, 364, 367, 376, 385) 67, ‡MS(388), OH 60; ***Cyclonaias tuberculata*** (Raf.), *A. conchicola* MO 27, OH 60, TN(437) 24, *C. insignis* MO 27; ***Cyrtonaias tampicoensis*** (Lea) as *Lampsilis tampicoensis berlandierii, *A. conchicola* TX(185), *C. insignis* TX(185) 19; ***Disconaias fimbriata*** (Frierson), **A. conchicola* ‡SLP(462); ***Ellipsaria lineolata*** (Raf.) as *Plagiola lineolata, A. conchicola* TN 24; ***Elliptio arctata*** (Conrad), **C. insignis* FL(96); ***Ellipto buckleyi*** (Lea), **C. insignis* FL(69), **C. occidentalis* ‡FL(74); ***Elliptio complanata*** (Lightfoot) as *Unio purpureus, A. conchicola* ‡CT(§1, §2), ‡DE(3), NJ(16), MA(§3, §4), PA(21) 37, 40, 44, *C. insignis* NC 46, PA(§8), *C. occidentalis* ONT 34, 35, 36; ***Elliptio crassidens*** (Lam.), *A. conchicola* FL 25, TN 24, *C. insignis* FL 25, ‡MS(134, 146), *L. interiora* FL 26; ***Elliptio dilatata*** (Raf.), *A. conchicola* IL 37, MO 27, OH 60, WI 71; ***Elliptio folliculatus*** (Lea), *C. insignis* GA 25; ***Elliptio icterina*** (Conrad) as *E. toumeyi, A. conchicola* AL 25; ***Elliptio jayensis*** (Lea), **C. insignis* FL(68); ***Elliptio lanceolata*** (Lea) as *E. gibbosus, C. insignis* NC 46; ***Elliptio strigosus*** (Lea), *A. conchicola* FL 25, *C. insignis* FL 25, GA 25, *L. interiora* FL 26; ***Elliptoideus sloatianus*** (Lea) as *Elliptio sloatianus, A. conchicola* FL 25; ***Friersonia iridella*** (Pilsbry and Frierson), **A. conchicola* ‡SLP(462); ***Fusconaia ebena*** (Lea), *A. conchicola* TN 24, WI 71; ***Fusconaia escambia*** Clench and Turner, *A. conchicola* FL 25, *C. insignis* FL 25; ***Fusconaia flava*** (Raf.) as *Quadrula rubiginosa, A. conchicola* IN 72, LA(349), MO 27, ‡MS(143), OH(207) 60, OK 50, *C. insignis* IN 72, LA(341, 377, 384), MO 27, ‡MS(146), OK 50; ***Fusconaia subrotunda*** (Lea), *A. conchicola* OH 6; ***Fusconaia succissa*** (Lea), *A. conchicola* FL 25, *L. interiora* FL 26; ***Fusconaia undata*** (Barnes) as *Quadrula trigona, A. conchicola* WI 71, *C. insignis* IL 37; ***Glebula rotundata*** (Lam.), *A. conchicola* LA(291, 313, 323, 361, 370, 373, 375) 66, 67, ‡MS(138, 142), *C. insignis* LA(120, 310, 313, 316, 317, 320, 361, 365, 370, 373, 375) 66, 67; ***Gonidea angulata*** (Lea), *A. conchicola* WA 55; ***Lampsilis cariosa*** (Say), **A. conchicola* ‡NY(§6), **C. insignis* PA(§8); ***Lampsilis claibornensis*** (Lea), *C. insignis* FL(97), 25, LA(123), ‡MS(135, 139, 146); ***Lampsilis fasciola*** Raf., *A. conchicola* OH 60; ***Lampsilis higginsi*** (Lea), *C. insignis* IL 37; ***Lampsilis hydiana*** (Lea) as *L. radiata hydiana, *A. conchicola* LA(157, 168, 337, 358), *C. insignis* LA(151, 154, 160, 165, 168, 171, 289, 304, 305, 311, 337, 338, 341, 349, 377, 383, 384) 67, TX(181) 13, *L. interiora* FL 26; *Lampsilis ochracea* (Say), *C. insignis* NC 46, **C. occidentalis* ‡DE(3); ***Lampsilis ovata ovata*** (Say), *A. conchicola* LA(151, 154, 157) 67, OK 50, TX(174, 181), *C. insignis* ‡AR(400, 406), LA(151, 152, 154, 157, 171, 349) 67, OK 50, TX(174, 181), **C. occidentalis* ‡TX(174); ***Lampsilis ovata ventricosa*** (Barnes) as *Lampsilis ventricosa, A. conchicola* IA 37, IL 37, MO 27, OH 32, *C. insignis* IA 37, IL 37, 65, IN 73, MO 27, OH 60, WV 11, *C. occidentalis* OH 30, MO 27; *Lampsilis radiata radiata* (Gmelin), **A. conchicola* ‡CT(§1), ‡DE(3), MA(§3), **C. occidentalis* ‡DE(3); ***Lampsilis radiata siliquodea*** (Barnes) as *L. radiata luteola, L. siliquoidea* and *L. luteolus, A. conchicola* IL 37, IN 72, LA 67, OH 32, OK 50, WI 71, WV 11, *C. insignis* IL 37, IN 72, 73, LA 67, NY 53, 54, OH(206) 60, OK 50, WV 11, *C. occidentalis* IA 14, 15, 38, OH 30; ***Lampsilis reeviana brevicula*** (Call), *C. insignis* MO 27; ***Lampsilis subangulata*** (Lea) as *Ligumia subangulata, A. conchicola* FL 25, *C. insignis* FL 25, *L. interiora* FL 26; ***Lampsilis teres*** (Raf.) as *L. anodontoides* and *L. anodontoides floridana, A. conchicola* FL 25, IA 37, IL(227) 37, LA(151, 154, 157, 168, 171, 287, 303, 304, 305, 309, 312, 322, 323, 324, 334, 335, 349, 363, 373, 384) 66, 67, MO 27, OK(414) 50, TX(174, 181), *C. insignis* ‡AR(391), FL(96) 25, GA 25, IA 37, IL 37, 39, LA(151, 160, 165, 168, 171, 292, 304, 305, 309, 311, 312, 319, 322, 324, 341, 349, 363, 364, 370, 373, 377, 384) 10, 67, MO 27, ‡MS(139), OK 50, TX(181) 13, 19; ***Lasmigona complanata*** (Barnes) as *Alasmodonta complanata, Symphynota complanata* and *Unio katharinae, A. conchicola* IA 37, IL 37, IN 72, MO 27, OH 6, 32, OK 50, *C. insignis* IL 37, 39, OK 50; ***Lasmigona costata*** (Raf.), *A. conchicola* OH 6, 60; ***Leptodea fragilis*** (Raf.) as *Lampsilis fragilis, L. gracilis,* and *Unio gracilis, A. conchicola* IA 37, IL 37, 65, LA(151, 157, 287, 304, 320, 324, 363,

most likely → RI§9 A. cataracta instead of A. implicata — shell lost so it is a matter point

365, 367, 370) 67, MO 27, 64, ‡MS(110, 111), OH 6, 60, OK 50, TX(175, 176), WI(231), *C. insignis* ‡AR(279), IA 37, IL 37, 39, 61, LA(151, 157, 303, 320, 334, 367, 368, 370) 67, ‡MS(139), OK 50, TX(175, 181), ‡WI(231); ***Leptodea leptodon*** (Raf.) as *Lampsilis tenuissimus, C. insignis* IL 37; ***Ligumia nasuta*** (Say) as *Lampsilis nasutus* and *Unio nasutus, A. conchicola* ‡CT(§2), ‡DE(3), NJ(14), OH 60, PA 40, 44, *C. insignis* ‡NJ(14), OH 60, PA 37, ‡RI(§9), *C. occidentalis* ‡CT(§2), MI 15, 16, 74; ***Ligumia recta*** (Lam.) as *Lampsilis rectus* and *Unio rectus, A. conchicola* IA 37, IL 37, OH 60, *C. insignis* IA 37, IL 37, 39, IN 72, 73, LA(349), MO 27, OH 72, *C. occidentalis* MI 45; ***Ligumia subrostrata*** (Say) as *Lampsilis subrostratus, A. conchicola* LA(314), MO 27, *C. insignis* LA(113, 297, 338) 67, MO 27, TN 48, 49; ***Medionidus conradicus*** (Lea), **A. conchicola* ‡VA(446); ***Obliquaria reflexa*** Raf., *A. conchicola* MO 27, ‡MS(110), OH 60, OK 50, TN 24; ***Obovaria castenea*** (Lea), **A. conchicola* LA(157, 168); ***Obovaria olivaria*** (Raf.) as *Obliquaria olivaria* and *Lampsilis ellipsis, A. conchicola* IA 37, IL 37, 65, TN 24, *C. insignis* IA 37, IL 37; ***Obovaria retusa*** (Lam.) as *Obliquaria retusa, A. conchicola* TN 24; ***Obovaria subrotunda*** (Raf.), *A. conchicola* OH 6; ***Orthonymus cylindrica*** (Say) as *Quadrula cylindrica, *A. conchicola* TN (437); ***Orthonymus metanevra*** (Raf.) as *Quadrula metanevra, A. conchicola* MO 27, TN 24, *C. insignis* IL 37; ***Plagiola triquetra*** (Raf.) as *Dysonomia triquetra, A. conchicola* OH 60; ***Plethobasis cyphyus*** (Raf.), *C. insignis* TN 24; ***Pleurobema cordatum*** (Conrad) as *P. coccineum, A. conchicola* IL 65, OH 6, 60, TN 24, WV 11; ***Pleurobema sintoxia*** (Raf.), *A. conchicola* MO 27; ***Pleurobema strodeanum*** (B. H. Wright), *A. conchicola* FL 25, *L. interiora* FL 26; ***Popenaias*** **sp.**, **A. conchicola* ‡SLP(462); ***Proptera alata*** (Say) as *Lampsilis alatus* and *Potamilus alatus, A. conchicola* IA 37, IL 37, MO 27, OH 6, 60, OK 50, TN 24, WI 71, WV 11, *C. insignis* IA 37, IL 37, 39, MO 27, OK 50; ***Proptera amphichaena*** (Frierson), **A. conchicola* TX(176), **C. insignis* TX(176); ***Proptera laevissima*** (Lea) as *Leptodea laevissima* and *Potamilus ohioensis, A. conchicola* ‡AR(279), MO 27, WI 71, **C. insignis* ‡AR(279); ***Proptera purpurata*** (Lam.) as *Potamilus purpuratus, A. conchicola* LA(154, 168, 287, 304, 305, 311, 312, 320, 323, 334, 337, 345, 347, 349, 363, 369, 370, 377) 66, 67, ‡MS(110), OK(389) 2, 50, TX(175, 181) 1, *C. insignis* ‡AR(398, 404), LA(154, 168, 305, 311, 334, 341, 345, 347, 349, 363, 368, 369, 377) 67, ‡MS(139), OK(389) 50, TX(175, 176) 1, 13; ***Ptychobranchus fasciolare*** (Raf.), *A. conchicola* OH 6, 60, *C. insignis* MO 27, OH (207); ***Ptychobranchus subtentum*** (Say), **A. conchicola* TN(437); ***Quadrula apiculata*** (Say), *A. conchicola* LA(287, 293, 294, 323, 324, 375, 377) 66, *C. insignis* LA(375) 67; ***Quadrula nodulata*** (Say) as *Q. pustulata, A. conchicola* LA(312, 326) 67 *C. insignis*, IL 37, LA(326, 368); ***Quadrula pustulosa*** (Lea) as *Q. houstonensis* and *Unio pustulosus, A. conchicola* IA 37, IL 37, 65, LA(151, 168, 171, 294, 312, 324, 326, 349, 378) 67, MO 27, ‡MS(386), OH 6, 60, OK 50, TN 24, TX 19, WI 71, WV 11, *C. insignis* IL 37, 61, LA(363, 368) 67, MO 27, ‡MS(110, 139), TX 19, WV 11, *C. occidentalis* MO 27; ***Quadrula quadrula*** (Raf.) as *Q. forsheyi, A. conchicola* LA(171), MO 27, OH(206, 208) 6, 32, 60, OK 2, 50, TN 24, TX 19, *C. insignis* LA(303, 345, 347, 368), TX 19, WV 11; ***Quincuncina burkei*** (Walker), **A. conchicola* FL(100); ***Quincuncina infucata*** (Conrad), *A. conchicola* FL 25, *C. insignis* FL(97) 25, **L. interiora* FL(97); ***Strophitus subvexus*** (Conrad), **A. conchicola* LA(157), **C. insignis* ‡MS(143); ***Strophitus undulatus*** (Say) as *S. edentulus, S. rugosus* and *Unio edentulus, A. conchicola* IA 37, IL 37, LA(337) 3, MO 27, OH 6, *C. insignis* IA 37, IL 37, 39, LA(337), OH 60, WV 11; ***Tritogonia verrucosa*** (Raf.) as *Quadrula tuberculata* and *Unio tuberculata, A. conchicola* ‡AR(396), IL 37, LA(162, 168, 171, 303, 323, 347, 369, 370) 66, 67, MO 27, ‡MS(111), OH 6, 60, OK 2, 50, TN 24, WI 71, WV 11, *C. insignis* ‡AR(396), IL 37, 39, LA(154, 171, 305, 341, 349, 370) 66, 67, MO 27, ‡MS(139, 140, 146) OK 50; ***Truncilla donaciformis*** (Lea) as *Plagiola donaciformis, A. conchicola* IA 37, IL 37, OH 60, OK 50, **C. insignis* LA(363); ***Truncilla truncata*** Raf. as *Plagiola elegans* and *Unio elegans, A. conchicola* IL 37, OK 50, WI 71, *C. insignis* IL 39, OK 50; ***Uniomerus tetralasmus*** (Say) as *U. obesus; A. conchicola* LA(324) 67, MO 27, *C. insignis* FL 25, GA 25, LA(310, 324, 338, 364) 67, MO 27, TN 48, 49, TX(390); ***Villosa delumbis*** (Conrad), **C. insignis* NC(40); ***Villosa iris*** (Lea), **A. conchicola* ‡AR(404), **C. insignis* ‡AR(404), OH (207); ***Villosoa lienosa*** (Conrad), *A. conchicola* FL(100) 25, LA(168, 377), ‡MS(143), *C. insignis* FL(97) 25, GA 25, LA(123, 124, 168, 322, 338, 377), ‡MS(133, 134, 140, 143, 144, 145), OK(414); ***Villosa vibex*** (Conrad), *A. conchicola* LA 67, ‡MS(143, 145), *C. insignis* FL 25, LA(123), ‡MS(143, 146); ***Villosa villosa*** (B. H. Wright) as *Carunculina villosa, C. insignis* FL(95) 25; **Unionidae or Mussels,** *A. conchicola* IL 70, PA 20, 21.

SUBPHYLUM VERTEBRATA, CLASS OSTEICHTHYES, Order Acipenseriformes, Family Polyodontidae: ***Polyodon spathula*** (Walbaum), *C. cokeri* MS 58. Order Perciformes, Family Sciaenidae: ***Aplodinotus grunniens*** Raf., *C. occidentalis* IA 38, LA 59, MN 14, 15, 51?, 52, MS 58, OH 12, TN 4.

CLASS REPTILIA, Order Testudines, Family Chelydridae: ***Chelydra serpentina*** (L.), *C. stunkardi* NC 57; ***Macroclemys temminckii*** (Troost), *L. interiora* AR 68. Family Emydidae: ***Chrysemys scripta*** (Schoepff), *Cotylaspis* sp. LA 7; ***Graptemys geographica*** (LeSueur) as *Malacoclemmys lesueuri, C. cokeri* IN 8, OH 56, TX 61; ***Graptemys pseudogeographica*** (Gray) as *Malacoclemmys lesueurii* and Lesseur's terrapin, *C. cokeri* IA 5. Family Trionychidae: ***Trionyx ferox*** (Schneider), *C. insignis* OK 17 (incidental host).