



**State of Utah**

**DEPARTMENT OF NATURAL RESOURCES**

*Division of Wildlife Resources - Utah Natural Heritage Program*

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**RARE, IMPERILED, AND RECENTLY EXTINCT OR EXTIRPATED  
MOLLUSKS OF UTAH**

**A LITERATURE REVIEW**

**Prepared for**

**UTAH RECLAMATION MITIGATION AND CONSERVATION COMMISSION**

**and the**

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## Introduction

About 139 species of mollusks are known to occur, or within historical times to have occurred, in Utah. The number of known Utah mollusks is not fixed and can be expected to continue to change, increasing as new molluscan discoveries are made in Utah and possibly decreasing as taxonomic revisions change our concept of how many valid mollusk species exist.

This report represents one of the end products of a review of literature—published journal articles and books as well as unpublished agency reports—dealing with mollusks in Utah. The goals of this review were to determine (1) which species have been documented from the state, (2) extent of knowledge of the status—abundance, distribution, conservational needs, and so forth—of each of the species in Utah, and, thus, (3) which species are of conservational concern in the state. This report summarizes the assembled information pertaining to the last goal, the 79 molluscan species that are of conservational priority—or of conservational interest in the cases of those believed to be extirpated or extinct; it is intended to help guide current management of the molluscan resources of the state as well as to identify gaps in existing knowledge that will need to be filled in order to manage these resources more effectively in the future.

Some of the understanding that is important for truly effective management of Utah's mollusks is lacking, especially with regard to our knowledge of threats to and population trends in these species. Threats to various species discussed in this report should be understood, in most cases, as potential threats, often based on educated guesses. Similarly, information pertaining to population trends of mollusks in Utah is largely unavailable from the existing literature. Despite the incompleteness of reported information concerning Utah mollusks, much is known, and this information obtained from the literature provides an valuable base from which to plan future work.

Mollusks, as a group, are thought to be among the most endangered of animal groups that occur in North America, but this is a new awareness, and conservational management attention has only recently begun to be directed toward this group. The Utah Division of Wildlife Resources now has management authority for all mollusks in the state and is establishing mechanisms and procedures for the management and protection of the state's molluscan resources.

***Anodonta californiensis* I. Lea, 1852**  
**California floater**

**Utah Taxonomy**

This species was reported in Utah by Call (1884) as *Anodonta nuttalliana*, the name under which he synonymized *A. nuttalliana*, *A. wahlametensis*, and *A. californiensis*.

As currently recognized, this species is monotypic.

**Status in Utah**

At least 2 extant occurrences are known in Utah (see Clarke 1993), possibly as many as 6. This species was historically reported from Utah and Millard counties (Henderson 1936). There has been a recent report of fresh shells from Rich and Tooele counties and shells of unspecified age (and thus not mapped) from northwestern Box Elder County (Clarke 1993).

Abundance at most Utah localities is unreported, but Clarke (1993) stated that this species "occurs abundantly" at "Reddin Spring [*sic*]".

Pesticides in agricultural run-off, habitat degradation by cattle, and water diversion are the most immediate threats. Fish management practices including fish control with poisons and introduction of exotic fishes are also threats.

This species is apparently declining in Utah; historical populations in the Raft River (Box Elder County), Utah Lake (Utah County), and Bear Lake (Rich County) are possibly extirpated (see Clarke 1993).

Inventory is needed, particularly in drainages in the Great Basin, as is continued monitoring of known populations.

Considerable confusion exists concerning this and other floaters (*Anodonta*) in Utah. How many species of floaters occur or historically have occurred in this state is uncertain, and whether reported Utah specimens of floaters have been correctly identified is questionable. The most comprehensive work on Utah mollusks, by Chamberlin and Jones (1929), discussed 4 nominal species of floaters and provided specific localities, from the earlier literature as well as new records, for 3 of the 4 species; only for *Anodonta californiensis* did Chamberlin

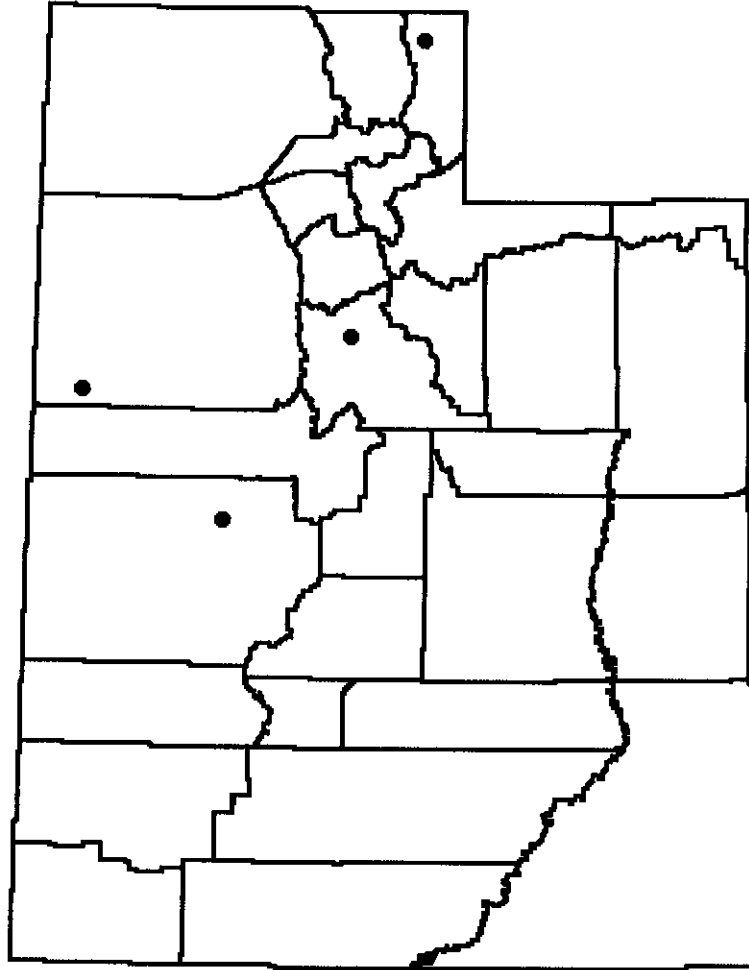


Figure 2. Utah localities for the California floater (*Anodonta californiensis*) obtained from literature.

***Tryonia protea* (Gould, 1855)  
desert tryonia**

**Utah Taxonomy**

This species has been allocated to various genera. Works dealing with Utah have assigned it to the genera *Melania* (see Yarrow 1875), *Paludestrina* (see Chamberlin and Jones 1929, Jones 1940a), *Hydrobia* (see Chamberlin and Roscoe 1948), and more recently *Tryonia* (see Russell 1971, Hershler no date).

A very old record of this species from Utah (Tryon in Ruschenberger 1873) also placed it in the genus *Tryonia*, as it is currently arranged, but tentatively assigned it to species as "probably *T[ryonia] exigua*", "of which *Melania protea*, Gould, is a synonym". Yarrow (1875) reported that Tryon had written to him of a specimen of this species collected in Utah, which Yarrow listed as "*?Tryonia exigua*", noting: "Mr. Tryon informs me this is probably *T. exigua*, Stimp., or else a new species. Unfortunately, not enough specimens were secured to establish the latter."

Chamberlin and Jones (1929) used the common name the cornucopia snail for the species.

Seemingly no subspecies have been proposed in this species.

**Status in Utah**

There are 9 known occurrences of this species in Utah. Chamberlin and Jones (1929) wrote, with regard to Utah: "Range.—Great Basin ...." Although Russell (1971) stated that this species occurs in "southern Utah", all known Utah localities are from the 3 adjacent counties Tooele, Utah, and Juab in north-central and west-central Utah: Juab County (6 sites at 1 locality, Russell 1971, also Hershler, no date), Tooele County (2 localities, Chamberlin and Jones 1929; 1 locality [probably the same as one in Chamberlin and Jones 1929], Jones 1940a; 3 localities, Hershler no date), Utah County (1 locality, Jones 1940a). These localities correspond well with Chamberlin and Jones' (1929) assertion that the species occurs in Utah within the Great Basin.

Tryon (in Yarrow 1875) reported an example of this species from the "shores of Sevier Lake [Millard County]". Since this specimen would have been drift material, of unknown age (possibly prehistoric, hundreds or even thousands of years old) and of unknown origin (undoubtedly washed into Sevier Lake and possibly from

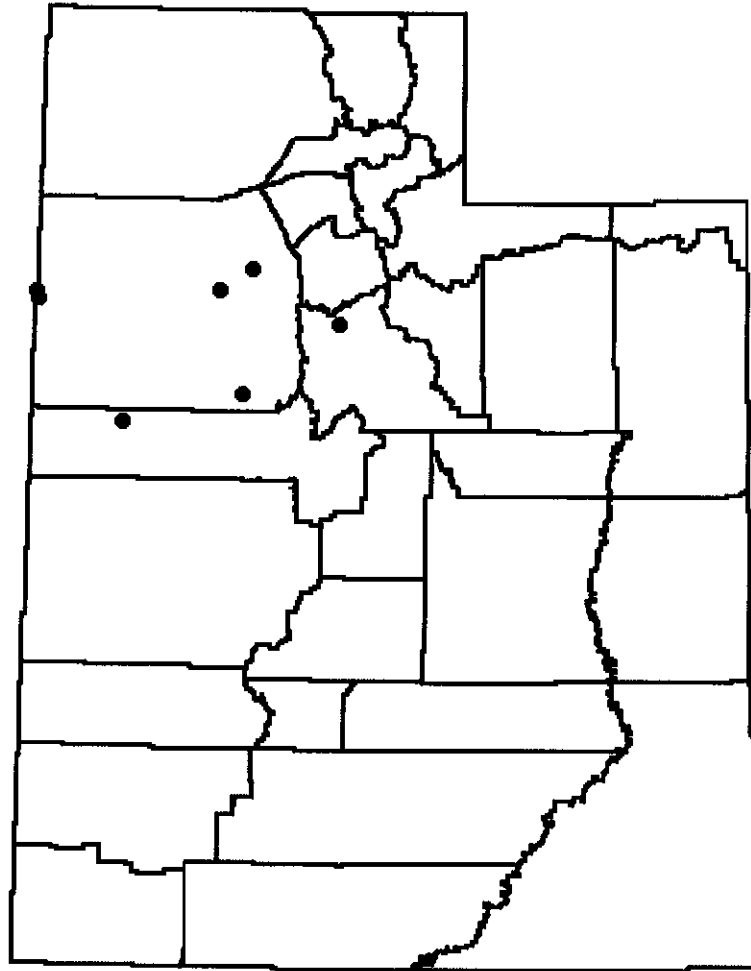


Figure 5. Utah localities for the desert tryonia (*Tryonia protea*) obtained from literature.

***Pyrgulopsis hamlinensis* Hershler, 1998**  
**Hamlin Valley springsnail**

**Utah Taxonomy**

Hershler (no date) referred to this species as *Pyrgulopsis* new species 41. Hershler (1998) suggested the common name Hamlin Valley pyrg.

The type locality is "[s]prings, 0.5 km east of White Rock Cabin Springs, Hamlin Valley, Beaver County, Utah, T 30S, R 20W, SE 1/4 section 2"; the holotype, USNM 883215, was collected 9 May 1993 (Hershler 1998).

No subspecies have been proposed in this species.

**Status in Utah**

So far as is known, this species occurs only in one small complex of springs, 0.5 km east of White Rock Cabin Springs, in Hamlin Valley, Beaver County (Hershler no date, 1998).

Although Hershler (no date) considered this species to be "abundant" at the only known locality of its occurrence, relative to other organisms and in view of its extremely narrow endemism, its entire global population existing in a single small spring complex, its abundance must be considered very low.

Hershler (no date) considered the site inhabited by this species to be slightly disturbed and noted the presence of livestock and a residence. Elsewhere he stated (Hershler 1998) that the locality is "slightly impacted by cattle." Given that this species occurs, so far as is known, nowhere else, the known threat of trampling by cattle together with the potential threats suggested by the proximity of a residence must be considered serious threats that jeopardize to continued survival of the species. Population trend in this species is not known.

Prospective searches of other springs in the vicinity may be justified.

**Habitats Utilized in Utah**

Hershler (1998) described the only known locality for this species as "a small, high elevation rheocrene". Hershler (no date) reported the elevation of the locality to be 7,160 ft; he gave the temperature of the spring as 16 °C and its conductivity



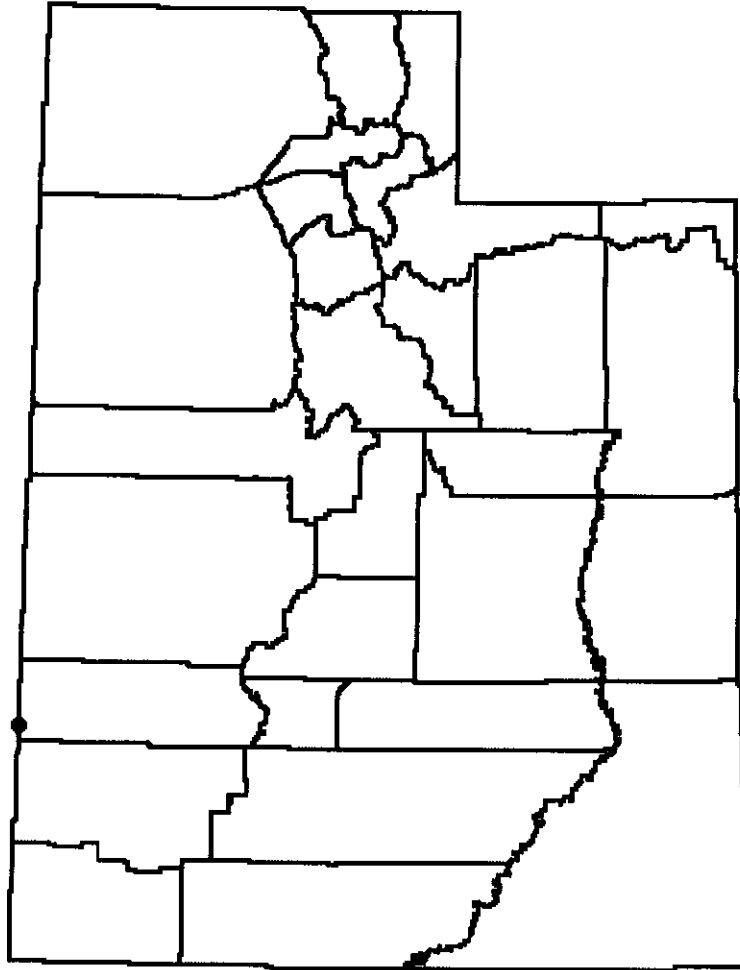


Figure 10. The Utah locality for the Hamlin Valley springsnail (*Pyrgulopsis hamlinensis*) obtained from literature.

***Pyrgulopsis peculiaris* Hershler, 1998**  
**bifid duct springsnail**

**Utah Taxonomy**

In an unpublished report to the BLM, Hershler (no date) referred to this species as *Pyrgulopsis* new species 39. Hershler (1998) has suggested the common name bifid duct pyrg for it.

The type locality of this species is "Spring, Maple Grove, Round Valley, Millard County, Utah, T 21S, R 2 1/2W, NW ¼ section 1." The holotype, USNM 883933, was collected 11 May 1995.

No subspecies have been proposed in this species.

**Status in Utah**

This species is known in Utah from 6 springs in Millard County; only 2 localities are known outside of Utah, these being in White Pine County, Nevada (Hershler 1998).

At 2 of the known Utah localities, this species has been reported to be "scarce"; at 3 other Utah localities it has been reported as "common" (Hershler no date). However, these terms were from a work dealing with springsnails in the Great Basin and very likely are not comparable to their use in other, less ecologically restricted groups. Since the species is known in Utah from only 6 springs, its overall abundance in this state should be considered quite low relative to most other kinds of organisms.

Only 1 of the Utah occurrences was considered by Hershler (no date) to be undisturbed. At 3 of the springs disturbance was "slight", and at one spring disturbance was "moderate" (Hershler no date). At these 4 disturbed springs, diversion of the spring was noted at one, livestock were present at another, and recreational use was evident at 3 others. Thus, trampling by livestock, water diversion, and recreational use are the known threats to this species in Utah. Population trend in Utah is not known.

Further inventory of springs in Millard County could perhaps reveal the presence of other populations of this species.

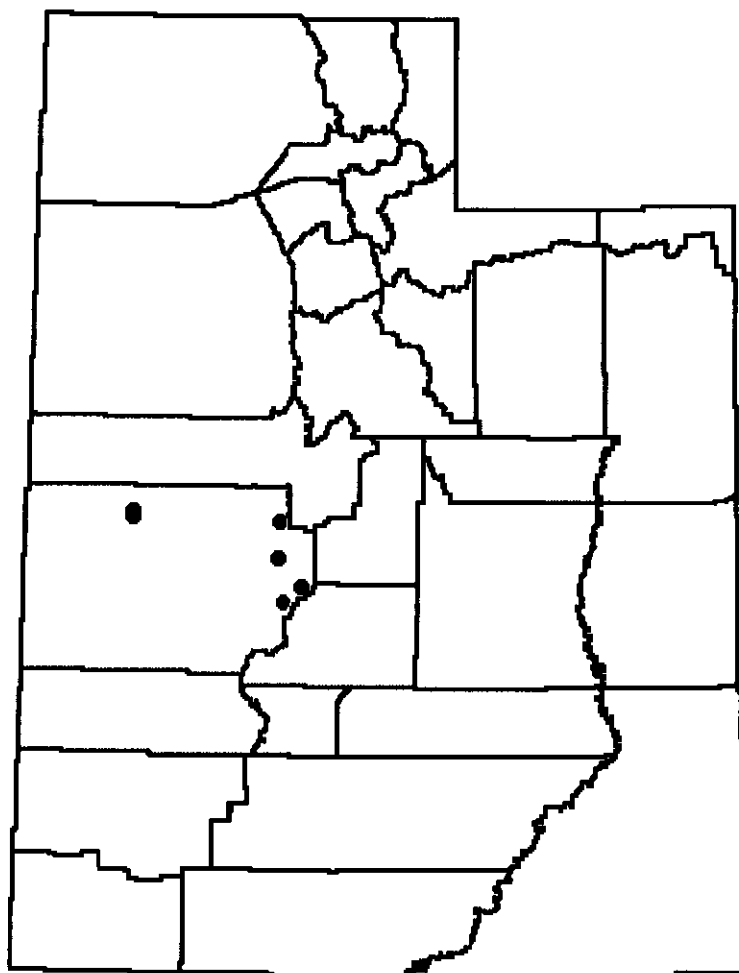


Figure 11. Utah localities for the bifid duct springsnail (*Pyrgulopsis peculiaris*) obtained from literature.

The spring "issues out of box, flow mostly diverted to irrigation ditch" (Hershler no date). The elevation of the site was given as 5,400 ft by Hershler (no date).

***Pyrgulopsis saxatilis* Hershler, 1998**  
**sub-globose Snake springsnail**

**Utah Taxonomy**

Hershler (1998) described this species as *Pyrgulopsis saxatilis* and has suggested the common name sub-globose snake pyrg.

The type locality (the only known locality) is "Warm Springs, Snake Valley, Millard County, Utah, T 16S, R 19W, SW 1/4 section 31". The holotype, USNM 883237, was collected 10 May 1993.

No subspecies of this species have been proposed.

**Status in Utah**

So far as is known, this species is entirely endemic to one locality: Warm Springs, Snake Valley, Millard County, Utah (Hershler no date, 1998).

Although Hershler (no date) reported this species to be "common" at this locality, since his report dealt only with Great Basin springsnails, this term must be considered as relative only to this group of organisms, and, since the entire world population of this species exists in only a single series of springs, its abundance compared with other organisms may be assumed to be low.

Hershler (no date) reported slight disturbance of the spring complex inhabited by this species and noted recreational use of the site. Recreation is, then, the only known threat to this species. However, since the spring complex apparently is at least in part owned as a source for public water, the possibility of dewatering and alteration of the spring complex may represent a potential threat. Population trend in this species is unknown.

Prospective searches at other suitable springs in Millard County may be justified.

**Habitats Utilized in Utah**

Hershler (1998) described the only known locality of occurrence as "a series of large, thermal (26.9° C.) rheocrenes issuing from the side of a hill." Hershler (no date), however, reported the temperature of the springs, at the outflow, as 27 °C.

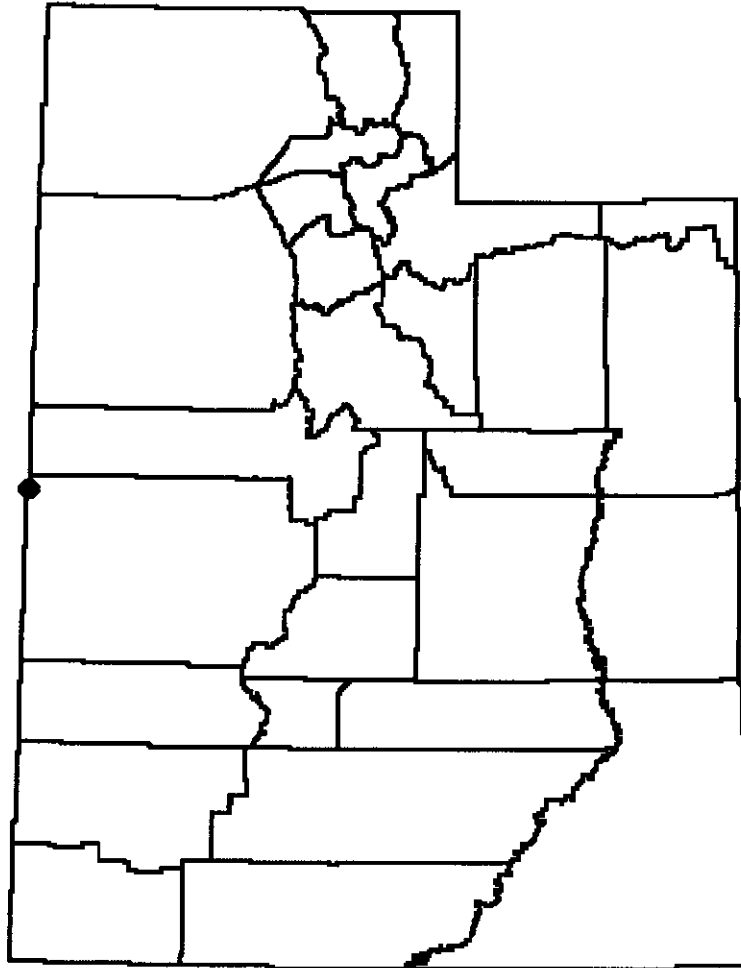


Figure 13. The Utah locality for the sub-globose Snake springsnail (*Pyrgulopsis saxatilis*) obtained from literature.

***Valvata humeralis* Say, 1829**  
**glossy valvata**

**Utah Taxonomy**

Henderson and Daniels (1917) commented that Yarrow's (1875) and Ingersoll's (1876) Utah records of *Valvata sincera* probably should be referred to *Valvata humeralis*. According to Taylor (1986), Russell (1971) misidentified this species as *Valvata utahensis*.

The subspecies found in Utah is *Valvata humeralis californica*.

**Status in Utah**

At least 12 Utah occurrences of this species have been reported in the literature. All reported localities for this species in Utah are from the central and western parts of the state. Chamberlin and Jones (1929) documented this species in Kane, Sevier, Utah, Wasatch, Rich, and Box Elder counties. Jones (1940a) provided an additional locality in Utah County. Woolstenhulme (1942a) reported material from Tooele County. The only recent report of the species in Utah is from Fish Springs National Wildlife Refuge in Juab County (Taylor 1986).

Although some authors (e.g., Chamberlin and Jones 1929) have listed records of this species from Salt Lake County, most or all of these records are very old (Yarrow 1875, Ingersoll 1876) and were assigned in the original sources to another species, *Valvata sincera*, now considered to occur only in northeastern North America. Although these early records probably do apply to *Valvata humeralis* as Henderson and Daniels (1917) opined and *Valvata humeralis* probably did formerly inhabit Salt Lake County, this has not been persuasively demonstrated and must be regarded as speculative.

Chamberlin and Jones (1929) noted that this species was "plentiful" at Fish Lake, Sevier County. Jones (1940a) listed Utah collections of 5, 5, and "several", and, although he did not indicate whether any of these had been collected live, he seemingly was distinguishing these from fossil or subfossil material. Woolstenhulme (1942a, 1942b) also reported 2 Utah collections of "several". Taylor (1986) found 440 live individuals and numerous empty shells of this species at one locality.

Threats to this species in Utah almost certainly include alterations and elimination of aquatic habitat. Introductions of aquatic organisms such as fishes and other

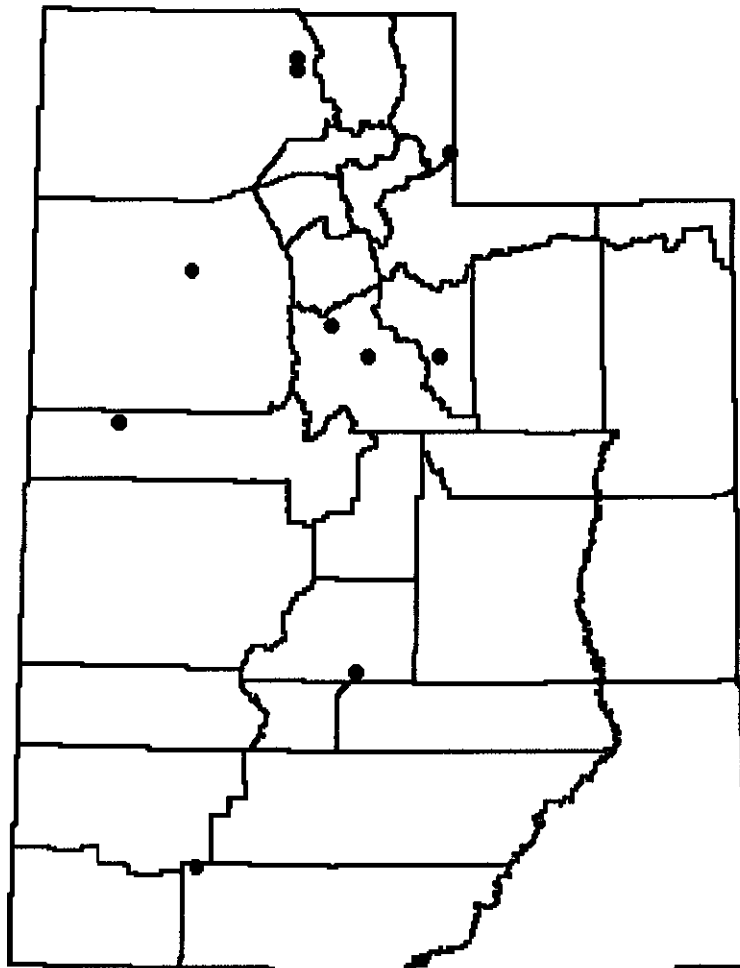


Figure 23. Utah localities for the glossy valvata (*Valvata humeralis*) obtained from literature.



***Stagnicola pilsbryi* (Hemphill, 1890)**  
**Fish Springs marshsnail**

**Utah Taxonomy**

Hemphill (1890), who named and described this species, placed it in the genus "*Limnaea*" (= *Lymnaea*). Baker (1911) assigned the species to the genus *Galba*. Most modern authors (e.g., Taylor et al. 1963, Russell 1971) have arranged it as a species of *Stagnicola*. Taylor et al. (1963) demonstrated that, within *Stagnicola*, the species belongs to the subgenus *Hinkleyia*. Clarke (1991) argued that the species should be assigned to the genus *Bakerilymnaea*; he called this species the Fish Springs lymnaeid.

No subspecies have been proposed in this species (i.e., the species is monotypic).

**Status in Utah**

There is one historical occurrence of this species, now considered to be extinct. Hemphill (1890) stated the type locality as "Fish Spring, Nevada". Baker (1911) expanded Hemphill's locality to "TYPE LOCALITY: Fish Spring, Nye County, Nevada" and "NEVADA : Fish Springs, Nye Co., in approximately lat. 38.45, long. 116.30 ...". Taylor et al. (1963) commented: "Hemphill's label with the type says 'Fish Spring Nevada between Austin and Salt Lake', thus ruling out the locality specified by Baker. Most probably Hemphill collected at Fish Springs, northern Juab County, Utah ...." The opinion that Fish Springs, Juab County, Utah, is the locality where Hemphill collected the first specimens of this species has been followed by others (e.g., Russell 1971, Clarke 1991); it is also the only locality from which others since Hemphill have collected specimens of the species, all of these specimens being dead, empty shells.

This species is believed no longer to be extant. Taylor et al. (1963) wrote: "Only three specimens of this species are known, all from the original lot collected by Henry Hemphill in 1868. ... The bleached periostracum and the dirt inside the aperture shows that all three were collected as empty shells. Hemphill's label notes 'These are the best I can do for you. I have but two or three others ...'. These additional specimens have not been traced." Russell (1971) reported: "In all, 134 complete shells and 30 fragmented specimens of this species were collected [in 1970] on the surface of the ground ...." Apparently Russell found no living representatives of this species, which Clarke (1991) believed was already extinct when Russell surveyed the molluscan fauna of Fish Springs.

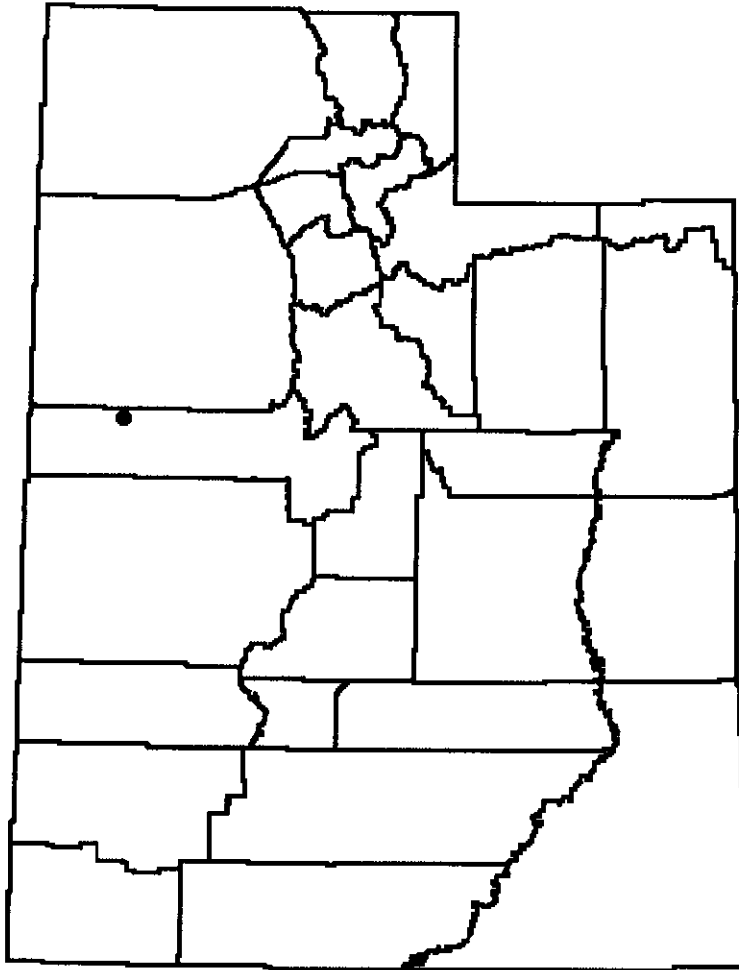


Figure 34. The Utah locality for the Fish Springs marshsnail (*Stagnicola pilsbryi*) obtained from literature.

***Physa megalochlamys* Taylor, 1988**  
**cloaked physa**

**Utah Taxonomy**

No subspecies have been proposed in this species.

**Status in Utah**

The only reported locality for this species in Utah is in Snake Valley in northwestern Millard County (less than 20 miles from the Nevada border) (Taylor 1988).

No information has been reported concerning the abundance of this species in Utah. Since this species has been collected in Utah only once, it is considered rare in this state.

Threats to this species in Utah are not known; however, the single Utah locality is in a very arid part of the state where human demands on water resources are great. Dewatering of natural aquatic sites for agricultural irrigation and degradation of aquatic ecosystems by various agents, especially the trampling of such sites by cattle, are factors that potentially threaten this species in Utah. The population trend of this species in Utah is not known. The species was not named and described until 1988, at which time the only known Utah locality was reported (Taylor 1988).

Monitoring of the only known Utah population is needed. Prospective searches for this species in other parts of the state are also warranted since the species is also known from one locality in south-central Colorado, a few localities in northwestern Wyoming, and one locality in southeastern Idaho less than 30 miles from the Utah border. The Idaho locality is particularly suggestive of the appropriateness of searching for this species in Cache and Box Elder counties.

**Habitats Utilized in Utah**

Taylor (1988), in the type description of this species, wrote: "Habitat: Mostly found in extensive marshes or ponds, fluctuating or even drying seasonally. Yet one locality is ... a large and perennial water body. Evidently the habitat range is poorly known." Although Taylor (1988) did not report the habitat of the single Utah locality, he did provide some habitat information for the Idaho locality, which

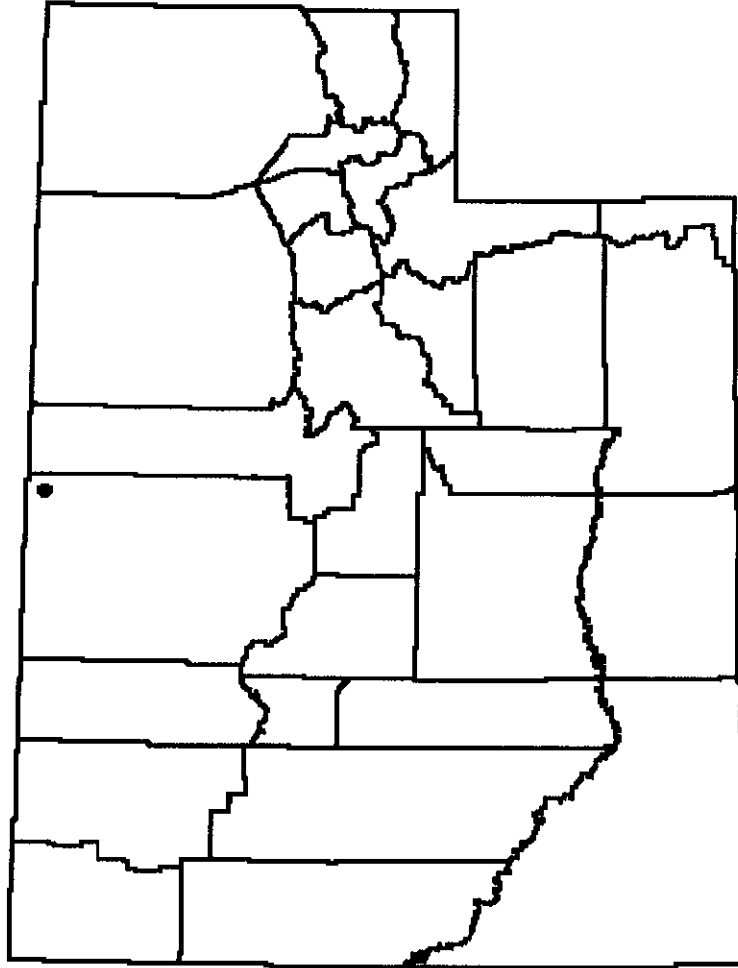


Figure 36. The Utah locality for the cloaked physa (*Physa megalochlamys*) obtained from literature.

***Physella utahensis* (Clench, 1925)**  
**Utah physa**

**Utah Taxonomy**

Clench (1925) named and described this taxon from Utah Lake, placing it in the genus *Physa* as a subspecies: *Physa lordi utahensis*. In a letter to Ralph Chamberlin, however, Clench stated (as quoted in Chamberlin and Jones 1929): "I have since [the time of the type description] considered this [taxon] as rating full specific status." Chamberlin and Jones (1929) thus arranged it as a species, placing it, however, in the genus *Physella*. Henderson (1936)—and later Jones (1940a, Chamberlin and Roscoe (1948), and Russell (1971)—referred to the species as *Physa utahensis*.

Chamberlin and Jones (1929) called this species the Utah sinistral pond snail. Clarke (1991) applied to it the common name Utah Lake physella.

No subspecies have been proposed in this species.

**Status in Utah**

Two extant occurrences of this species in Utah are known, both in northeastern Box Elder County. The species inhabits three pools "located near Utah Hwy. 83, 14.3, 14.7, and 16.9 road miles W of Corrine, Cache [*sic*: Box Elder] County", and "Bar M Spring, Locomotor [*sic*: Locomotive] Springs area", also in Box Elder County (Clarke 1991).

Historically the species inhabited Utah Lake and associated springs (Chamberlin and Jones 1929, Jones 1940a), where it is now extirpated (Clarke 1991). Henderson (1936) reported this species from "a spring seven miles south of Junction, [Piute or Garfield County], Utah", which must be regarded as a historical occurrence, probably extirpated.

Russell (1971) reported the species from 4 of the springs making up the spring complex at Fish Springs, Juab County. It is unknown whether, but somewhat doubtful that, the species is extant at Fish Springs; moreover, Taylor (1986) seemed to doubt Russell's (1971) identification of this species at Fish Springs.

In the Museum of Zoology, University of Michigan, there reportedly are 4 lots of specimens collected live prior to 1950 in Utah (Clarke 1991). One of these lots is from Redden Spring, extreme southwestern Tooele County, the other 3 are

at each [of three] was of mud, sand, gravel, and/or rocks. ... [The fourth site] was an unusual, large, and very shallow pool virtually paved with flat rocks and choked with watercress."

Russell (1971), reporting this species from 4 of the springs in the Fish Springs complex, wrote: "This species was not seen alive in any of the marshes or canals but is known only from springs." Taylor (1986), however, seems to have doubted Russell's (1971) identification of this species at Fish Springs.

***Physella virgata* (Gould, 1855)  
protean physa**

**Utah Taxonomy**

Several authors (e.g., Woodbury 1929, Chamberlin and Berry 1929, and Chamberlin and Jones 1929) have discussed this species in Utah under the name in current use, *Physella virgata*. Others (e.g., Chamberlin and Berry 1930, Jones 1940a, Woolstenhulme 1942a, 1942b, Chamberlin and Roscoe 1948, and Russell 1971) have treated it as *Physa virgata*. Russell (1971) noted: "Whether or not *Physa virgata* is a valid species or represents an eastern species remains to be seen." Taylor (1986) has called this species in Utah *Physa squalida*, which he asserted "includes *P. virgata* as a synonym." It is likely that other names were used in discussing this species in Utah prior to 1929, but, without reexamination of specimens, such names may not be recognizable as synonyms of *Physella virgata* now.

Chamberlin and Jones (1929) applied the common name the striped physella to this species.

The subspecies that occurs in Utah is probably the type race *Physella virgata virgata*. It is also likely that the race *Physella virgata berendti* is represented in Utah, and it is possible that the race *Physella virgata concolor* may also be present in this state.

**Status in Utah**

This species is known, at least historically, from scattered localities throughout Utah. It has been reported from 18 localities in 12 counties: Washington County (Woodbury 1929, Chamberlin and Jones 1929, Jones 1940a), Iron County (Chamberlin and Jones 1929), Salt Lake County (Chamberlin and Jones 1929), Cache County (Chamberlin and Jones 1929), San Juan County (Chamberlin and Berry 1929, Chamberlin and Jones 1929), Grand County (Chamberlin and Berry 1929, Chamberlin and Jones 1929), Carbon County (Chamberlin and Berry 1929, Chamberlin and Jones 1929), Wayne County (Chamberlin and Berry 1930), Juab County (Russell 1971), Tooele County (Woolstenhulme 1942a), Wasatch (Woolstenhulme 1942b), and Summit (Woolstenhulme 1942b).

Little in the way of useful abundance data has been reported for this species in Utah.

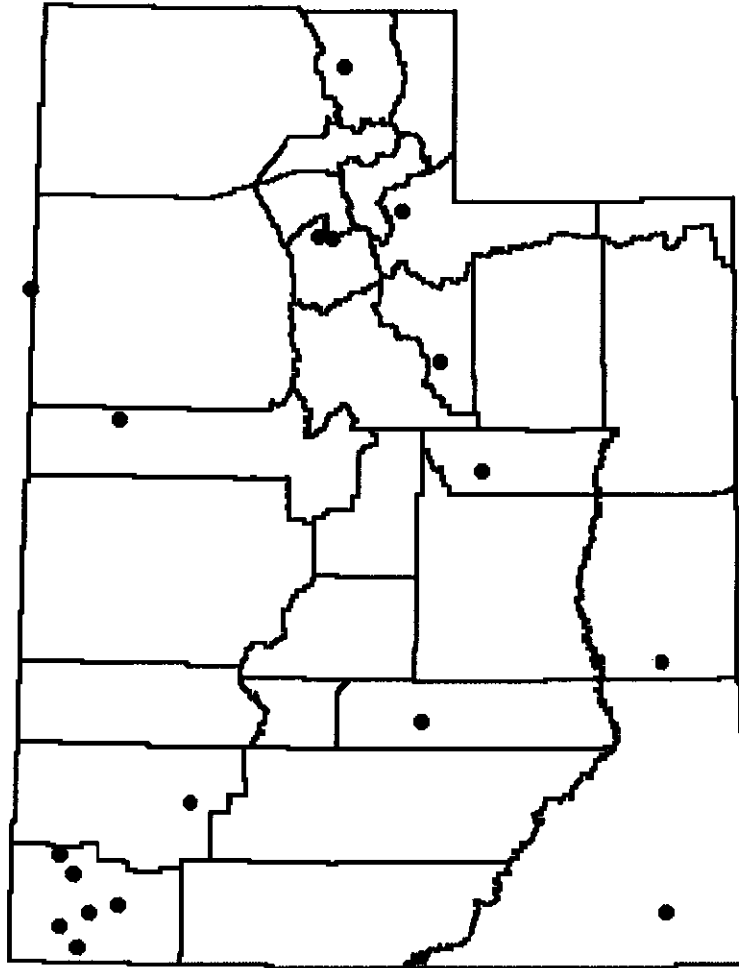


Figure 39. Utah localities for the protean physa (*Physella virgata*) obtained from literature.



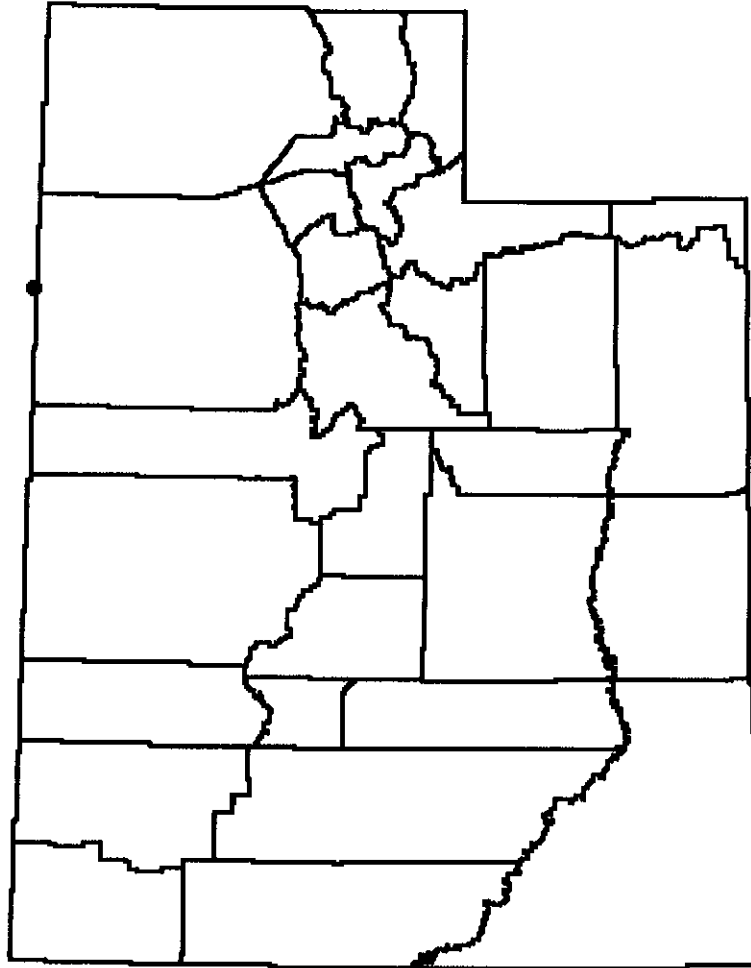


Figure 44. The Utah locality for the lamb rams-horn (*Planorbella oregonensis*) obtained from literature.

other native aquatic mollusks, including this species may not be secure in Fish Lake.

Though the population trend of this species in Utah is not known, the disappearance of the species from Utah Lake suggests that it is declining in this state.

Inventory is needed at the sites from which this species has been reported historically as well as elsewhere in Utah to determine its current status in the state.

### **Habitats Utilized in Utah**

Most Utah records of this species have been from lakes (see, for example, Call 1884, Chamberlin and Jones 1929, Jones 1940a), though it has also been collected from a reservoir in Utah (Henderson and Daniels 1917).

***Ferrissia rivularis* (Say, 1817)  
creeping ancyliid**

**Utah Taxonomy**

Call (1884) referred a specimen, almost certainly this species, from Utah to the genus *Ancylus* as "*Ancylus*, sp. undt." Russell (1971) called his Utah specimens, again almost certainly this species, *Laevapex californica*. Taylor (1986) called Utah specimens *Ferrissia californica*.

Many authors (e.g., Jones 1935, Jones 1940a, Chamberlin and Roscoe 1948) have referred to the species in Utah by its currently accepted name. Chamberlin and Jones (1929) referred to this species in Utah by its currently recognized name, except for its spelling in the text, where it appeared three times (p 170) as: "*Ferrisia [sic] rivularis*"; however, this appears to have been either a lapsus or a printer's error, for in their accompanying figure (Fig. 29, p 171) the name was hand-written correctly, and the name appeared correctly spelled in the table of contents (p ix), in their overview of molluscan classification (p 14), and in the index (p 197).

No subspecies are recognized in this species.

**Status in Utah**

There are 5 known occurrences of this species in Utah, all but 1 being historical. This species has been reported from 4 counties in Utah, all in north-central or west-central parts of the state: Utah County (Call 1884, Chamberlin and Jones 1929, Winger et al. 1972), Morgan County (Jones 1935), Juab County (Russell 1971), and Millard County (Taylor 1986).

Meaningful data regarding abundance of this species in Utah are not available. However, the species is believed to be very uncommon in the state.

Russell (1971) reported remains of what was apparently this species from a spring-fed marsh that had been drained and burned. Similarly, Taylor (1986) found apparently this species, only dead, and noted: "Charred ground and burned bases of sedge clumps show that the marsh has been burned over in the recent past; this is a probable cause for the few live specimens [of mollusks] that were found." Thus, the draining and burning of marsh habitats is a known threat to this species in Utah. Population trend of this species in Utah is not known.

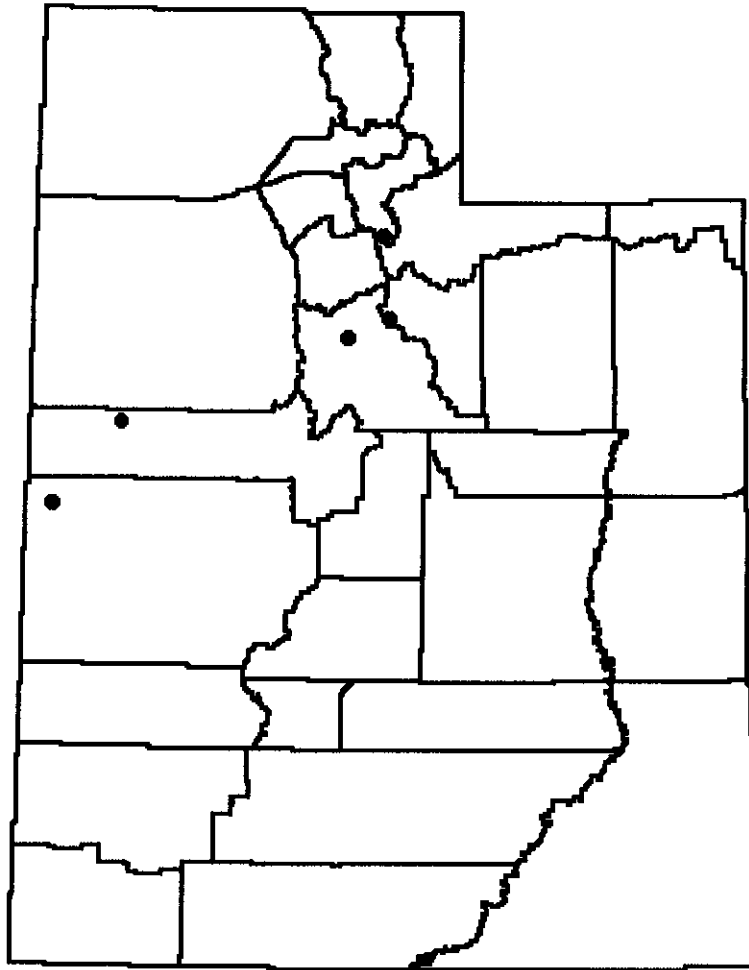


Figure 46. Utah localities for the creeping ancyliid (*Ferrissia rivularis*) obtained from literature.

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