

Report on 2001 Mollusc Survey at Whitney Preserve

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ABSTRACT: In July 2001, waterways on the Whitney Preserve and some adjacent lands were sampled for molluscs. Live specimens were not found, but shells from several species were collected and are discussed here.

Introduction

The molluscs in western South Dakota and the Black Hills are not well known. This survey was designed to determine what aquatic mollusc species are present on the Whitney Preserve and the adjoining Horse Sanctuary.

Methods

In July of 2001, Cool Creek, Bridal Veil Falls, Cascade Creek, and Cheyenne River were sampled for molluscs. Samples were taken using bottom nets and strainer buckets. Descriptions of the sample points and the molluscs found are given in the results below. Molluscs of the different species found were retained for identification. Identification was done using taxonomic keys by Burch (1982, 1962) and were assisted by Robert Herschler of the Smithsonian Museum (personal communication) and Jochen Gerber at the Field Museum (personal communication).

Results

A description of each sample point and the molluscs found at each are listed in Table 1. Table 2 gives a complete list of the species found. No live specimens were found, most likely due to the high temperatures (air temperatures reached 100 °F during sampling). Identification of specimens down to the species level is difficult, if not impossible, for many species without live specimens. Therefore, some specimens are identified only to Genus level.

Plans for additional sampling in September were hampered by forest fire activity in the vicinity. Future sampling should be planned over a wider time period including the cooler parts of the summer to attempt to catch live materials.

Samples are deposited at the Field Museum in Chicago under identification numbers 296296-296312 (see Table 3)

Discussion

Many *Physa* samples were present. *Physa* are extremely difficult to identify to species (even with live tissue available) and much revision of species groups are currently underway. Samples in a range of sizes were collected, so it is possible that more than one *Physa* species is present, but it is impossible to tell without additional sampling that includes live material.

Some of the species listed in Table 2 are not truly aquatic. *Catinella* sp. actually reside on streamside vegetation, so the sample collected must have fallen into the water. No live *Catinella* were observed on vegetation lining the waterways. *Pupoides albilabris*, *Discus cronkitei*, *Pupilla blandi*, *Gastrocopta armifera*, and *Vallonia gracilicosta* are land snail species that evidently were washed into the water after they died as the shells appeared old.

Pisidium sp. was the only mussel found. This may represent a new species for western south Dakota as it is not listed by Backlund (2000) as one of the mussel species found in the area, although Backlund's article focused on Unionids. Regardless, positive identification with live specimens is necessary. It is unclear why mussels are not more numerous in the region, although Beetle (1989) suggests that elevation, temperature extremes, and intermittent creeks play a role. One local resident indicated they could recall finding larger mussel shells (presumably bivalves) on the shores of Cheyenne River as a child (personal communication). However, the current conditions of the Cheyenne River, at least on the Horse Sanctuary are apparently not conducive to mussel survival. Water levels were quite low and temperatures relatively high, so fish hosts may not be able to reach these areas.

The most interesting finding may be *Melanoides tuberculata*. According to standard aquatic gastropod references (Burch and Tottenham 1980), this species an introduced species and resides in Arizona, Florida, and Texas. More recent western surveys have also turned up this species (USFWS ??, USGS ??). This is apparently a new species record for South Dakota. I am currently preparing a manuscript for publication regarding the current range of the species in the United States.

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Table 1. Description of Sampling Points

Creek	Sample Point#	Temp.	Description	Species Found
Cool Creek	1	22°C	At pool behind the house, muddy sediment with rock underneath	<i>Physa sp.</i>
	2	19.5°C	Narrow, fast flow, with sediment, vegetation and a few rocks	<i>Physa sp.</i> , <i>Pupoides albilabris</i> , <i>Catinella sp.</i> , <i>Pisidium sp.</i> , <i>Pupilla blandi</i> , <i>Vallonia gracilicosta</i>
Bridal Veil	1	24.5°C	Stagnant--creek not flowing at this time Cloudy water with clay-like bottom sediment, green sunfish present	<i>Physa sp.</i>
Cascade Creek	1	21°C	Right at FS/TNC boundary, rapid flow, some overhead shade, watercress along banks, gravel/cobble bottom	<i>Melanoides tuberculata</i> , <i>Physa sp.</i> , <i>Pisidium sp.</i> , <i>Discus cronkhitzi</i> <i>Vallonia gracilicosta</i>
	2	20.5°C	One-half mile down road, just past rapids, large cottonwood tree back from bank, grassy bank, cobble and sediment	<i>Pisidium sp.</i> , <i>Physa sp.</i>
	3	22.5°C	One-half mile down road from point 2, just upstream of catkin/marshy area, partly rock, partly sediment, moderate flow	<i>Physa sp.</i> , <i>Vallonia gracilicosta</i> <i>Gastrocopta armifera</i>
	4	20°C	Just upstream from FS fence at Falls, deeper (about 4.5 feet deep), muddy bottom, rushes along shore, slow to moderate flow	<i>Physa sp.</i>

Table 1 Continued.

Creek	Sample Point#	Temp.	Description	Species Found
Cheyenne River	1	30 °C	Behind Horse Sanctuary Office, sandy beach, opposite shore grassy, gentle flow, small gravel/sandy bottom, about 6 inches deep	NO MOLLUSCS
	2	?	About 1.25 miles downstream, about 6 inches deep, faster flow, larger gravel, some clay on bottom	NO MOLLUSCS
	3	29.5 °C	Large old log in river, moderate flow, 6-8 inches deep, bottom sandy with small and medium gravel	NO MOLLUSCS
	4	21 °C	Edge of Horse Sanctuary/Corps of Engineer property boundary, very sandy bottom with small and medium gravel, 4-6 inches deep	NO MOLLUSCS

Table 2. List of Species Found

<u>Species</u>	<u>Locations Found</u>
<i>Physa sp.</i>	Bridal Veil, Cascade Creek, Cool Creek
<i>Pisidium sp.</i> (Pill clam)	Cascade Creek, Cool Creek
<i>Melanoides tuberculata</i>	Cascade Creek
<i>Catinella sp.</i>	Cool Creek
<i>Pupoides albilabris</i>	Cool Creek
<i>Pupilla blandi</i>	Cool Creek
<i>Gastrocopta armifera</i>	Cascade Creek
<i>Discus cronkhitei</i>	Cascade Creek
<i>Vallonia gracilocosta</i>	Cascade Creek, Cool Creek

Table 3. Identification Numbers of Specimens Deposited at the Field Museum*

<u>ID#</u>	<u>Species</u>	<u>Location</u>
296296	<i>Pupoides albilabris</i>	Cool Creek 2
296297	<i>Pupilla blandi</i>	Cool Creek 2
296298	<i>Vallonia gracilocosta</i>	Cool Creek 2
296299	<i>Catinella sp.</i>	Cool Creek 2
296300	<i>Pisidium sp.</i>	Cool Creek 2
296301	<i>Physa sp.</i>	Cool Creek 2
296302	<i>Physa sp.</i>	Cool Creek 1
296303	<i>Discus cronkhitei</i>	Cascade Creek 1
296304	<i>Vallonia gracilocosta</i>	Cascade Creek 1
296305	<i>Physa sp.</i>	Cascade Creek 1
296306	<i>Melanoides tuberculata</i>	Cascade Creek 1
296307	<i>Pisidium sp.</i>	Cascade Creek 2
296308	<i>Physa sp.</i>	Cascade Creek 2
296309	<i>Gastrocopta armifera</i>	Cascade Creek 3
296310	<i>Physa sp.</i>	Cascade Creek 3
296311	<i>Physa sp.</i>	Cascade Creek 4
296312	<i>Physa sp.</i>	Bridal Veil

**Vallonia gracilocosta* from Cascade 3 lost en route, therefore not deposited at the museum.