A GUIDE TO SOUTHERN IDAHO'S

Freshwater Mollusks

STEVE LYSNE, US FISH AND WILDLIFE SERVICE

This handy field guide will help citizen-scientists, researchers, and natural resource professionals learn more about the mollusks of southern Idaho.

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U.S. FISH AND WILDLIFE SERVICE
U.S. BUREAU OF RECLAMATION
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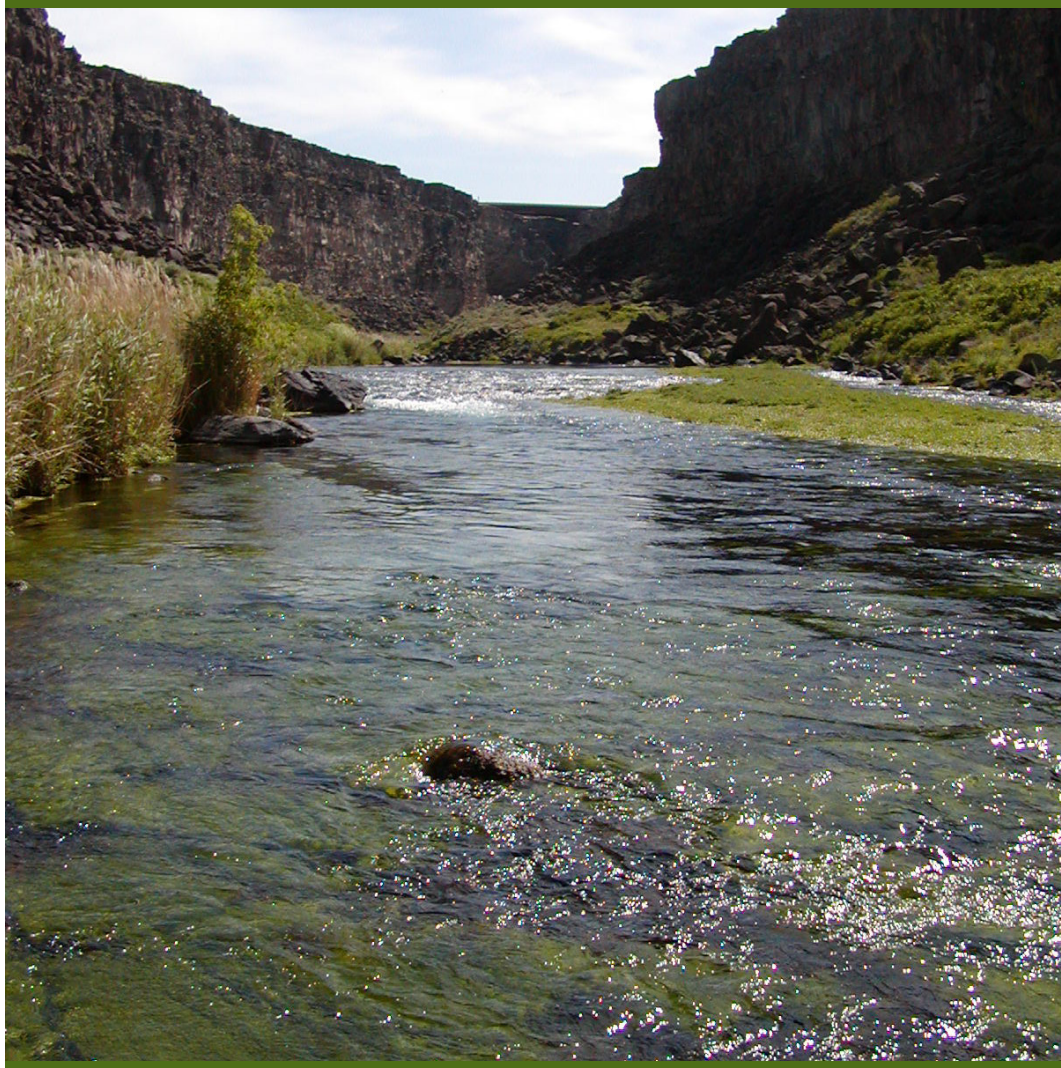

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2009

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AUTHOR:

STEVE LYSNE

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Introduction

Freshwater mollusks have a long American history. Years ago, they served as a dietary staple for Native Americans, and by the late 19th century, shells were commonly used in the button industry at home and abroad. Although often quite small in size, mollusks have played a large part in both the social and economic history of humans.

MOHAWK TRIBE

Native Americans used bead-clamshell necklaces, called "wampum," for barter, gifts and cultural rights.

Today, there is growing interest in the role these animals play in biological diversity and ecoystem health. The focus has turned to conserving freshwater mollusks, as research now shows that they are the most imperiled group of animals in North America: greater than 60% of the 842 named species are considered imperiled, critically imperiled, or extinct. Much can be learned from these creatures and their habitats if efforts continue to understand our molluscan diversity.

Molluscan research over the past 20 years has resulted in an ambitious program to survey and catalog the distribution of all North American freshwater mollusks. The information gathered will be of great use not only to researchers, but to natural resource managers and citizens. As more is learned about the distribution of mollusks, we will be able to better manage these species and the habitats upon which they depend.

Introduction

A Guide to Southern Idaho's Freshwater Mollusks contributes to the understanding of the diversity and distribution of mollusks in southern Idaho.

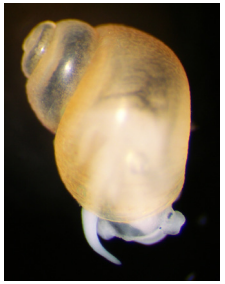
This Guide is a collaborative effort of several Idaho entities, including the U.S. Fish and Wildlife Service; U.S. Bureau of Reclamation; USDA Forest Service - Rocky Mountain Research Station; Idaho Governor's Office of Species Conservation; The College of Idaho's Orma J. Smith Museum of Natural History/ William H. Clark, Museum Director; Dr. Jack B. Burch and Ethan Nedeau for illustrations. Photography in this Guide is a collaborative effort by many individuals and agencies; see credits at back of book. The Guide would not have been possible without the diligence of author Steve Lysne, who led the project when he was employed by the U.S. Fish and Wildlife Service in Boise, Idaho.

It is our hope that this Guide will encourage greater numbers of people to learn more about Idaho's mollusks, and to actively engage in looking for these species in Idaho's freshwaters. When appropriate, we encourage samples to be submitted for research. Samples will be deposited in the Orma J. Smith Museum of Natural History. Information about responsible collecting is included in this Guide. Data collection forms are in this booklet.

Species distribution data contributed by citizen-scientists, researchers, and natural resource professionals will be compiled in an electronic database and made available to the public and scientific community. The net product will be reflective of the collective energy that is placed into this project.

Thank you for taking the time to use the *A Guide to Southern Idaho's Freshwater Mollusks.*

How to Use This Guide



DAN GUSTAFSON, MONTANA STATE UNIVERSITY

This Guide is designed to be used by citizen-scientists, researchers, and natural resource professionals. Take this handy Guide with you in the field to help identify the freshwater snails or clams you find.

This book is organized by three simplified shell types:

- Elongated or pointed shells
- Round or wide shells
- Clams

Some of the mollusks in this Guide can be identified to the species-level based on their physical appearance, geographic distribution, or lack of similar-looking species. Others, however, cannot be determined by appearance or distribution, and may be more difficult to identify. Those species are only described to the level of genus. For characteristics described in each species profile, please refer to *Mollusk Anatomy, page 5*.

Common habitat type and general range maps are also included on each species page.

Pick up the snail or clam and orient it toward you to determine its shape, and then try to match the specimen with those from this Guide.

How to Use This Guide

PART I
Elongated or pointed shells

Stagnicola spp

PART II
Round or wide shape

Radix auricularia

PART III
Clams

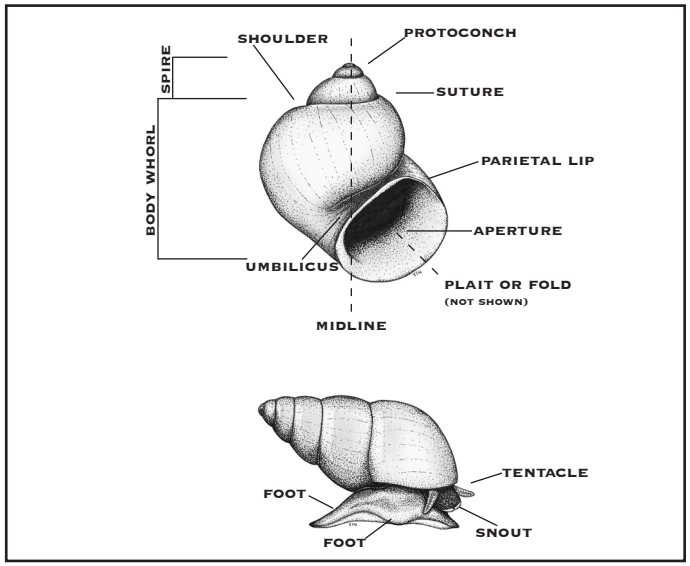
** Southern Idaho has few large clams, but there are many "fingernail" or "pea" clams. These are very difficult to identify and are not included in this Guide.*

Gonidea angulata

If you don't feel you can positively identify the mollusk, or if it appears to be a species described only to the generic level, consider collecting the individual for positive identification. *(See Reporting Element Occurrences, page 40)*

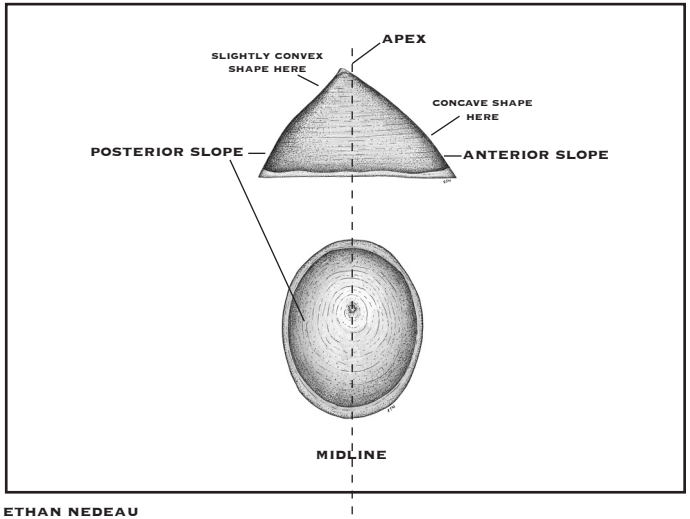
Mollusk Anatomy

SNAIL



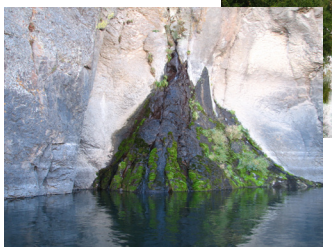
ETHAN NEDEAU

LIMPET



ETHAN NEDEAU

SPRINGS



Southern Idaho has a tremendous concentration of freshwater springs and spring-fed creeks. Most exist on private land.

Amazingly, these springs and spring-fed creeks contribute greater than 5,000 cubic feet per second (cfs) to the base flow of the Snake River, which greatly improves water clarity, quality and habitat availability for mollusks.

The springs are characterized by relatively slow flows, stable, cool temperatures and crystal-clear water. Substrates for these types of habitat range from fine sands to larger pebble/gravel or cobble/boulder areas with submerged vegetation.

Springs and creeks are easily waded, and are ideal for clear-botttom buckets or hand collections.

TRIBUTARY STREAMS

Tributary streams in southern Idaho are generally mid-sized, with predictable flows, although they are known to flash flood following severe weather. Driven by snowmelt, tributaries are much colder than large rivers or reservoir systems that typically have warmer water temperatures due to large surface areas and volume.

Tributary streams have moderate to swift currents and cobble to boulder-sized substrates. In some areas, fine sediments may also be found.

Tributaries are accessible to collectors with waders, though caution must be exercised in high flow conditions, deep pools and rapids.

LARGE RIVERS

Idaho's largest river is the Snake River. Its free-flowing reaches contain swift, powerful currents and numerous habitats, including riffles, runs, counter-current eddies and still backwaters. The Snake River is generally warmer than its contributing streams.

Nearly every type of substrate exists in this system, from fine clay silts to bedrock, and mollusks use all of them. The diversity of mollusks in the Snake River is unsurpassed by any other area in Idaho.

Mollusks are best collected from the shore of the Snake River, unless you have a powerful boat and an experienced crew of divers.

LAKES AND RESERVOIRS

Reservoirs are more common than lakes in southern Idaho, but similar groups of mollusks can be found in both. Lakes and reservoirs have deep, slow-moving water and fine sediments, often with abundant submerged vegetation. Reservoirs are warm in the summer and may freeze in the winter.

Reservoirs are best sampled with a dip-net in the shallows or any of the various grab-samplers in deeper waters. Most mollusks will be found in deeper areas of reservoirs. Water levels can fluctuate greatly throughout the year, leaving only the deepest portions continuously wetted.

It is estimated that there are 117 mollusk species in the State of Idaho from 35 genera and 15 families. This Guide includes the following freshwater mollusks:

SNAILS

SCIENTIFIC NAME	COMMON NAME
Ferrissia rivularis	Creeping ancylid
Fisherola nuttalli	Shortface lanx
Fluminicola spp.	Pebblesnails
Fossaria spp.	Fossaria
Gyraulus spp.	Gyros
Lanx sp.	Banbury Springs lanx
Physa spp.	Physa
Planorbella spp.	Rams-horns
Potamopyrgus antipodarum	New Zealand mudsnail
Prygulopsis bruneauensis	Bruneau hot springsnail
Pyrgulopsis robusta	Jackson Lake springsnail
Pyrgulopsis spp.	Springsnails
Radix auricularia	Big-ear radix
Stagnicola spp.	Pondsnails
Taylorconcha insperata	n/a
Taylorconcha serpenticola	Bliss Rapids snail
Valvata humeralis	Glossy valvata
Valvata utahensis	Desert valvata
Vorticifex effusa	Artemisian rams-horn

CLAMS

SCIENTIFIC NAME	COMMON NAME
Anodonta spp.	Floaters
Corbicula spp.	Asian clams
Dreissena spp.	Zebra/quagga mussels
Gonidea angulata	Western ridgemussel
Margaritifera falcata	Western pearlshell

PART I
ELONGATED OR POINTED SHELLS

Ferrissia rivularis..... 12

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Fossaria spp..... 14

Lanx sp. 15

Physa spp..... 16

Potamopyrgus antipodarum..... 17

Pyrgulopsis robusta..... 18

Pyrgulopsis spp..... 19

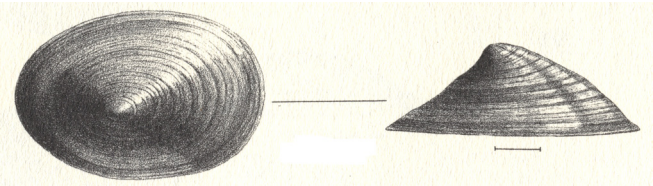
Stagnicola spp..... 20

NOTE: For the illustrations by John Tottenham (reprinted courtesy of Dr. Jack B. Burch, Malacological Publications, Hamburg, Michigan) scale is represented by one-millimeter measurement lines; if line has dividers, each section represents 1 mm.

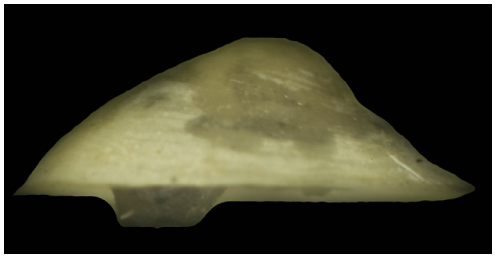
Ferrissia rivularis

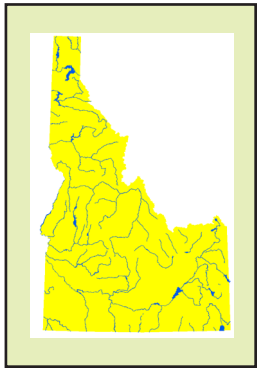
TRIBUTARIES, RIVERS, RESERVOIRS

This species belongs to a group of snails called "limpets." They're interesting snails, and as you can see, they are unusual in shape. The *Ferrissia rivularis*, or creeping ancylid, is common across North America in streams, lakes, and marshes. In southern Idaho, it is the most common limpet and is found in most streams.



Ferrissia rivularis is found in gravel to cobble substrates in large rivers or tributaries, but may also be found in substrates ranging from mud to boulder to aquatic vegetation. This limpet will tolerate areas that are nutrient-rich (reservoirs, ponds, marshes). It's relatively small; about 6 mm long and <2 mm high. The apex of the spire is away from the mid-line and the posterior slope is convex.



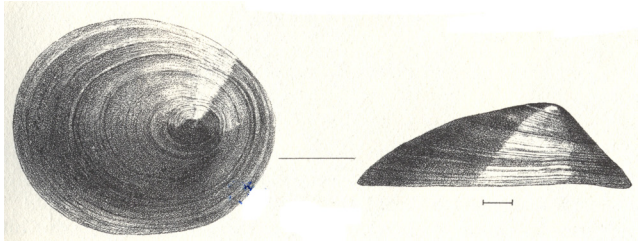


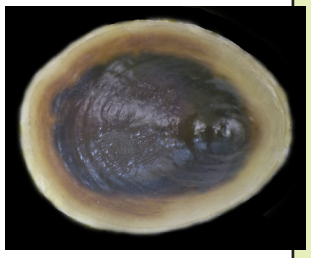
Fisherola nuttalli

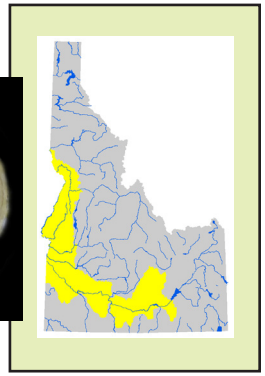
TRIBUTARIES, RIVERS

Fisherola nuttalli also belongs to the group of snails called "limpets." This limpet, also known as the shortface lanx, is found in Idaho's large rivers (primarily the Snake and Salmon Rivers and some of those rivers' tributaries) and is generally uncommon. Often, it is found on large and stable rocks in swift currents.

Fisherola nuttalli is a medium-sized native snail, reaching sizes greater than 10 mm in length and 4-5 mm in height. It can be distinguished from other limpets by its distribution (found in large rivers), adult size, and shape. The apex of the spire is in the mid-line of the animal but is reflected back; the posterior slope is straight.



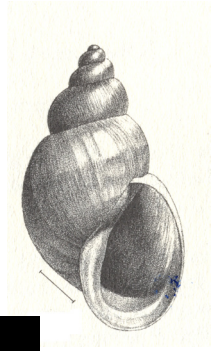




Fossaria spp.

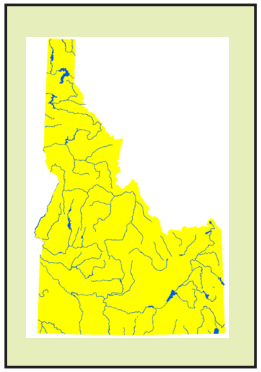
TRIBUTARIES, RIVERS, RESERVOIRS

This genus of snails is represented by as many as five species in Idaho; two of which are likely found in southern Idaho.



Citizen scientists can help us better understand the distribution of the various types of *Fossaria* that may exist around the State of Idaho. *Fossaria* are medium-sized (6 to 14 mm) freshwater snails with body whorls that are 1 to 1 1/2 times that of its remaining whorls. They're generally found in shallow, slow-to-medium velocity habitats at stream, lake and pond edges.

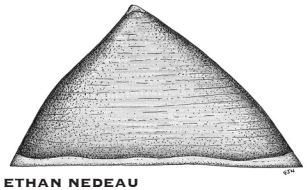
Fossaria are likely to be found on many substrates, including aquatic plants. Some may be amphibious, meaning they have been observed out of the water! Depending on the area, *Fossaria* abundance ranges from uncommon to common. These snails are distinguished from similarly-shaped species by their size, spire shape, and body whorl. If you think you have found one of these snails, it is best to collect it and send it in for further study.



Lanx sp.

SPRINGS

Lanx are also called "limpets." Commonly referred to as Banbury Springs lanx, this species has not yet been formally described by scientists, but is a distinct species. It's extremely rare, as it is found only in four locations in Idaho, and it's protected by law! The lanx is listed as a federal endangered species.



ETHAN NEDEAU

This limpet is found only in springs with exceptional water quality and always on stones. The lanx is very small - only a few millimeters in diameter.

It can be distinguished from other limpets in Idaho by its distribution (spring-dwelling), a centrally-located spire, and a concave shell slope.

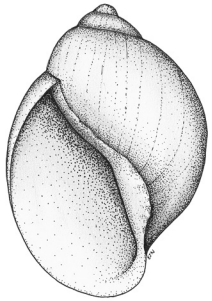
Due to this species' rarity and sensitivity, ***please do not collect this species.*** If you find yourself in a colony of this limpet, carefully retrace your steps to leave the area — you'll likely only have to move a few hundred feet. If you have a camera with you, photograph what you see, complete a Data Collection Form, and send it to the U.S. Fish and Wildlife Service. *(See Reporting Element Occurrences, page 40)*

Physa spp.

SPRINGS, TRIBUTARIES, RIVERS, RESERVOIRS

The family *Physidae* is incredibly rich in species. Recent research has resulted in rearranged relationships among different species in this family. There are about a dozen species of *Physa* in Idaho.

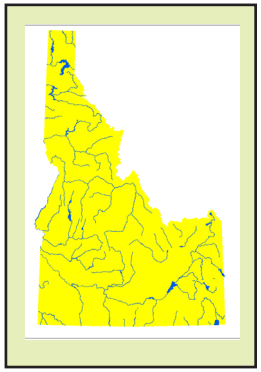
These snails are typically medium-sized (12-18 mm), have a large body whorl (1/2 to 3/4 of their length), and are light colored, but not transparent.



ETHAN NEDEAU

The most certain distinguishing aspect of this snail is the position of the aperture! *Physidae* are all "left-handed:" when you hold the shell in standard view, the aperture is on the left.

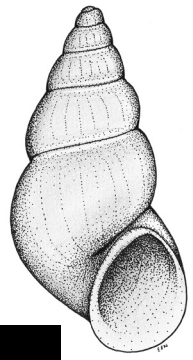
Two physa are thought to be most common in southern Idaho: *P. acuta* and *P. gyrina*, but they're difficult to tell apart. In the middle Snake River, there is a very small snail, the Snake River Physa. This snail is listed as an endangered species. ***Please do not collect any snails in the Snake River from Twin Falls downstream to C.J. Strike Reservoir.***



Potamopyrgus antipodarum

SPRINGS, TRIBUTARIES, RIVERS, RESERVOIRS

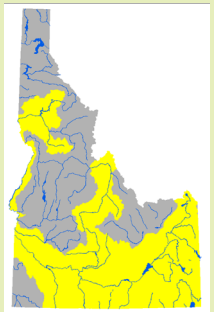
This non-native, invasive snail, most commonly known as the New Zealand mudsnail, is often the most abundant freshwater mollusk in the middle Snake River between American Falls Dam and Brownlee Reservoir. It can also be found in great numbers in tributaries to the Snake, associated spring complexes, and reservoirs. It will be found on most substrates including aquatic vegetation.



ETHAN NEDEAU

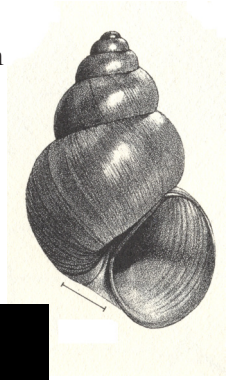
The New Zealand mudsnail grows to about 5-6 mm and is differentiated from similar-looking snails by its high, narrow spire, thin body whorl, and dark pigmentation on its tentacles and head. The body is dark brown/black.

This is a harmful "aquatic hitchhiker!" Clean all gear including fishing equipment, boats, trailers, motors, clothing, boots, waders and buckets by removing mud, plants, fish/animals. DISINFECT ALL GEAR before moving to another waterbody! In 2009, Idaho enacted a new law requiring all boats registered in Idaho or other state, and any non-motorized vessel (canoe, kayak, raft, drift boat, etc.) to purchase and display an *Idaho Invasive Species Fund* sticker to legally launch and operate in Idaho. Inflatable, non-motorized vessels must be less than 10 feet in length to be exempted from this requirement. For more information, visit this website: http://parksandrecreation.idaho.gov/idahoinvasivespeciesfund.



Pyrgulopsis robusta

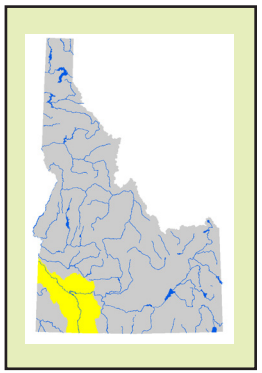
SPRINGS, RIVERS, RESERVOIRS



At least ten *Pyrgulopsis* are reported to exist in Idaho, and all are called "springsnails," though they may not always be found in springs.

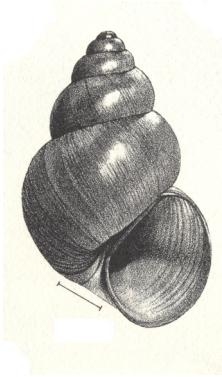
This "springsnail," *Pyrgulopsis robusta*, or the Jackson Lake springsnail, can be abundant in the Snake River in and near C.J. Strike Reservoir to Weiser, Idaho.

It is generally associated with cobble-bottom stream sites but may also be picked up in reservoir samples. *Pyrgulopsis robusta* reaches a maximum length of 7 mm and is differentiated from similar-looking snails by its larger body whorl, blunt spire, and yellow pigmentation on its tentacles and head. The opucular area is often orange in color, and the body is gray.



Pyrgulopsis spp.

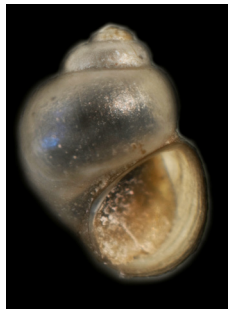
SPRINGS, TRIBUTARIES, RIVERS

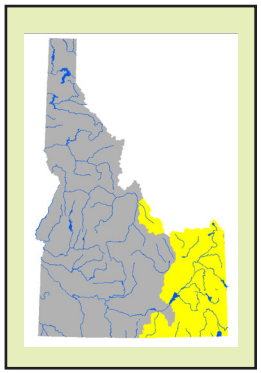


Pyrgulopsis are abundant in Idaho, including *P. bruneauensis* (see Part II) and *P. robusta* (described on the previous page), but they are difficult to tell apart! Many *Pyrgulopsis* have not been formally described by scientists.

Fortunately, we can separate the new or unknown "Pyrgs," as they're called, from our known Pyrgs. These new Pyrgs are mostly found in eastern Idaho; northeast to southeast of American Falls Reservoir and from the Montana border in the north to the Utah border in the south. Most have similar features such as larger body whorl and blunt spire. The number of whorls, however, will vary.

Pyrgs inhabitat just about any water body from warm to cold, mud to cobble, slow to swift currents.

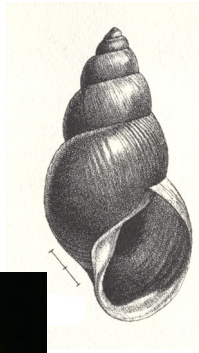




Stagnicola spp.

TRIBUTARIES, RIVERS, RESERVOIRS

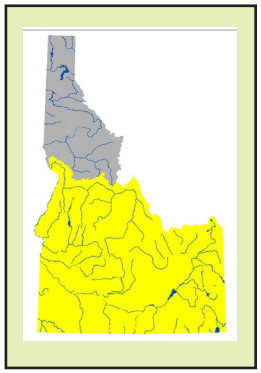
This is another genus with multiple species in Idaho. *Stagnicola* has about seven! The shell shapes can vary greatly, but commonly-shared characteristics include the aperture on the right side and a well-developed collumellar fold.



Some *Stagnicola* are very long and skinny (up to 45 mm), and others are shorter and wider (≈ 13 mm at maturity).

Stagnicola may be found on mud to large boulders in waterbodies of all sizes; flowing or still.

They are typically uncommon, but not rare, in the Snake River of southern Idaho. Distribution elsewhere in the state is not well known.



Freshwater Mollusks

PART II
ROUND OR WIDE SHELLS

Fluminicola spp. 22

Gyraulus spp. 23

Planorbella spp. 24

Prygulopsis bruneauensis 25

Radix auricularia 26

Taylorconcha insperata 27

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Valvata humeralis 29

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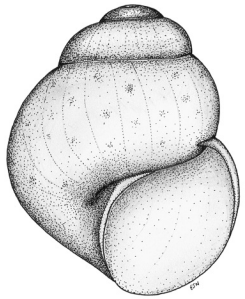
NOTE: For the illustrations by John Tottenham (reprinted courtesy of Dr. Jack B. Burch, Malacological Publications, Hamburg, Michigan)

Fluminicola spp.

SPRINGS, TRIBUTARIES, RIVERS

This genus, which contains about a dozen species, belongs to the largest family of freshwater snails in Idaho, the *Hydrobiidae*. Another large genus, the Pyrgs, contains about ten species.

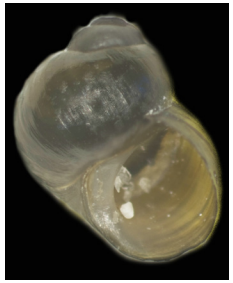


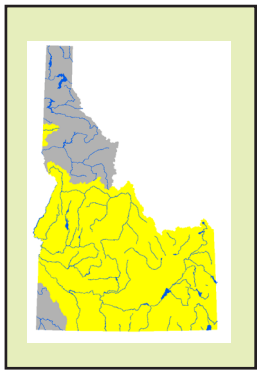
ETHAN NEDEAU

All of the species in this genus are called "pebblesnails" because they look like pebbles on stream bottoms.

At maturity, these snails will be about 7-10 mm. Pebblesnail shells are black and often have a worn spire that appears white. The animal is dark grey to black, and they can be difficult to distinguish from other *Hydrobiidae* such as *P. bruneauensis* or *T. serpenticola* except by their size and relative abundance.

Often the most abundant snail in rivers, springs, and tributaries, they are largely absent from reservoirs. These snails are found in Idaho in the Snake River from the Henry's Fork to the Oregon border and in many tributaries (including the Wood, Bruneau, and Portnuef Rivers) and springs. *Fluminicola* are common in the western United States. Their taxonomy is currently under revision.



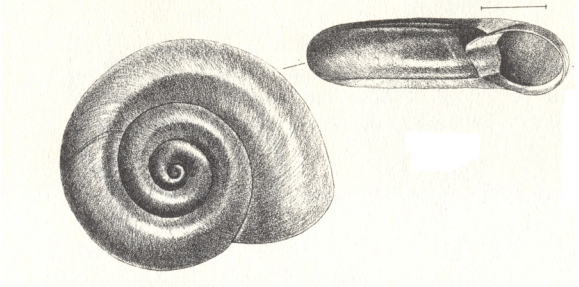


Gyraulus spp.

TRIBUTARIES, RIVERS, RESERVOIRS

One of seven genera belonging to the *Planorbidae* family of snails, several species of *Gyraulus* exist in Idaho, but they're difficult to distinguish from one another.

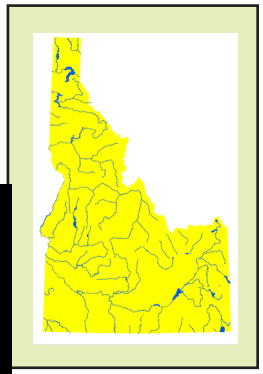
These snails are medium-sized;. They reach a maximum size of about 8-9 mm across but only 3-4 mm in height.

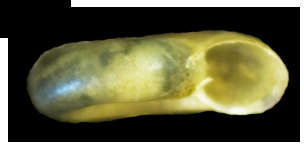


The shell is light brown and translucent in younger snails and older snails are darker, with chalky white areas.The animal is dark grey.

Gyraulus can be distinguished from the *Planorbella* in Idaho primarily by their size. They're common throughout North America in rivers and lakes; residing on various substrates from fine silt to large cobbles.

Gyraulus is found throughout the State of Idaho. It's believed that these mollusks do not exist in springs.

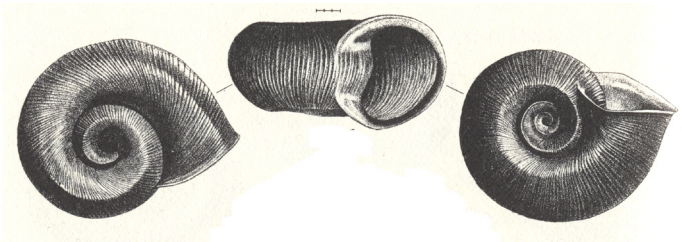




Planorbella spp.

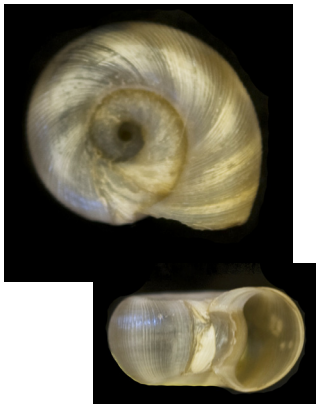
TRIBUTARIES, RIVERS, RESERVOIRS

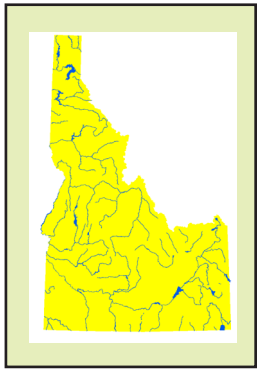
This genus is one of seven belonging to a family of snails called the *Planorbidae*. There are as many as four species in Idaho, and all are called "rams-horns" due to their shape, though they look nothing like *Vorticifex effusa* which is called an Artemisian rams-horn.



Adults of this genus are large; as great as 30 mm across and 15 mm high. They are reddish-brown and primarily distinguished from similar-looking species by their size.

Planorbella inhabit a variety of habitat types including lakes, rivers, and marshes and can be found on most substrates, but will generally be associated with very fine sediments. They are common throughout North America, but less so in Idaho.

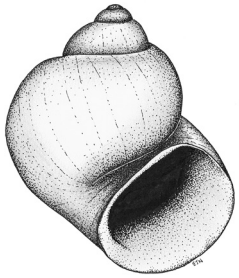




Pyrgulopsis bruneauensis

SPRNGS, TRIBUTARIES

Pyrgulopsis, or "springsnails," can be difficult to tell apart. The *pyrgulopsis bruneauensis* is found only in the Bruneau River. Commonly known as the Bruneau hot springsnail, it lives in warm-water spring habitats.

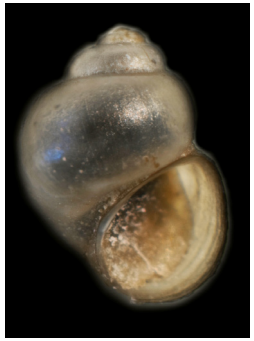


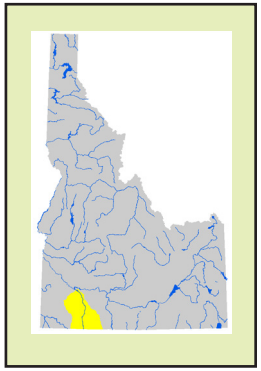
ETHAN NEDEAU

This species is federally listed as endangered. ***Please don't collect it!***

This species is small, only about 2-3 mm in length when full grown. It looks like a "dot" on the surface (occasionally bottoms) of rocks or fine sediments, and is dark brown or completely black. If you find a snail that you think is *P. bruneauensis*, please put it back and leave the immediate area. You will not have to go far, as the colonies are small and only two are known from the main-stem river.

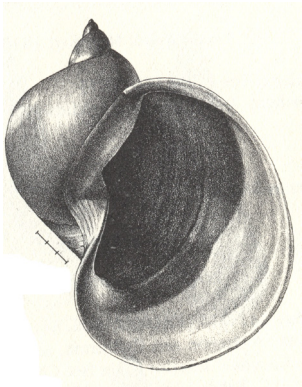
If you have a camera and/or a GPS unit, photograph what you see, complete a Data Collection Form, and send it to the U.S. Fish and Wildlife Service. (*See Reporting Element Occurrences, page 40*)





Radix auricularia

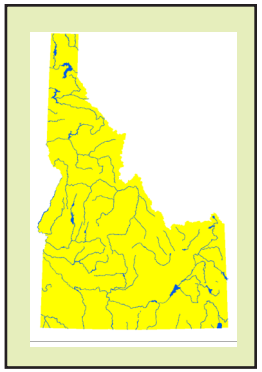
TRIBUTARIES, RIVERS, RESERVOIRS



This rather large (23-30 mm) snail is an introduced species in North America. Its easily distinguished by the sharp spire and huge aperture that looks like an ear, thus giving the species its name: the big-ear radix.

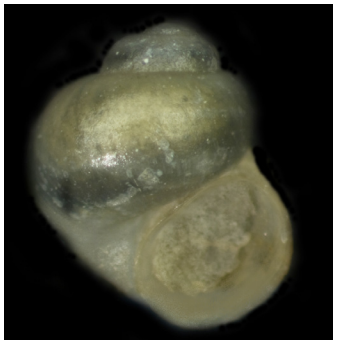
Radix auricularia is generally found in still waters, reservoirs, ponds. It is more tolerant of polluted conditions.

This species is not uncommon in Idaho, but it is never abundant. It has been found in the Bruneau and Big Wood Rivers and other tributary streams.



Taylorconcha insperata

RIVERS

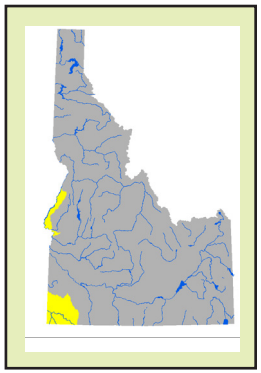


This snail is one of two similar species in Idaho named in honor of Dwight Taylor, a malacologist who conducted considerable work in Idaho.

Taylorconcha insperata is small (3-5 mm), and it's about as tall as it is wide, but it is larger than its counterpart, also named after Taylor, the *Taylorconcha serpenticola*, or Bliss rapids snail.

Its shell is "horn" colored (tan or very light brown) and the animal is a translucent white.

Taylorconcha insperata is found on cobble substrates, but is only known from the Snake River below the Hells Canyon complex of dams and in the Owyhee River of southeastern Oregon. It has no common name.



Taylorconcha serpenticola

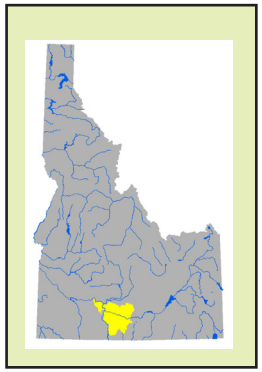
SPRINGS, TRIBUTARIES, RIVERS

Taylorconcha serpenticola is one of two similar species in Idaho named in honor of Idaho malacologist Dwight Taylor. This snail is small; about 2-3 mm full grown and is about as wide as high.

It has two color morphs: a blonde morph and an orange morph, though variation exists in the color of both varieties.

This snail is found in the Snake River and associated springs between Twin Falls and Glens Ferry. It is commonly known as the Bliss Rapids snail, and lives on the bottoms of cobbles; almost never on the sides or tops.

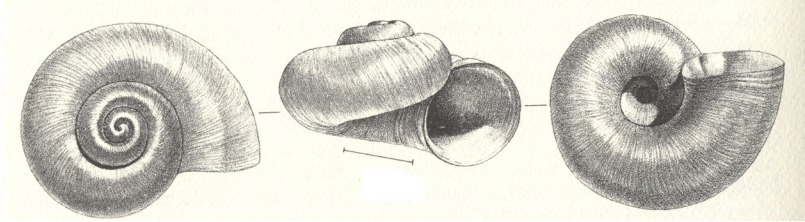
This species needs cool, flowing water to survive, and isn't found in any of Snake River reservoirs. This snail is federally protected as a threatened species. ***Please do not collect it!***



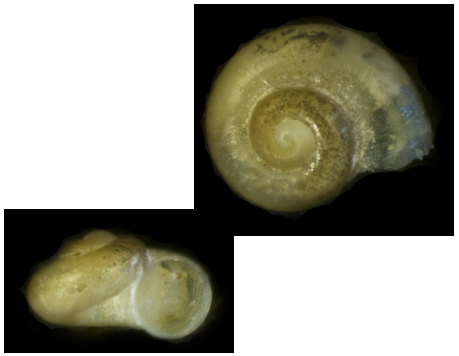
Valvata humeralis

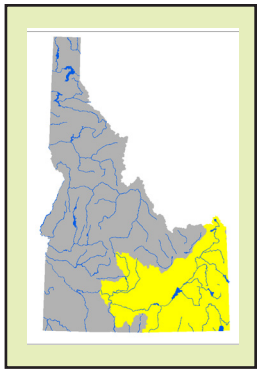
RIVERS, RESERVOIRS

Also known as the glossy valvata, this is one of about five species from this genus that exists in Idaho. *Valvata humeralis* is similar to the *Valvata utahensis* or desert valvata, but it lacks the desert valvata's ridge and its shape is a little more compressed.



Valvata humeralis is found in the western United States and Mexico. It may be locally abundant but is less so in Idaho. The only known occurrences in Idaho are on fine sediments in the Snake River from Henry's Fork to Lake Walcott Reservoir.

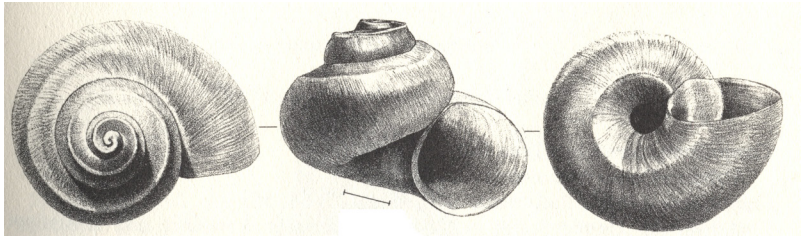




Valvata utahensis

SPRINGS, TRIBUTARIES, RIVERS, RESERVOIRS

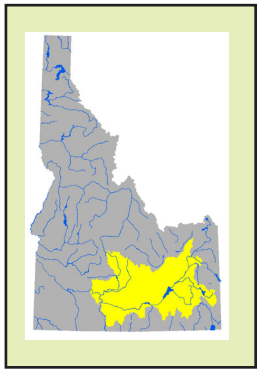
Known only to occur in Idaho, the desert or Utah valvata, was described from the high deserts of Utah, although it is no longer found there.



This snail is wider than it is tall, and is mottled with light brown, white, and clear patches on its shell It has a single ridge winding down from the spire almost to the aperture, and grows to about 7 mm in height.

This species is known primarily from the Snake River between Henry's Fork and Thousand Springs Preserve but may be found in other low gradient streams with fine sediments. At the time of printing, this species is federally-listed as an endangered species, but the desert valvata appears to be doing well in Idaho.

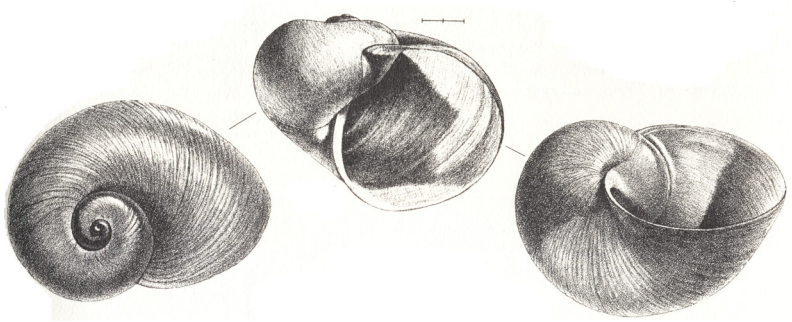
The U.S. Fish and Wildlife Service proposed to delist this snail in July of 2009. A final Rule will be published when the decision is made.



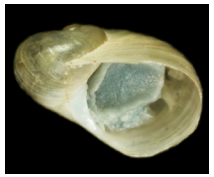
Vorticifex effusa

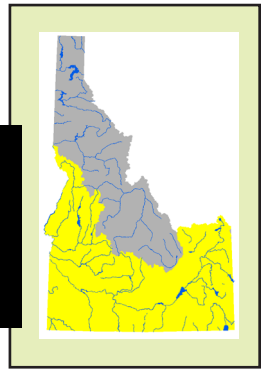
RESERVOIRS, TRIBUTARIES, RIVERS

One of several snails that are called "rams-horns," the Artemisian rams-horn or *Vorticifex effusa* is the only one of its genus in Idaho. It has a large body whorl and a huge aperture when held in the standard view. It can measure 9 mm high and 11 mm wide. Its shell is reddish-brown and an adult body is black.



This snail can be found on the tops of cobbles in reservoirs, rivers, or anywhere suitable habitat exists, but it is not know from springs. *V. effusa* is common, but generally is not abundant throughout the Snake River from Henry's Fork to below the Hells Canyon complex of dams. It is uncommon, but present in some tributaries.





Freshwater Mollusks

PART III
CLAMS

Anodonta spp. 34

Corbicula spp. 35

Dreissena spp. 36

Gonidea angulata 37

Margaritifera falcata 38

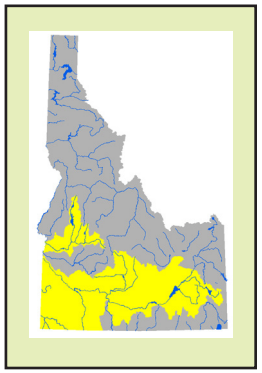
Anodonta spp.

These clams, called floaters, are found in lower elevations across North America and eastern Asia. They are habitat generalists and can be collected from rivers, streams, lakes or reservoirs in depositional habitats with fine sediments.

Floaters are shorter-lived species than either the pearlshell or ridgemussel clams, and grow quickly to about 12-18 centimeters. The shell is olive, pale-brown, or reddish- brown in color. The inside of the shell, called the nacre or "mother of pearl," is usually white.

Floaters are thin-shelled and break easily. They can be distinguished from other mussels in Idaho by their color and distinctive "wing" on the dorsal surface near the beak. Little is known about the distribution of floaters in Idaho but they are believed to be uncommon.

These mussels should not be collected, but photo documentation and the collection of site information are of great scientific value.

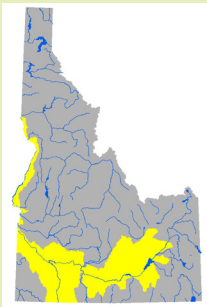


Corbicula spp.

Corbicula is an introduced clam species in North America but is common common in the Snake River of Idaho and other large rivers throughout the United States. Originally from Asia, and typically referred to as an "Asian clam," these species (there may be two distinct species in Idaho) grow to about 5 centimeters and can be found in rivers, streams, lakes, and reservoirs on various substrates.

Asian clams are particularly abundant in the Snake River below the Hells Canyon complex of dams and are also found upstream to at least American Falls Reservoir. They are generally less abundant in tributary streams.

Corbicula is distinguished from other mussels in Idaho by a very large beak and "teardrop" shape. Please do not collect, but do take pictures and record location information on a Data Collection Form. Please send the form to the U.S. Fish and Wildlife Service. *(See Reporting Element Occurrences, page 40)*



Dreissena spp.

RIVERS, RESERVOIRS

These clams are not yet known to be in Idaho waters, but they have invaded waterbodies from New York to Washington state. There are two *Dreissena* species of interest to biologists: the highly publicized zebra mussel and its cousin, the quagga mussel. Both are invasive species, native to the Caspian and Black Sea region of eastern Europe. It is believed these clams were introduced to North America in the ballast water of trans-Atlantic cargo ships.

Responsible for enormous ecological damage and economic losses, the zebra mussel has the potential to significantly alter the normal ecosystem functioning of Idaho's rivers, reservoirs, lakes and streams. These fast-multiplying species choke out native snails and clams, and deprive fish of their natural food sources.

These mussels are about 2-3 centimeters and are easily identified by their distinctive shape and shell. Idaho is vigilantly watching for this species. If you think you've found it, please send a Data Collection Form to the U.S. Fish and Wildlife Service and contact the Idaho State Department of Agriculture immediately.

(See Reporting Element Occurrences, page 40)

Gonidea angulata

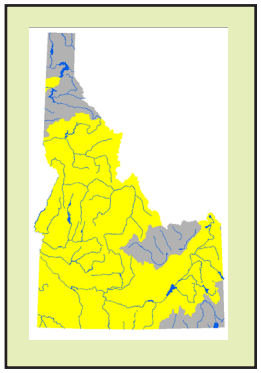
TRIBUTARIES, RIVERS, RESERVOIRS

Gonidea angulata, also called a western ridgemussel, inhabits rivers, streams, lakes, and reservoirs. It can be found buried in streams with cobbles and/or finer sediments.

Common west of the Continental Divide, the ridgemussel grows to about 15 centimeters and has a dark brown or black shell. The inside of the shell, called the nacre or "mother of pearl," is usually white, but can be pink or pale blue.

It is distinguished from other mussels in Idaho by a distinctive ridge that runs from the beak, at an angle, to the margin of the shell. Its status in Idaho is unknown. Collecting this clam is not recommended, but photo documentation and site information are of great scientific value. If you think you've found this species, please send a Data Collection Form to the U.S. Fish and Wildlife Service.

(See Reporting Element Occurrences, page 40)



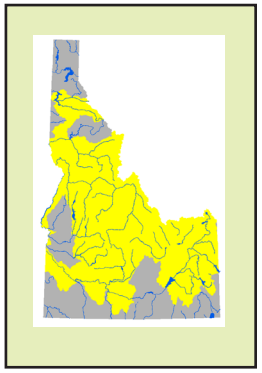
Margaritifera falcata

TRIBUTARIES, RIVERS

This species of clam, called a pearlshell, is an inhabitant of cold, clear salmon and trout streams in Idaho and throughout the west. Once considered to be the most common mussel in the Pacific Northwest, the pearlshell is increasingly rare. Individuals of this species can live for 100 years! They are very slow to reproduce and rely on fish hosts for the survival of their young (called *glochidia*).

The pearlshell grows to 15 centimeters as an adult and will appear dark brown or black. The inside of the shell, called the nacre or "mother of pearl," is purple, salmon-colored, or pink. It can be distinguished from other mussels in Idaho by its slightly concave ventral margin. The species is somewhat uncommon in Idaho due to the alteration of many salmon and trout streams.

Given its rarity, we do not recommend that they be collected, but photo documentation and site information are of great scientific value. If you wish to contribute to this effort, please send your Data Collection Form to the U.S. Fish and Wildlife Service. *(See Reporting Element Occurrences, page 40)*



Invasive Species in Idaho

About a dozen species of non-native mollusks have found their way into Idaho's waters. Two species are of particular concern in southern Idaho: the Asian clam (*Corbicula fluminea*) and its close relatives, and the New Zealand mudsnail (*Potamopyrgus antipodarum*). Both are abundant in the Snake River of southern Idaho. The Asian clam dominates downstream from C.J. Strike Reservoir through the Hells Canyon Complex of dams. The New Zealand mudsnail dominates the aquatic invertebrate community from C.J. Strike upstream to American Falls Reservoir.

In addition to non-native, invasive mollusks, several plants are of concern to those recreating and working in Idaho waters. Hydrilla (*Hydrilla verticilliata*) has been recently discovered in Idaho. This aquatic plant has severely damaged freshwater systems in the United States and threatens to do the same in Idaho.

Idaho needs your help to stop aquatic hitchhikers!

- Wash all equipment and gear in very hot water.
- Drain your livewell, transom, bilge, and anything else that might contain contaminated water.
- Thoroughly clean watercraft, trailers and tow-vehicles.
- Completely dry all gear, in the sun if possible.
- Never move fish or plants from one waterbody to another.

FOR MORE INFORMATION:

IDAHO INVASIVE SPECIES COUNCIL

http://www.agri.state.id.us/Categories/Environment/InvasiveSpeciesCouncil/indexInvSpCouncil.php

COLLECTING MOLLUSKS

In Idaho, freshwater mollusks are designated as "unregulated wildlife." Because of this designation, no permit is required to collect these animals.

Collection should ***only*** occur, however, when it is necessary to positively identify an individual. To avoid overcollecting rare species, it is best to collect only one individual of each particular form. In most cases, this will enable a qualified malacologist (a person who studies mollusks), to make a species determination.

Do not collect rare, threatened or endangered species! If you think you have found a mollusk in any of these categories, take photographs of the specimen, replace the individual where you found it, and leave the area. Great harm can be done merely by walking through a colony of rare mollusks.

It's not always necessary to remove the animal from its habitat to photograph it if you can take a series of shots from different angles. If this isn't possible, take one specimen and place it in a water-tight container filled with water (or a moist paper towel), and deliver or mail the specimen, along with a Data Collection Form, to the U.S. Fish and Wildlife Service.

WHO TO CONTACT

After you have collected an "element occurrence," that is, an individual taken as a specimen or photographs of a specimen, please e-mail the information and photos, or "snail-mail" (quite literally!) the specimen in a water-tight container to the mollusk biologists at the U.S. Fish and Wildlife Service for positive identification. The occurrence will then be catalogued into the mollusk database. Specimens will not be returned.

Parcels or inquiries about mollusks in southern Idaho may be mailed to:

U.S. Fish and Wildlife Service
Idaho Fish and Wildlife Office
Attn: Mollusk Biologist
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709

Data collection, photographs and inquiries may be e-mailed to: the Service's general e-mail box: fw1srbocomment@fws.gov

If you wish to speak to a biologist, please call 208-378-5243. Thank you for your interest in Idaho's freshwater mollusks!

Mollusk Literature

Burch. John Bayard. 1989. North American freshwater snails. Malacological Publications, Hamburg, Michigan. Pp. i-viii, 1-365.

Frest and Johannes. 2000. Checklist: "An Annotated Checklist of Idaho Land and Freshwater Mollusks." Journal of the Idaho Academy of Science. 36 (2):1-51.

Frest, Johannes, Clark, Stephens and Plew. 2001. A Bibliography of Idaho Freshwater and Terrestrial Mollusks. Journal of the Idaho Academy of Science. 37 (2): 9-120.

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USDA FOREST SERVICE
ROCKY MOUNTAIN RESEARCH STATION
Dr. Claire McGrath, Ecologist
Chris Corwin, Biological Technician
Photography of multiple species in this Guide

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Nate Fisher, Administrator
Mary Reid, Administrative Assistant

THE COLLEGE OF IDAHO
ORMA J. SMITH MUSEUM OF NATURAL HISTORY
William H. Clark, Museum Director, and Photography
John Keebaugh, Curator of Invertebrates

UNIVERSITY OF MICHIGAN, MUSEUM OF ZOOLOGY
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ECOANALYSTS, INC.
Dr. David Richards, Photography

RICHARD SALISBURY
Photography

IDAHO DEPARTMENT OF FISH AND GAME
IDAHO DEPARTMENT ENVIRONMENTAL QUALITY
US GEOLOGICAL SURVEY
Mollusk element occurrences

IDAHO DEPARTMENT OF AGRICULTURE
Idaho Invasive Species Council, invasive species information

BIODRAWVERSITY
Ethan Nedeau, illustrations

Notes

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Data Collection Form

Please complete this form and include a photo if possible. If you have collected a specimen, please send this form along with it. Specimens will not be returned. The information you provide will greatly contribute to mollusk science in Idaho, and your efforts are greatly appreciated.

PLEASE MAIL TO:
U.S. Fish and Wildlife Service/Idaho FWO
1387 S. Vinnell Way, Room 368, Boise, Idaho 83709
Attn: Mollusk Biologist
Questions: 208-378-5243

DATE COLLECTED _____

NAME/CONTACT INFORMATION _____

_____

COLLECTION LOCATION (Indicate Nearest Map Location)

_____

WATERBODY _____

LATITUDE/LONGITUDE (UTM) _____

PHOTO(S) Yes ☐ No ☐
Attach to this form, or if you wish to email, please send a .tif or .jpg file to: fw1srbocomment@fws.gov

SPECIMEN? Yes ☐ No ☐

HABITAT DESCRIPTION
☐Spring ☐Tributary stream ☐River ☐Lake ☐Reservoir

☐ Gravel ☐ Cobble ☐Mud ☐Plants

OTHER NOTES _____

_____

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