RECLAMATION

Managing Water in the West

Implementation Plan for the Proposed Action of Snake River physa (*Physa natricina*) Surveys

Minidoka Dam to Jackson Bridge, Snake River, Idaho

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Snake River Area Office - East
Burley, Idaho

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Introduction

In 1992, the U.S. Fish and Wildlife Service (USFWS) listed the following five species of snails as threatened or endangered under the Endangered Species Act (57 FR 59244): Utah valvata (*Valvata utahensis*), Snake River physa (*Physa natricina*), Bliss Rapids snail (*Taylorconcha serpenticola*), Idaho springsnail (*Pyrgulopsis idahoensis*), and the Banbary Springs limpet (*Lanx* sp.). The overall recovery area for these species extends from C.J. Strike Reservoir (RM 518) upstream to American Falls Dam (RM 714) (USFWS 1995). Threats and limiting factors include habitat fragmentation, water withdrawals, increasing water temperatures, decreasing water quality (*i.e.*, lower dissolved oxygen levels, increased sedimentation, and increased pollutants), and the expanding distribution of the non-native New Zealand mudsnail (*Potamopyrgus antipodarum*).

In 2005, the Bureau of Reclamation (Reclamation) finalized Section 7 ESA consultation with USFWS for future Reclamation operations on 12 Federal projects located in the Snake River basin above Brownlee Reservoir (see Reclamation 2004, 2005; USFWS 2005). One of Reclamation's proposed actions is to conduct up to 5 years of Snake River physa surveys from below Minidoka Dam downstream to above Milner Pool, as described in a March 16, 2005, amendment to Reclamation's 2005 biological assessment.

Reclamation's proposed action includes establishing and working with a Technical Team to help design survey and study protocols, review and interpret the results, and provide biological recommendations. This document describes more fully the specific tasks associated with the Snake River physa surveys and roles and responsibilities of the Technical Team to accomplish the proposed action's goals. As described in the biological assessment's amendment, Reclamation proposed up to 3 years of absence/presence surveys in a 5-year period, beginning in the fall 2005 season (Reclamation 2005). However, to allow adequate time to design survey methodologies and species identification protocol and assemble a Technical Team, surveys will begin in the late summer/early fall of 2006.

Purpose of the Study

This action consists of surveys for the endangered Snake River physa in the Snake River reach below Minidoka Dam and, if live Snake River physa are found, additional studies.

If suspected Snake River physa are discovered, the second purpose of the study will be to describe the species genetically and morphologically and to fully describe (quantitatively

when possible) the habitat from which the species was found, which will require additional research.

Survey Description

Study Area

The recovery area for Snake River physa is the Snake River between RM 553 and 675 (USFWS 1995). Snake River physa surveys will be conducted in the Snake River in south-central Idaho starting at Minidoka Dam (RM 675) and extending downstream to 1 mile below Jackson Bridge (near RM 669). The study area (from RM 669 to 675) falls within the recovery area for Snake River physa.

Methods

Survey Timing and Duration

Three years of Snake River physa surveys will be conducted within a 5-year period, with both summer and fall survey periods each year. Snails are seasonally abundant and more likely to be present in detectible numbers during late summer and early fall. All documented live Snake River physa were observed in the field during the month of August (Taylor 1988).

Ten-day summer surveys will occur in late August during peak irrigation release flows. Five-day fall surveys will occur in early October after the irrigation season has ended. October surveys in these areas are critical because they follow the reproductive cycle when a local population/colony would have sufficient time to increase, but precede the period when the local population/colony is expected to decline to lower winter densities. Also, dangerous conditions resulting from high irrigation release flows and high powerplant releases may prevent safe access to some portions of the study area during the August survey period. The potentially hazardous area includes the river reach immediately below the old powerhouse at Minidoka Dam downstream to the boat launch rapids.

Survey Locations

Surveys conducted in August will commence at the boat launch rapids (near RM 674.5) and extend downstream to approximately 1 mile below Jackson Bridge (RM 669). Surveys conducted in October will focus on that portion of the Snake River beginning at Minidoka Dam and extending downstream to and including the boat launch rapids. Thus, the boat launch rapids will be surveyed during each survey period. However, only the margins may be accessible during irrigation release flows in August. Coordination with

powerplant operation personnel will be necessary to allow for safe diving conditions. This will likely require coordination with Bonneville Power Administration to shut down the old powerhouse during some surveys.

The species is thought to occur on the underside of large cobble- to boulder-sized substrate in swift currents in sections of the mainstem Snake River characterized by relatively good water quality (USFWS 2005). One small rapid (boat launch rapid) and multiple medium- to large-sized riffles exist within the study area. All rapid and large riffle habitat within the identified reach will be thoroughly surveyed for Snake River physa. Because shells have been collected in depositional zones in slower moving reaches with less than ideal water quality, some survey effort will be conducted in habitats other than those described as appropriate. This will include lower velocity reaches and depositional zones. Therefore, surveys for Snake River physa in the study area will include thorough surveys in traditional habitat and less thorough surveys in all other habitat types. Efforts will be concentrated in permanently watered reaches and will encompass all substrate types. Exact survey locations may change from year to year depending upon environmental variables, previous years findings, and recommendations from the technical Team.

Survey Methods

Transects will be established through each identified habitat type, with 15 - 25 0.25-m^2 plots surveyed on each transect. Transect placement will not be random but rather will be located so as to encompass the desired habitat type. Plots will be randomly located along the habitat transects. Plots will be sampled using one of two methods, depending upon on-site conditions, macrophyte abundance, water depth, and water velocity.

> Method 1 - plots will be sampled with a Venturi suction dredge operated by a scuba diver. A 0.25-m^2 plot will be excavated to a depth no greater than 2.5 cm deep by the vacuum dredge. The sample will be transported through flexible tubing and collected in a 1,000 um sieve (see Weigel 2002, 2003).
>
> Method 2 - plots will be sampled through the removal of a random sample of stones that thoroughly represent the 0.25-m^2 plot; mollusks will be either hand removed or brushed into a small sample tray. Transect placement will be appropriate in the identified habitat types located at and below the boat launch rapids.

In bedrock and large boulder sections of the study area (*i.e.*, immediately below the old powerhouse downstream to the boat launch rapids) the placement of transects and 0.25-m^2 plots may not be appropriate. In these areas, divers will collect timed samples with the suction dredge for a period of 60 seconds. The scrubbing of underwater rock surfaces may be necessary to dislodge mollusks, and will require two divers. The suction dredge

will entrain dislodged mollusks and transport them to the surface. Survey points (rather than transects) will be established and all timed sample collections (n = 10 - 20) will occur within a 5-m radius of each point (see Frest and Johannes 1993). Survey point placement will be appropriate for the boulder and bedrock habitat located immediately below the old powerhouse downstream to the boat launch rapids (boulder and bedrock is the only habitat type within this reach).

The total number of transects and 5-m radius survey points will be determined following a site visit by Reclamation biologists and the selected university personnel in the spring of 2006 (prior to irrigation release flows).

Specimen Collection, Identification and Disposition

All samples collected will be preserved. Voucher specimens will be relaxed using menthol crystals, fixed and preserved in 95 percent ethyl alcohol. Voucher specimens will be appropriately labeled (*e.g.*, date, location, reference number, agency, site, etc.), stored in glass specimen jars, and transported to Albertsons College, Orma J Smith Museum of Natural History in Caldwell, Idaho, for initial sorting and species identification by John Keebaugh. All suspected Snake River physa or unknown Physids will be sent to Dr. T. Frest for species determination/verification. Upon completion of his analysis, Dr. Frest will return the specimens to the Museum of Natural History in Caldwell, Idaho.

Further genetic and morphological analysis of Physids determined to be Snake River physa by Dr. Frest will be conducted by two independent genetic labs. One half of the Snake River physa samples will be sent to Dr. Charles Lydeard at the University of Alabama and one half will be sent to Dr. Robert T. Dillon, Jr., College of Charleston, South Carolina, with review by Dr. Amy Wethington. The Museum of Natural History in Caldwell, Idaho, will be responsible for providing the genetic labs with the appropriate specimens. Representatives from each Physa sp., as determined by Dr. Frest, will be sent to each genetic lab for additional analysis and comparison purposes.

Additional Data Collection

Each transect and survey point will be described. This will include, in part, UTM coordinates, substrate descriptions, site descriptions, ambient temperatures, percentage of macrophyte cover, percentage of attached algae cover, and select water quality constituents (*i.e.*, water temperature, dissolved oxygen, pH, and specific conductance). UTM coordinates will be recorded for each plot. This may not be possible for plots located within the 5-m radius survey points, in which case one UTM reading at the center of the 5-m radius survey point may be sufficient. UTM coordinates will be necessary to allow for repeated surveys each successive year for the 3 years of surveys. Continuous water discharge data will be available from the USGS gaging station located at RM 674.

Technical Team

Technical Team Purpose

As Reclamation (2005) proposed in its amendment to the biological assessment, a Technical Team will be convened to assist in the Snake River surveys. The purpose of the Technical Team is to help design survey and study protocols, review and interpret the findings, and provide biological recommendations associated with the Snake River physa study. The Technical Team will be responsible for the scientific, logistical, and statistical merit of the study and will work to prepare and execute a scientifically and statistically sound study. This may include modifications to this study proposal.

Roles and Responsibilities

Technical Team:

- Prepare the study design.
- Review annual reports and make comments or changes to the survey plan.
- Review and clarify any issues that may result in deviations from the original study design.
- Meet and determine recommendations for future activities following the final reports.
- Prepare additional studies if Snake River physa are identified and verified.
- Present Reclamation and USFWS management with interim and final study results.
- Provide recommendations to Reclamation for opportunities and activities to minimize impacts by project operations if Snake River physa are found to be present.

Reclamation:

- Provide sample collection equipment, boat, and boat operator.
- Administer the dive contract and provide the contractors with the appropriate level of training for site specific snail collection.
- Provide logistical oversight and coordination during the survey process to ensure individual safety during specimen collection.
- Provide sample collection assistance if needed.
- Provide biologists to assist in Snake River physa surveys.
- Obtain the proper State and Federal (ESA Section 10) collection permits.

Montana State University:

- Select a graduate student(s) to collect field data, coordinate specimen disposition, and compile all data (initial and final identifications, genetic analysis, and morphological analysis).
- Collect, compile, and analyze data.
- Provide an annual survey results report to the Technical Team for review.
- Prepare a final, comprehensive report no later than 6 months following the final survey season and submit draft copies to each Technical Team member for review.

Dr. Lydeard, Dr. Dillon, and Dr. Wethington :

- Perform genetic and morphological analysis of reference specimens.
- Prepare a final species genetic and morphological analysis report and submit it to the Technical Team no later than 6 months following the final survey season and submit draft copies to each Technical Team member for review.
- Return all specimens to the Orma J. Smith Museum of Natural History at Albertsons College in Caldwell, Idaho.

Museum of Natural History:

- Perform initial sample sorting and identification.
- Send all suspected Snake River physa and unknown Physids to Dr. Terrance Frest for species verification.
- Send all verified Snake River physa and representatives of each Physa sp. to the above mentioned universities for genetic and morphological analysis.
- Catalog and store all specimens.

Dr. Terrance Frest:

- Provide species verification for all suspected Snake River physa.
- Return all specimens to the Orma J. Smith Museum of Natural History at Albertsons College in Caldwell, Idaho.

Technical Team Members

The Technical Team will consist of:

- Ryan Newman, Bureau of Reclamation
- Dana Weigel, Bureau of Reclamation
- Dave Hopper, USFWS
- Montana State University advisor and student
- Dr. Amy Wethington, Chowan College, North Carolina
- Dr. Robert T. Dillon, Jr., College of Charleston, South Carolina

- Dr. Charles Lydeard, University of Alabama
- Dr. Terrance Frest, Deixis Consultants, Seattle, Washington

Proposed Tentative Work and Activity Timeline

(subject to change pending study findings)

Activity	Date
First Technical Team Meeting in Burley, Idaho. Reclamation will provide initial draft of study design and Technical Team concept	Late Summer 2005
Comments on the draft study design and Technical Team concept due	Early Fall 2005
Cooperative Agreement prepared between Reclamation and Montana State University	Late Summer 2005
Second Technical Team meeting to discuss final study design and study logistics (probably conf. call)	Fall 2005
Cooperative Agreement, with Statement of Work (study design) attached, submitted to appropriate Reclamation CESU representative.	Late Summer / Early Fall 2005
CESU Cooperative Agreement in place with Montana State University	Fall 2005
Study initiated at Montana State University	Fall 2005
Initial study site review and site selection trip	Late March 2006
First 2006 data collection trip	August 2006
Second 2006 data collection trip	October 2006
Interim Report due to Technical Team	Early February 2007
Technical Team meeting	Early March 2007
Technical Team's comments due to Montana State University	Late March 2007
First 2007 data collection trip	August 2007
Second 2007 data collection trip	October 2007
Interim Report due to Technical Team	Early February 2008
Technical Team meeting	Early March 2008
Technical Team's comments due to Montana State University	Late March 2008
First 2008 data collection trip	August 2008
Second 2008 data collection trip	October 2008
Interim Report due to Technical Team	Early February 2009
Technical Team meeting	Early March 2009
Technical Team's comments due to Montana State University	Late March 2009
Draft Completion Report due to Technical Team	Early August 2009
Technical Team's comments due to Montana State University	Early September 2009
Technical Team meeting	Late August 2009
Final Completion Report due to Technical Team	December 2009
Final Genetic and Morphological Analysis Report due to Technical Team	December 2009
Potential Final Technical Team meeting to develop recommendations for future activities based on study results	Late January 2010

Technical Team Initial Meeting Outline (tentative)

- Meet in conference room at Minidoka Dam.
- Reclamation Burley office Water Operations personnel provide water operation presentation outlining hydrology and management of Snake River with emphasis at and above the above mentioned study site.
- Reclamation biologists provide presentation outlining past snail survey efforts within the study area.
- Dr. Terrance Frest provides presentation outlining the history of Snake River physa. This will include past collections/identifications, Taylor's findings, and species identification.
- Do site visit by land and by boat (depending upon flows).
- Reconvene in conference room, where Reclamation and FWS will explain the Technical Teams Roles and Responsibilities.
- Montana State University advisor and/or student will hand out study design paper.
- Technical Team members will comment on study design within two weeks of meeting.
- May have second meeting (likely involving conference call) discussing proposed changes, corrections and additions.

Proposed Specimen Chain of Custody (tentative)

- Montana State University (Dr. Billy Kerans) collect, record, and preserve specimens with Reclamations assistance as needed.
- Montana State University deliver specimens and collection data to Albertsons College, Museum of Natural History.
- John Keebaugh at museum sort all samples and identify all listed gastropods.
- John Keebaugh send all suspected Snake River physa and unknown Physids to Dr. Terrance Frest.
- Dr. Terrance Frest identify/verify all specimens and return all specimens to John Keebaugh.

- John Keebaugh send all verified Snake River physa specimens to Dr. Charles Lydeard, University of Alabama for genetic and morphological analysis, with review and assistance by Dr. Robert T. Dillon, Jr., College of Charleston, South Caroline, and Dr. Amy Wethington, Chowan College, Murfreesboro, North Carolina.
- Dr. Charles Lydeard return specimens to John Keebaugh at the Museum of Natural History at Albertsons College, Caldwell, Idaho.
- John Keebaugh catalog and store all the specimens at the Museum of Natural History pursuant to ESA Section 10 permit requirements.

Technical Team Contact Information

- Ryan Newman, 1359 Hansen Ave, Burley, ID 83318. (208) 678-0461.
- Dana Weigel, c/o NPNF Route 2 Box 475, Grangeville, ID 83530. (208) 983-5142.
- Dave Hopper, FWS 1387 S. Vinnell Way, Rm 368, Boise, ID 83709. (208) 685-6957.
- Dr. Charles Lydeard, U. of Alabama, 409 Mary Harmon Bryant Hall, Box 870345, Tuscaloosa, AL 35487. (205) 348-1792 NSF # - (202) 633-1747; clydeard@nfs.org; clydeard@bama.ua.edu.
- Dr. Robert T. Dillon, College of Charleston, Dept. of Biology, Charleston, SC 29424. (843) 953-8087.
- Dr. Amy Wethington, Science Dept., Chowan College, 200 Jones Drive, Murfreesboro, NC 27855. (252) 398-6216; wethia@chowan.edu; awething@aol.com.
- Dr. Terrance Frest, Deixis Consultants, 2517 NE 65th St, Seattle, WA 98115. tjfrest@earthlink.net; (206) 527-6764.
- Dr. Billy Kerans, Montana State University. (406) 994-3725.

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