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UNIONACEAN MUSSELS OF KANSAS

by

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Two superfamilies of bivalved molluscs are found in Kansas. These groups are the Unionacea, freshwater mussels or naiades, and Sphaeriacea, pill or fingernail clams. Three families of Unionacea, Margaritiferidae, Amblemidae, and Unionidae, are found in the United States, but only the latter two are represented in Kansas. Murray and Leonard (1962) published an excellent account of the unionacean mussels found in Kansas. Their handbook is particularly useful in coordinating early and recent nomenclature as well as outlining distribution patterns within the state. Mackie and Huggins (1976) and Huggins and Liechti (Huggins et al., 1976) have published the only species accounts dealing with fingernail clams in Kansas. Murray and Leonard (1962) noted that the Kansas unionacean mussel fauna comprised 41 species, and Branson (1966a) added a new genus and species for Kansas. Murray and Leonard (1962) stated that three species (Anodonta suborbiculata, Obovaria olivaria, and Ptychobranchus fasciolare) previously reported from Kansas by Scammon (1906) were probably extirpated. The entire unionacean collection of Murray and Leonard was subsequently given to the United States National Museum and is therefore less accessible to Kansas workers.

The Kansas Biological Survey staff is in the process of surveying mussels in Kansas, and to date has collected 34 of the 41 species reported in Kansas by Murray and Leonard. In addition, two of the three mussels thought to be extirpated were found within the state. Twenty of the 25 genera previously reported have been collected and others will probably be added as collecting continues.

The nature of the substrates of stream and river bottoms determines the distribution and abundance of particular species of mussels. The shifting sand bottoms of running water in western Kansas excludes nearly all species of lotic mussels. Williams (1969) investigated the mussel fishery of the Tennessee, Ohio and Green Rivers and found that no mussels live in rolling sand or on shifting bars. The situation is probably similar in Kansas rivers and streams. The majority of mussels are found in the eastern quarter of the state where bottom substrates are composed of silt, gravel, mud or clay, and organic debris. Many other factors may affect the distribution and ecology of freshwater mussels. Fuller (1974) reviewed many factors that may affect the ecology of clams and mussels under normal and polluted conditions. Among the more important factors mentioned that may be pertinent to the Kansas mussel fauna are: (1) changes in fish population and structure; (2) the physical parameters--light and temperature; (3) the chemical parameters--hardness, alkalinity, pH, arsenic, cadmium, chlorine, copper, zinc, and oxygen; (4) dams; (5) silt; (6) acid mine waste; and (7) pesticides. Murray and Leonard (1962) also discussed some ecological requirements of freshwater mussels. They reported continuous industrial pollution and increased turbidity of the waters of Kansas as conditions most

likely to extirpate unionacean clams. It was their contention that industrial pollution was the single most important factor affecting Kansas mussels, since most mussels in Kansas have a high tolerance to siltation. Starrett (1971), in a comprehensive study of the mussels of the Illinois River, found that during the past 75 years the river had changed from an excellent mussel stream to a poor one. He stated that the major factors involved in this change were domestic, industrial, and agricultural pollution. Starrett's study showed that the following genera appear to have been greatly reduced in numbers and/or kinds by the deterioration of water quality of the Illinois River: (1) Pleurobema; (2) Elliptio; (3) Lasmigona; (4) Plagiola; (5) Ligumia; and (6) Lampsilis. The presence of unusually large populations of clams and mussels is indicative of pollution only in the case of slight organic enrichment (Fuller, 1974). The absence of mussels from lentic or lotic habitat is of value as an indication of environmental stress only when their former presence can be demonstrated. Mussels are valuable in bioassay and biomonitoring studies.

The following discussion relates to problems of generic nomenclature with specific name changes discussed following the separate species accounts. The taxonomy and relationships of most freshwater mussels is still poorly known, but generic determinations can be made with relative confidence. Generic usage in this paper primarily follows that set forth by Heard and Guckert (1970) and Burch (1973).

The generic names Carunculina and Proptera are retained by the authors in deference to Valentine and Stansbery's (1971) use of Toxolasma for Carunculina and Potamilus for Proptera. It is possible that Valentine and Stansbery are correct in their usage but until there has been a nomenclatural ruling the more popular names will be retained. The genera Proptera (=Potamilus) and Leptodea are recognized, in part, on the basis of glochidial characters. In keeping with this separation the species laevissima is more correctly placed with Proptera than the Leptodea of Murray and Leonard (1962), Burch (1973), and others. A more detailed discussion of this usage is given by Valentine and Stansbery (1971). Also, Murray and Leonard (1962), in an attempt to expedite the systematic problems involved with the name for Amblema (=Crenodonta), adopted Crenodonta as the simplest answer based on Clench and Turner (1956). Recently, Crenodonta has been dropped for the more familiar Amblema. Heard and Guckert (1970) do not even mention the use of Crenodonta but use Amblema Rafinesque (1820). However, Valentine and Stansbery (1971) explain the nomenclatural confusion and show the synonomy of Amblema plicata (Say, 1817) with Crenodonta peruviana (Lamarck, 1819) of Murray and Leonard (1962). Furthermore, they go on to discuss the morphologic plasticity of the species Amblema plicata and the possibility of synonomy of the numerous species of Amblema that have thus far been described. We are thus discarding the usage of Murray and Leonard (1962) in favor of Amblema plicata by priority.

In the following list, species found in less than ten counties have complete locality information included with the county name.

For those species with ten or more county records, only the county is given. Keys used for the majority of the identifications were those of Murray and Leonard (1962), Burch (1973), Clench (1959), Pennak (1953), and Clarke (1973). Valentine and Stansbery's (1971) key was also useful. Dr. A. Byron Leonard's expertise and willingness to aid with the identifications was invaluable.

UNIONIDAE Fleming

Actinonaias Fischer and Crosse

Actinonaias ligamentina (Lamarck)

BOURBON Co: Marmaton River S of Uniontown, 13 Apr 1976, R. McGregor; CHEROKEE Co: Spring River N of K96 hwy bridge, 2 Mar 1976, R. McGregor and R. Brooks. Branson (1967) also reported this species from Shoal Creek in Cherokee County.

Alasmidonta Say

Alasmidonta marginata Say

This species is represented in Kansas by three specimens taken from the Spring River in Cherokee County (Branson, 1966a). Our survey of the Spring River has not yet revealed this species in Kansas.

Amblema Rafinesque = Crenodonta Schlüter

*Amblema plicata (Say) = Crenodonta peruviana peruviana (Lamarck) = C. p. costata (Rafinesque)

ALLEN Co; ANDERSON Co; BOURBON Co; BROWN Co; BUTLER Co; CHAUTAUQUA Co; CHEROKEE Co; COFFEY Co; DOUGLAS Co; FRANKLIN Co; JACKSON Co; LABETTE Co; LINN Co; MONTGOMERY Co; OSAGE Co; WILSON Co; WOODSON Co.

Anodonta Lamarck

Anodonta grandis Say

ALLEN Co; ANDERSON Co; BARTON Co; BOURBON Co; BROWN Co; BUTLER Co; CHAUTAUQUA Co; CHASE Co; CLARK Co; COFFEY Co; DOUGLAS Co; ELK Co; FRANKLIN Co; GEARY Co; GOVE Co; HARVEY Co; JOHNSON Co; LABETTE Co; LINN Co; LOGAN Co; LYON Co; MARION Co; MARSHALL Co; MEADE Co; MIAMI Co; MONTGOMERY Co; MORRIS Co; NEOSHO Co; OSAGE Co; PAWNEE Co; PRATT Co; SCOTT Co; SEDGWICK Co; SHAWNEE Co; WOODSON Co.

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* See introduction regarding nomenclatural changes.

Anodonta grandis is one of the more common species in Kansas. It is one of the few mussels found in the western part of the state, although it still has not been found in the extreme west. Murray and Leonard (1962) state that the range for A. grandis does not extend into the northern areas of the state. Two records listed above (Marshall County and Brown County) represent a range extension of approximately 80 miles northward. Thus, the extreme north central and western portions of Kansas are the only areas in Kansas where this species has not been found. This species survives equally well in lakes and ponds as in streams, a factor which accounts for its more extensive range compared with other mussels.

Anodonta imbecillis Say

CHAUTAUQUA Co: Big Caney River, 1.5 mi W Elgin, 25 Jul 1974, T. Edmonds; DOUGLAS Co: Mary's Lake, Lawrence, 10 May 1972, D. Huggins; ELK Co.: Farm pond, 6.3 mi N, 4.8 mi E Howard, 19 Jun 1975, D. Huggins; LINN Co: Marais des Cygnes Waterfowl Refuge Unit "B", 17 Jun 1974, D. Huggins; MONTGOMERY Co: Montgomery County State Lake, 23 Jul 1974, T. Edmonds.

Anodonta suborbiculata Say

ALLEN Co: Oxbow lake and pond, 4 mi S, 1 mi W humboldt hwy 169, 11 Mar 1976, P. Liechti and D. Huggins.

Early literature reports by Scammon (1906) and others indicated that A. suborbiculata occurred in the eastern quarter of the state. This species was last collected and recorded in 1949 by Leonard, but the specimens from his single known locality were subsequently lost. A resampling of the area in 1958 and 1959 failed to produce any specimens and the species was then reported to be extirpated from the state. The Kansas Biological Survey staff sampled the Allen County pond in 1976 and found one complete shell of A. suborbiculata. Although somewhat eroded, this shell reestablishes the presence of the species in Kansas. Although this species is considered exceedingly rare in Kansas, so little is known about the status of lentic species in the Mississippi River drainage that no statement has been made about the rare or endangered status of A. suborbiculata in the U.S. (Stansbery, 1970).

Carunculina Simpson

Carunculina parva (Barnes)

BOURBON Co; BUTLER Co; CHAUTAUQUA Co; DOUGLAS Co; ELK Co; FRANKLIN Co; GREENWOOD Co; JOHNSON Co; LABETTE Co; LINN Co; POTTAWATOMIE Co.

Cyprogenia Agassiz

Cyprogenia aberti (Conrad)

CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor.

This is the second account of C. aberti in Kansas since 1906. Branson (1966b) collected a single specimen from the Spring River in Cherokee County. It had been thought that the range of this species had become restricted to the Black and Ouachita Rivers of Missouri and Arkansas (Stansbery, 1970).

Elliptio Rafinesque

Elliptio dilatatus (Rafinesque)

ALLEN Co: Neosho River, 1 mi W Iola, 6 Aug 1975, T. Edmonds; CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor; COFFEY Co: Neosho River at Burlington, 14 Mar 1974, D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 30 Dec 1975, P. Liechti and D. Huggins.

Fusconia Simpson

Fusconia flava (Rafinesque)

ALLEN Co: Neosho River at Humboldt, 16 Aug 1973, G. Lessenden; COFFEY Co: Neosho River at Burlington, 16 Jun 1976, P. Liechti and D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 30 Dec 1975, P. Liechti and D. Huggins; LINN Co: Marais des Cygnes River, US 69 hwy Trading Post, 5 Aug 1976, T. Oldham.

Lampsilis Rafinesque

Lampsilis ovata ventricosa (Barnes)

ALLEN Co: Neosho River, 0.5 mi W Humboldt, 11 Mar 1976, P. Liechti and D. Huggins; CHAUTAUQUA Co: Big Caney River, 1.5 mi W Elgin, 30 Jul 1975, D. Huggins; COFFEY Co: Neosho River at Burlington, 19 Sept 1972, R. Drenner and D. Huggins; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Lampsilis radiata luteola (Lamarck)

BOURBON Co: Marmaton River, 6 mi S Uniontown, 18 Dec 1974, D. Huggins; BROWN Co: Delaware River, 2.8 mi S Fairview, 25 Jun 1974, D. Huggins; CRAWFORD Co: West Branch Dry Wood Creek, Farlington State Fish Hatchery, 18 Dec 1974, D. Huggins.

This species had not been taken north of the Kansas River until recently. This range extension is not unexpected as this species is

known to occur throughout the Mississippi Valley and all of Canada east of the Rocky Mountains (Burch, 1973). This species was reported by Murray and Leonard (1962) as L. radiata siliquoidea (Barnes), but Wheeler (1963) provided evidence that this name was unavailable.

Lampsilis teres (Rafinesque, 1820)

ALLEN Co; ANDERSON Co; BROWN Co; BUTLER Co; CHASE Co; CHAUTAUQUA Co; CHEROKEE Co; DOUGLAS Co; FRANKLIN Co; GREENWOOD Co; JOHNSON Co; LABETTE Co; LINN Co; LYON Co; MARION Co; MIAMI Co; MORRIS Co; OSAGE Co; WABAUNSEE Co; WOODSON Co.

Priority dictates that Lampsilis teres be used instead of L. anodontoides Lea, 1834 as pointed out and summarized by Johnson (1972).

Lasmigona complanata (Barnes)

ALLEN Co; CHASE Co; CHAUTAUQUA Co; COFFEY Co; DOUGLAS Co; FRANKLIN Co; LABETTE Co; MARION Co; MIAMI Co; MONTGOMERY Co; SEDGWICK Co; WOODSON Co.

Lasmigona costata (Rafinesque)

CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor.

This species was first reported from the Spring River in Kansas by Branson (1967).

Leptodea Rafinesque

Leptodea fragilis (Rafinesque)

ALLEN Co; BOURBON Co; CHAUTAUQUA Co; COFFEY Co; DOUGLAS Co; FRANKLIN Co; GEARY Co; LABETTE Co; LINN Co; MARSHALL Co; MIAMI Co; WILSON Co; WOODSON Co; WYANDOTTE Co.

This species has been found in the Knasas River drainage, but the Marshall County (Black Vermillion River) locality represents a northward range extension of 50 miles.

Ligumia Swainson

Ligumia recta (Rafinesque)

BUTLER Co: Four Mile Creek, 1.5 mi W, 7.4 mi N Douglass, 28 Jul 1975, S. Matthies; CHAUTAUQUA Co: Big Caney River, 1.5 mi W Elgin, 30 Jul 1975, D. Huggins; DOUGLAS Co: Washington Creek, 2 Oct 1974, D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 5 Apr 1974, D. Huggins; MARION Co: Cottonwood River, Marion, 19 May 1976, P. Liechti and D. Huggins; MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden.

Ligumia subrostrata (Say)

BROWN Co; BOURBON Co; BUTLER Co; CHASE Co; CRAWFORD Co; ELK Co; JOHNSON Co; LINN Co; LYON Co; MONTGOMERY Co.

Megalonaias Utterback

Megalonaias gigantea (Barnes)

COFFEY Co: Neosho River at Burlington, 16 Jun 1976, P. Liechti and D. Huggins.

Obliquaria Rafinesque

Obliquaria reflexa Rafinesque

COFFEY Co: Neosho River at Burlington, 19 Sept 1972, R. Drenner and D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 5 Apr 1974, D. Huggins; LABETTE Co: Neosho River at Chetopa, 16 Sept 1976, D. Huggins and P. Liechti; MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Plethobasus Simpson

Plethobasus cyphyus (Rafinesque)

Although the Biological Survey staff has not collected this species from the state, Branson (1967) collected it from the Spring River. His collection represents the first record of this species since Scammon (1906) reported it from the Verdigris River near Coffeyville in Montgomery County.

Pleurobema Rafinesque

Pleurobema cordatum catillus (Conrad)

BOURBON Co: Marmaton River, S Uniontown, 13 Apr 1976, R. McGregor; CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor; COFFEY Co: Neosho River at Burlington, 19 Sept 1972, R. Drenner and D. Huggins.

This species was known from two localities in the southern part of the Neosho River (Murray and Leonard, 1962) and from Shoal Creek (Branson, 1967). The Bourbon County record reported herein extends the distribution to the Marmaton River drainage. Even with this range extension, this species continues to be rare.

Pleurobema cordatum pyramidatum (Lea)

MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden.

Pleurobema cordatum pyramidatum was previously known only from the Neosho River. The Montgomery County record extends the range 25 miles west and establishes the presence of the mussel in the Verdigris River system. This species was also reported from the Spring River in Cherokee County by Branson (1967).

Proptera Rafinesque

Proptera alata (Say)

ALLEN Co: Neosho River, 1 mi W Iola, 6 Aug 1975, T. Edmonds; CHAUTAUQUA Co: Big Caney River, US 166 hwy at Cedar Vale, 10 Sept 1974, D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 5 Apr 1974, D. Huggins; LINN Co: Big Sugar Creek, K7 hwy, 11 Jul 1975, T. Edmonds; MARSHALL Co: Little Blue River, 0.3 mi N Blue Rapids on K9 hwy, 11 Jun 1976, T. Oldham and S. Hamilton; MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

These records extend the range of this species into western Chautauqua County in the Big Caney River, and north to Marshall County. Proptera alata is known to occur as far north as Canada but reaches its western limit somewhere in the Great Plains region.

Proptera capax (Green)

COFFEY Co: Neosho River at Burlington, summer 1973, R. Drenner and D. Huggins.

Stansbery (1970) considers this species rare and endangered in his paper on the eastern freshwater mollusks of the Mississippi and St. Lawrence River systems. Although still present in the St. Francis and White River systems of Missouri and Arkansas, this species has largely, if not entirely, disappeared east of the Mississippi River (Holt et al., 1974).

Proptera laevissima (Lea)

ATCHISON Co; CLOUD Co; DICKINSON Co; DOUGLAS Co; FRANKLIN Co; GEARY Co; JEFFERSON Co; JEWELL Co; JOHNSON Co; LABETTE Co; LINN Co; MARION Co; OSAGE Co; RILEY Co; WASHINGTON Co.

Proptera purpurata (Lamarck)

ALLEN Co: Neosho River, 1 mi W Iola, 6 Aug 1975, T. Edmonds; BROWN Co: Delaware River, 2.8 mi S Fairview, 25 Jun 1975, D. Huggins; CHAUTAUQUA Co: Big Caney River, 1.5 mi W Elgin, 30 Jul 1975, D. Huggins; COFFEY Co: Neosho River at Burlington, 16 Feb 1974, D. Huggins;

LYON Co: Neosho River at Neosho Rapids, 15 Oct 1976, P. Liechti and R. Brooks; MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden.

The Delaware River record in Brown County for Proptera purpurata is the first report of the species in the Kansas River drainage system, and is thus the northernmost locality record for this species in Kansas and in the United States. Its previous U.S. range included southeastern Kansas, southern Missouri, western Tennessee, Alabama, Louisiana, Arkansas, Oklahoma, and Texas. Holt et al. (1974) stated that this species is rare in Missouri and restricted to the Black and St. Francis River systems.

Ptychobranchus Simpson

Ptychobranchus occidentalis (Conrad)

CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor.

Murray and Leonard (1962) stated that Ptychobranchus fasciolare had not been collected in Kansas since 1890. In 1966 Branson re-established the existence of this species in the Spring River in Cherokee County. The State Biological Survey staff obtained two more specimens of Ptychobranchus from the Spring River, but these specimens were identified as P. occidentalis using the key of Burch (1973). Valentine and Stansbery (1971) questioned the determinations of Murray and Leonard, Branson, and Call (1885). Valentine and Stansbery believed that the previous descriptions more closely resembled P. occidentalis than P. fasciolare. They stated that P. fasciolare is common east of the Mississippi River and only enters the eastern edge of Missouri, whereas P. occidentalis only occurs west of the Mississippi River. It is our contention, considering the Survey's specimens and the work of Valentine and Stansbery, that P. fasciolare has never been found in Kansas and all previous records actually represent P. occidentalis. However, this species is quite rare and the account of Branson (1966a) and the Survey's recent records are the only records since 1890 for Kansas. All records to date are from the Spring River in Cherokee County, establishing that location as the only known habitat for P. occidentalis in Kansas.

Quadrula Rafinesque

Quadrula cylindrica (Say)

COFFEY Co: Neosho River at Burlington, 16 Jun 1976, P. Liechti and D. Huggins; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Quadrula cylindrica has never been abundant in Kansas. Although these records extend its range 85 miles northward, it is still known only from the Neosho River drainage. The specimens collected by the State Biological Survey staff consisted of two highly eroded valves. This species apparently prefers swift, clear streams with sandy gravel

bars. Murray and Leonard (1962) expressed concern that this species might become more uncommon as the turbidity of Kansas streams increases; this concern is still justified because of the few specimens obtained in recent collections. Stansbery (1970) reported that this species is represented only by a few populations in the Ouachita Mountains of Arkansas and Oklahoma, and a few headwater populations in the Ohio River system. This species has recently been reported from a single stream system in Missouri (Holt et al., 1974).

Quadrula metanerva Rafinesque

ALLEN Co: Neosho River, 0.5 mi W Humboldt, 11 Mar 1976, P. Liechti and D. Huggins; COFFEY Co: Neosho River at Burlington, 16 Feb 1974, D. Huggins; MONTGOMERY Co: Verdigris River at Sycamore, 1973, G. Lessenden; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Quadrula nodulata Rafinesque

ALLEN Co: Neosho River, 0.5 mi W Humboldt, 11 Mar 1976, P. Liechti and D. Huggins; COFFEY Co: Neosho River at Burlington, 19 Sept 1972, R. Drenner and D. Huggins; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Branson (1967) reported this species from the Spring River and considered its occurrence rare.

Quadrula pustulosa (Lea)

ALLEN Co; ANDERSON Co; BOURBON Co; CHAUTAUQUA Co; CHEROKEE Co; COFFEY Co; FRANKLIN Co; LABETTE Co; LINN Co; SEDGWICK Co; SUMNER Co; WOODSON Co.

Quadrula quadrula Rafinesque

ATCHISON Co; BARTON Co; BOURBON Co; CHEROKEE Co; COFFEY Co; DOUGLAS Co; ELK Co; FRANKLIN Co; HARVEY Co; LYON Co; MARION Co; MARSHALL Co; POTTAWATOMIE Co; TREGO Co; WOODSON Co.

Murray and Leonard (1962) suspected that Quadrula quadrula might be found in western Kansas, but they never found any specimens. Recently two isolated populations were found, one in the Smoky Hill River in Trego County, and one in Walnut Creek in Barton County. These records extend the range westward approximately 100 miles. It is possible that more sampling in permanent flowing waters in western Kansas will reveal additional isolated populations.

Strophitus Rafinesque

Strophitus undulatus (Say)

BUTLER Co: creek, 6.8 mi W Douglass, 28 Jul 1975, S. Matthies; CHAUTAUQUA Co: Big Caney River, hwy 166 bridge at Cedar Vale, 10 Sept

1974, D. Huggins; CHEROKEE Co: Spring River, N K96 hwy bridge, 2 Mar 1976, R. Brooks and R. McGregor; LYON Co: Neosho River at Neosho Rapids, 15 Oct 1976, P. Liechti and R. Brooks; WILSON Co: Verdigris River at Altoona, 1973, G. Lessenden.

Tritogonia Agassiz

Tritogonia verrucosa (Say)

ALLEN Co: Neosho River, 1 mi W Iola, 6 Aug 1975, T. Edmonds; BOURBON Co: Marmaton River, S Uniontown, 13 Apr 1976, R. McGregor; CHAUTAUQUA Co: Big Caney River, US 166 Bridge at Cedar Vale, 10 Sept 1974, D. Huggins; COFFEY Co: Neosho River at Burlington, 19 Sept 1972, R. Drenner and D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 30 Dec 1975, P. Liechti and D. Huggins; LABETTE Co: Neosho River at Chetopa, 1973, G. Lessenden; LINN Co: Marais des Cygnes River at Trading Post, date unknown, D. Huggins; LYON Co: Neosho River at Neosho Rapids, 15 Oct 1976, P. Liechti and R. Brooks; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Truncilla Rafinesque

Truncilla donaciformis (Lea)

ALLEN Co: Neosho River, 0.5 mi W Humboldt, 11 Mar 1976, P. Liechti and D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 23 Jan 1976, P. Liechti; LABETTE Co: Neosho River at Chetopa, 16 Sept 1976, D. Huggins and P. Liechti; WILSON Co: Verdigris River at Benedict, 1973, G. Lessenden; WOODSON Co: Neosho River at Neosho Falls, 12 Mar 1976, P. Liechti and D. Huggins.

Truncilla truncata Rafinesque

CHAUTAUQUA Co: Big Caney River, 1.5 mi W Elgin, 30 Jul 1975, D. Huggins; FRANKLIN Co: Marais des Cygnes River, 1.5 mi N Rantoul, 30 Dec 1975, P. Liechti and D. Huggins.

Uniomerus Conrad

Uniomerus tetralasmus (Say)

ATCHISON Co; BARTON Co; BUTLER Co; CHASE Co; CHAUTAUQUA Co; COMANCHE Co; DOUGLAS Co; ELLSWORTH Co; FRANKLIN Co; GOVE Co; HARVEY Co; JACKSON Co; LINN Co; LYON Co; MARION Co; NEOSHO Co; OSAGE Co; SEDGWICK Co; SHAWNEE Co; SUMNER Co; WABAUNSEE Co; WASHINGTON Co; WOODSON Co.

The Gove County record extends the range of this species 100 miles. Uniomerus tetralasmus is known to occur near the Colorado border in southwestern Kansas, but it still has not been found in the northwestern corner of the state. Like most other mussels found in western

Kansas, this species occurs in ponds as well as in streams. Although this species appears to be somewhat common in Kansas, Holt et al. (1974) reported that this species is known only from one locality in north central Missouri. Morrison (1976) lists U. tetralasmus from the central and western states of Colorado, Nebraska, Missouri, Kansas, Oklahoma, Arkansas and Texas.

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