

# ALASKA FRESHWATER MUSSEL PROJECT

## *The Distribution of the Freshwater Mussels, Anodonta spp. and Margaritifera falcata in Alaska*

### Purpose

Freshwater mussels inhabit watersheds throughout Alaska, yet they are often overlooked. Available literature and specimen data indicate that as many as four species of freshwater mussels may inhabit Alaskan rivers and lakes, but little is known about native mussel species distribution, and virtually nothing is known about non-native mollusk occurrence or distribution.

Freshwater mussels are good indicators of environmental conditions because they are long lived, they bio-concentrate contaminants, and they are sensitive to changes in environmental conditions. Most freshwater mussel larvae are obligate parasites of specific host fish, so their existence is closely tied to certain fish populations.



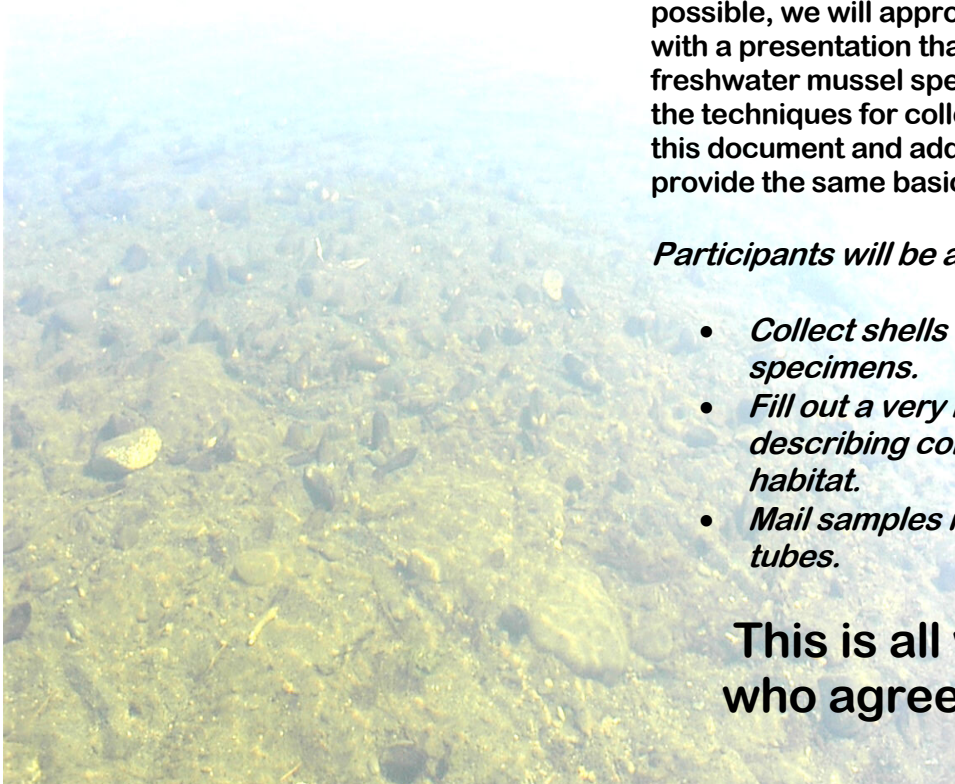
### Study Methods

**This study will rely heavily on the participation of professionals who will be conducting field research in the target areas during the 2004 summer season.** Participants are encouraged to send voucher specimens to the project for identification. New data garnered through this project should help clarify species distributions of mussels in the target areas. When combined with data already available, a more complete picture of statewide species distribution can be accomplished. When possible, we will approach potential participants with a presentation that will describe Alaskan freshwater mussel species, their habitats, and the techniques for collecting samples. For others this document and additional web postings will provide the same basic information.

### *Participants will be asked to:*

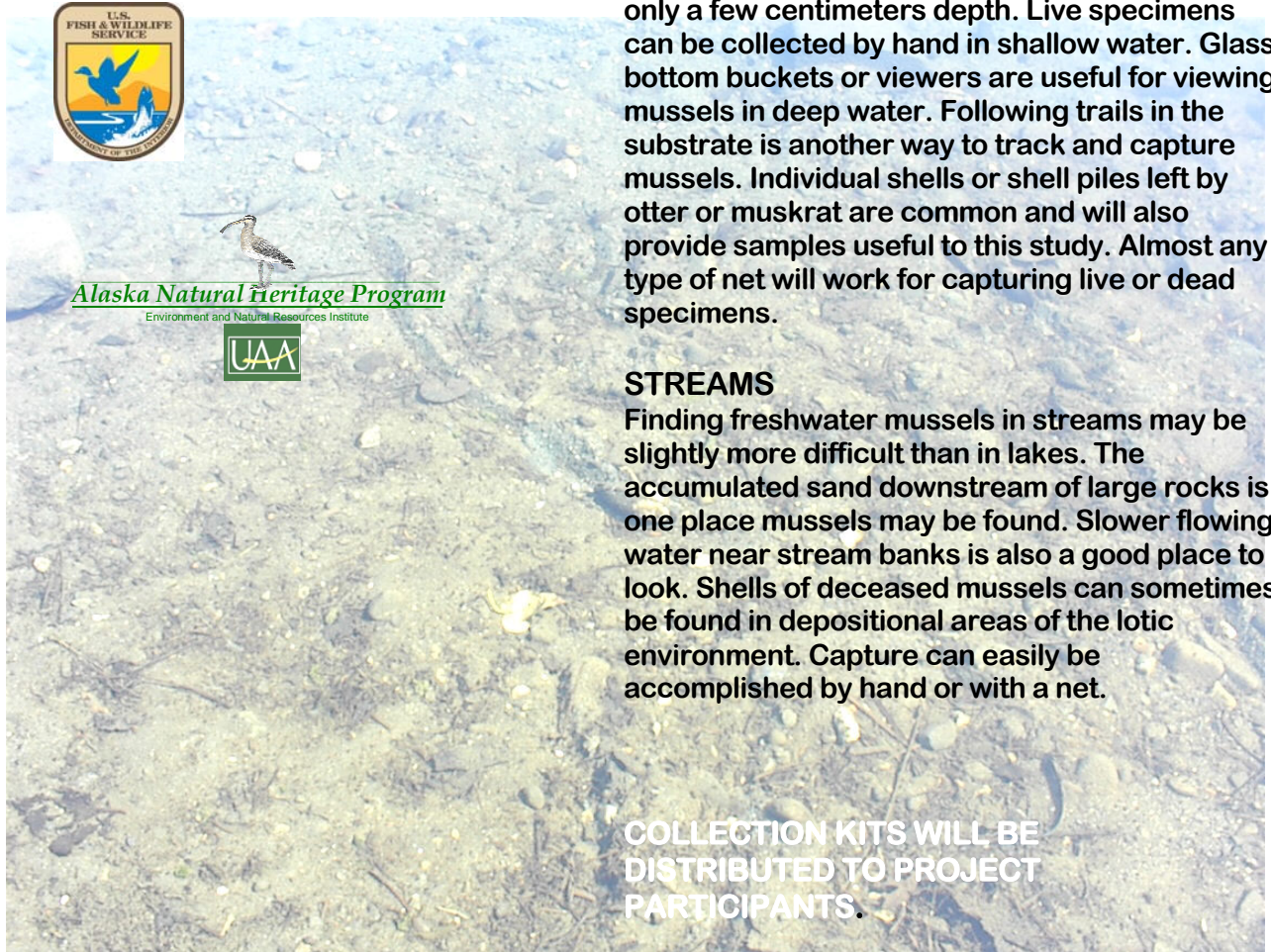
- *Collect shells from live or deceased specimens.*
- *Fill out a very brief data sheet describing collection location and habitat.*
- *Mail samples in postage paid mailing tubes.*

**This is all we ask of those who agree to participate!**



## Project Support

This project is being supported by the Cook Inlet Coastal Grants Program, U. S. Fish and Wildlife Service, and the Alaska Natural Heritage Program, University of Alaska Anchorage.



## Locating and Capturing Freshwater Mussels

### LAKES

Freshwater mussels are usually found at a modal depth of one meter in lentic ecosystems. Commonly specimens can be found in water of only a few centimeters depth. Live specimens can be collected by hand in shallow water. Glass bottom buckets or viewers are useful for viewing mussels in deep water. Following trails in the substrate is another way to track and capture mussels. Individual shells or shell piles left by otter or muskrat are common and will also provide samples useful to this study. Almost any type of net will work for capturing live or dead specimens.

### STREAMS

Finding freshwater mussels in streams may be slightly more difficult than in lakes. The accumulated sand downstream of large rocks is one place mussels may be found. Slower flowing water near stream banks is also a good place to look. Shells of deceased mussels can sometimes be found in depositional areas of the lotic environment. Capture can easily be accomplished by hand or with a net.

**COLLECTION KITS WILL BE DISTRIBUTED TO PROJECT PARTICIPANTS.**

### Contact Information:

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*Nora R. Foster* [fyaqua@uaf.edu](mailto:fyaqua@uaf.edu)

### Message Phone:

Steve 907-563-8059 Tracey 907-257-2782

### Website Address:

<http://enri.uaa.alaska.edu/aknhp/pdfs/Mussels.pdf>

### Mailing Address:

Alaska Natural Heritage Program  
707 A St.  
Anchorage, Alaska 99501

THIS PROJECT CAN ONLY SUCCEED WITH YOUR HELP!  
PLEASE CONSIDER JOINING IN THE PROJECT.

## *Locating, Capturing, and Shipping Methods*

In lakes and ponds with robust populations of freshwater mussels it is easy to locate mussels with little effort. However, if the lake bottom is covered with a dark substrate or if lighting conditions are poor it may require a closer inspection to see the mussels. Clear bottom buckets or viewers are helpful in these situations. Very often shells can be found singly or in piles left by predators. These shells are adequate for the purposes of this study, although shells of live or recently deceased mussels will better retain their color characteristics. Generally mussels can be seen at depths of less than one meter.

In streams or rivers mussels should also be visible in depths of less than one meter. The stream dwelling mussels will most likely be found burrowed into the sandy bottom between rocks. If they are abundant in a particular stream they should be easy to locate.

When a mussel is found it is best to send both valves from the same mussel. Mussel shells are very fragile, however a knife or pair of scissors can be used to open live specimens for removal of the inner anatomy. The project will also accept whole specimens, including the anatomical tissue. The only concern for shipping whole specimens is that they be shipped promptly and wrapped in moist paper towels. Boiling a mussel in water or leaving out in the air for a few hours will allow it to be pried open easily.

When shipping a specimen whole, it is important to double wrap it in two of the plastic bags provided before putting it into the mailing box or tube. If a worker uses any non-provided preservative a third baggy may be used. Only a few samples of each apparent species needs to be sent for any single location. Shells may be wrapped in one baggy only.

Postage paid mailing tubes, data sheets, plastic baggies, and writing instruments will be supplies to participants. Mussel tissue will stay in good condition for short periods of time if kept moist, although no special effort should be made to keep the mussels alive. It is imperative that no live invasive species be shipped. (Dead Specimens Or Shells Only)

**THIS STUDY WILL ALSO ASK PARTICIPANTS TO BE ON THE LOOKOUT FOR TWO INVASIVE SPECIES; THE *ZEBRA MUSSEL* AND THE *NEW ZEALAND MUDSNAIL*.**  
(Note: both of these species are much smaller than the native Alaska mussel species)

These species have not yet been found in Alaska. If found follow the instructions included with collection kits. Please click on the links below to read information that describes these animals.\*

### **ZEBRA MUSSEL**

<http://www.100thmeridian.org/Documents/2002zapthezebra.pdf>

### **NEW ZEALAND MUDSNAIL**

<http://alaska.fws.gov/fisheries/invasive/pdf/mudsnails.pdf>



Photo By Ralph Cutter

\*Beginning in June 2004, all collection kits that are sent out will contain information similar to that found at the above links, pertaining to invasive species.

The following pages include additional information and pictures useful to volunteer workers, as well as copies of the project data sheet. PREVIOUSLY UNCONFIRMED SPECIES MAY BE FOUND DURING THIS STUDY.

## *Margaritifera falcata*

### Ecology

- Found in streams and rivers, both swift and slow.
- Prefers gravel substrate, often found wedged between large rocks, or in sand behind boulders.
- Should be visible in shallow areas, if present.

### Host Fish

- Chinook salmon, Rainbow trout, Brown trout, Brook trout, and other non-Alaskan species.

### Description

- Shell length up to 125 mm and elliptical in shape.
- Dark brown periostracum. ( the outer shell material )
- Purplish nacre. ( the inner shell material )
- Incomplete hinge teeth, complete pseudocardinal teeth.
- Shell thick and robust compared to lake dwelling species.



Photo By Jayne Brim Box

Used by permission

## *Anodonta beringiana*

### Ecology

- Found in lakes and ponds and slow moving streams.
- Prefers sand and gravel substrate.
- Should be visible in shallow areas.

### Host Fish

- Chinook Salmon, Sockeye Salmon, and Three-spined Stickleback

### Description

- Shell length up to 150 mm and elliptical in shape.
- Dark brown periostracum. ( the outer shell material )
- Purplish or bluish nacre. ( the inner shell material )
- Shell thin and fragile.



Photo by Steve Smith

## *Anodonta kennerlyi*

### Ecology

- Found in lakes and ponds and slow moving streams.
- Prefers sand and gravel substrate.
- Should be visible in shallow areas.

### Host Fish

- Unknown

### Description

- Shell length up to 125 mm and elliptical in shape.
- Brown to greenish periostracum. ( the outer shell material )
- Purplish nacre. ( the inner shell material )
- Shell thin and fragile.



Photo By Jayne Brim Box

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*Alaska Freshwater Mussel Project Survey Form*

Collector Name: \_\_\_\_\_ Org: \_\_\_\_\_ Date: \_\_\_\_\_

Waterbody Name: \_\_\_\_\_ Latlong or Other: \_\_\_\_\_

Description of Waterbody: \_\_\_\_\_

Natural Waterbody (circle) yes no

Circle if evident: Contamination Damming Channelization Excess Siltation Other

Describe: \_\_\_\_\_

Predominant Substrate Type: circle type(s) Muck Sand Gravel Rock Boulder

Riparian Environment: \_\_\_\_\_

Fish Species Present (if known): \_\_\_\_\_

No. Specimens Sent: \_\_\_\_\_

Mail To: Alaska Natural Heritage Program  
Freshwater Mussel Project  
707 A St.  
Anchorage, Alaska 99501

**Use back of form for additional notes:**

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