Study 3.3

SPECIAL-STATUS MOLLUSKS

August 2011

1.0 Project Nexus

Yuba County Water Agency's (YCWA or Licensee) continued operation and maintenance (O&M) of the existing Yuba River Development Project (Project) has a potential to affect special-status mollusks.

2.0 Resource Management Goals of Agencies with Jurisdiction Over the Resource to be Studied

YCWA believes that four agencies have jurisdiction over special-status mollusks in the geographic area covered in this study proposal: 1) the United States Department of Agriculture, Forest Service (Forest Service) on National Forest System (NFS) land; 2) United States Department of Interior, Fish and Wildlife Service (USFWS); 3) California Department of Fish and Game (CDFG); and 4) State Water Resources Control Board Division of Water Rights (SWRCB). Each of these agencies and their jurisdiction, as understood by YCWA at this time, is discussed below.

Forest Service

The Forest Service's jurisdiction and applicable management goals are described by the Forest Service from page 59 to 76 in the Forest Service's March 2, 2011 letter to FERC providing the Forest Service's comments on YCWA's Per-Application Document, or PAD. The Forest Service's jurisdiction and management goals are not repeated here.

USFWS

USFWS's jurisdiction and goals and objectives are described by USFWS on pages 1 through 3 of USFWS's March 7, 2011 letter to FERC that provided USFWS's comments on YCWA's Pre-Application Document (PAD). USFWS's jurisdiction, goals and objectives are not repeated here.

CDFG

CDFG's jurisdiction is described by CDFG on page 1 of CDFG's March 2, 2011 letter to FERC providing CDFG's comments on YCWA's PAD. CDFG's goal, as described on page 2 of CDFG's letter is to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife and plant species.

SWRCB

SWRCB has authority under the federal Clean Water Act (33 U.S.C. §11251-1357) to restore and maintain the chemical, physical and biological integrity of the Nation's waters. Throughout the relicensing process the SWRCB maintains independent regulatory authority to condition the operation of the Project to protect water quality and the beneficial uses of stream reaches

consistent with Section 401 of the federal Clean Water Act, the Regional Water Quality Control Board Basin Plans, State Water Board regulations, CEQA, and any other applicable state law.

3.0 Existing Information and Need for Additional Information

YCWA reviewed CDFG's list of *State and Federally Listed Endangered and Threatened Animals of California* (November 2007); CDFG's list of *Special Animals* (October 2007); the Forests Service Pacific Southwest Region's Sierra Nevada Forests Management Indicator Species Amendment, and in particular Table E-11; the United States Department of Interior, Bureau of Land Management's (BLM) *Animal Sensitive Species List* (September 2006); and CDFG's California Natural Diversity Data Base (CNDDB).

Three mollusks are listed as either threatened or endangered (Trinity bristle snail, *Modanenia setosa*; Morro shoulderband snail, *Helminthoglypta walkeriana*; and white abalone, *Haliotis soenseni*) under the federal Endangered Species Act, and the Project's general vicinity is outside the range of these species.

CDFG does not list any mollusks as California Species of Special Concern.

The Forest Service lists seven mollusks as Forest Sensitive: California floater *(Anodonta californiensis)*; Great Basin rams-horn (*Hellisoma newberryi newberryi*); topaz juga *(Juga acutifilosa);* scalloped juga *(J. occata)*; montane peaclam *(Pisidium ultramontanum)*; Owens Valley springsnail *(Pyrgulopsis ownesensis)*; and Wong's springsnail *(P. wongi)*). None of these species are reported to occur in Plumas National Forest (PNF). Only the California floater and Great Basin rams-horn are reported to occur in the Tahoe National Forest (TNF), but the Great Basin rams-horn is only found on the east side of the Sierras in the Truckee River basin. None are reported as occurring in the PNF near the Project. The Forest Service does not list any mollusks as Management Indicator Species.

Table 3.0-1. Target Forest Sensitive mollusk species.

Common Name *Scientific Name*	Habitat Requirements	Current Distribution by State
California floater *Anodonta californiensis*	Shallow muddy or sandy habitats in large rivers, reservoirs, and lakes	AZ, CA, ID, V, OR, UT, WA, WY
Great Basin rams-horn *Hellisoma newberryi*	Large lakes, slow rivers, and spring-fed creeks; burrows in soft mud	CA, NV, OR, WY
Topaz juga *Juga acutifilosa*	Sand and gravel substrates in spring-influenced streams and lakes and occasionally in large spring pools	CA, OR
Scalloped juga *J. occata*	Cold, moving waters of large rivers, often spring-influenced, with stable boulder and cobble substrates	CA
Montane peaclam *Pisidium ultramontanum*	Sand and gravel substrates in spring-influenced streams and lakes and occasionally in large spring pools	CA, OR
Owen's Valley springsnail *Pyrgulopsis owensensis*	Small springs and spring runs, typically in watercress	CA, NV
Wong's springsnail *P. wongi*	Perennial seeps and small- to moderate-sized springs and spring runs, only in flowing waters	CA, NV

Sources: Duncan (2008), Frest and Johannes (1999), Furnish (2005).

In a letter dated May 26, 2011, the Forest Service identified that 10 additional species are proposed for Forest Sensitive status. These species are highlighted in Table 3.0-2. If one or more of the species is designated Forest Sensitive prior to initiation of fieldwork, the species will be targeted during YCWA's fieldwork for this study. Also, if one or more of the species is designated Forest Sensitive prior to preparation of the final report for this study, the report will note the change in status. YCWA does not intend to reinitiate fieldwork for a species if its status changes after fieldwork has begun.

Table 3.0-2. Recently proposed Forest Sensitive species by the Forest Service.

Common Name	Scientific Name
Canary duskysnail	*Colligyrus convexus*
Western ridgemussel	*Gonidea angulata*
Chace juga	*Juga chacei*
Black juga	*Juga nigrina*
Kneecap lanx	*Lanx patelloides*
Freshwater pearlshell	*Margaritifera falcata*
Pristine springsnail	*Pristinicola hemphilli*
Willow Creek pyrg	*Pyrgulopsis lasseni*
Warner Spring shoulderband snail	*Rothelix warnerfontis*
Artemesian rams-horn	*Vorticifex effuses*

CDFG's CNDDB includes reports of two mollusks in the vicinity of the Project (tight coin, *Ammonitella yatesii* and Button's Sierra sideband, *Monadenia mormonum buttoni*), neither of which is special-status.

Based on this existing information, the only special-status mollusks that have a remote potential to be affected by the Project are Forest Sensitive species, and these must occur on federal land managed by the Forest Service to be considered Sensitive. Incidental observations during YCWA's relicensing studies and low level mollusk surveys coordinated within portions of YCWA's Stream Fish Populations Upstream of Englebright Reservoir Study (Study 3.8) on federal land managed by the Forest Service would provide site-specific data at a level of effort consistent with the low likelihood that special-status mollusks occur in the vicinity of the Project.

CDFG advised YCWA that invasive mussels, such as zebra mussel (*Dreissena polymorpha*) and quagga mussel (*Dreissena rostriformis bugensis*) are not known to occur in the vicinity of the Project. New Zealand mud snail (*Potamopyrgus antipodarum*) is a concern to CDFG (Per. Comm., Lisa Corvington, CDFG Invasive Species – Quagga and Zebra Mussel Program, May 10, 2010.). According to USGS website on May 12, 2010, which is updated daily (<http://nas.er.usgs.gov/taxgroup/mollusks/newzealandmudsnaildistribution.aspx>), the only known occurrence of New Zealand mud snail in the vicinity of the Project on May 12, 2010, was in the American River downstream of Lake Natoma.

4.0 Study Goals and Objectives

The goal of this Special-Status Mollusks Study is to provide information concerning Forest Sensitive mollusk species within reservoirs and stream reaches potentially affected by the Project.

The objective of the study is to document the presence/absence of Forest Sensitive mollusk species relative to Project features.

5.0 Study Methods and Analysis

5.1 Study Area

For the purpose of this study, the study area includes National Forest Service (NFS) lands in: 1) the Middle Yuba River from and including Our House Diversion Dam Impoundment to the confluence with the North Yuba River, 2) Oregon Creek from and including the Log Cabin Diversion Dam Impoundment to the confluence with the Middle Yuba River, 3) surrounding New Bullards Bar Reservoir. NFS land does not occur downstream of these areas.

If YCWA proposes an addition to the Project, the study area will be expanded if necessary to include areas potentially affected by the addition.

5.2 General Concepts

The following general concepts and practices apply to the study:

- Personal safety is the most important consideration of each fieldwork team.
- Licensee will make a good faith effort to obtain permission to access private property where needed well in advance of entering the property.
- Field crews may make minor variances to the FERC-approved study in the field to accommodate actual field conditions and unforeseen problems. When minor variances are made, Licensee's field crew will follow the protocols in the FERC-approved study.
- When Licensee becomes aware of major variances to the FERC-approved study, Licensee will issue an e-mail to the Relicensing Contact List describing the variance and reason for the variance. Licensee will contact by phone the Forest Service (if the variance is on National Forest System land), USFWS, SWRCB and CDFG to provide an opportunity for input regarding how to address the variance. Licensee will issue an e-mail to the Relicensing Contact List advising them of the resolution of the variance. Licensee will summarize in the final study report all variances and resolutions.
- Licensee's performance of the study does not presume that Licensee is responsible in whole or in part for measures that may arise from the study.
- Global Positioning System (GPS) data will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3 meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and Licensee's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon

request, GIS maps will be provided to agencies in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata, that is useful for interactive data analysis and interpretation. Metadata will be Federal Geographic Data Committee (FGDC) compliant.[1]

- Licensee's field crews will record incidental observations of aquatic and wildlife species observed during the performance of this study. All incidental observations will be reported in the appropriate Licensee report (e.g., incidental observations of special-status fish recorded during fieldwork for the Special-Status Turtles – Western Pond Turtle Study will be reported in Licensee's Stream Fish Populations Study report). The purpose of this effort is not to conduct a focus study (i.e., no effort in addition the specific field tasks identified for the specific study) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of the study.
- Field crews will be trained on and provided with materials (e.g. Quat) for decontaminating their boots, waders, and other equipment between study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g. zebra mussel, *Dreissena polymorpha*). This is of primary importance when moving: 1) between tributaries and mainstem reaches; 2) between basins (e.g. Middle Yuba River, Yuba River, and North Yuba River); and 3) between isolated wetlands or ponds and river or stream environments.

5.3 Study Methods

The study methods will consist of the following four steps: 1) identify study sites; 2) conduct field surveys; 3) data quality assurance/quality control (QA/QC); and 4) report preparation.

5.3.1 Step 1 – Identify Study Sites

YCWA will select a single sampling location for Forest Sensitive mollusks on each river reach identified in the Stream Fish Populations Upstream of Englebright Dam Study (Study 3.8) on which NFS land occurs. Special-status mollusk sampling sites will be co-located with Stream Fish Population Upstream of Englebright Dam Study sites, and if a reach includes more than one stream fish sampling site on NFS land, YCWA will randomly select one of the sites in the reach for special-status mollusk sampling. In addition, YCWA will select three sites on NFS land for special-status mollusk sampling along the shoreline of New Bullards Bar Reservoir. Each reservoir site will have reasonable boat or foot access. YCWA will invite interested and available Relicensing Participants into the field to comment on the selected sites.

5.3.2 Step 2 – Conduct Field Surveys

YCWA will obtain all necessary permits prior to performing fieldwork.

Surveys will follow established protocol methods for determination of presence or absence of mollusk species. Stream sites will be surveyed by two-person teams, with one surveyor on either

[1] The Forest Service and CDFG each have requested that a copy of the GIS maps be provided to them when the maps are available.

side of the stream. Surveys will be done in an upstream direction. Surveyors will search the edges of the streams and all water to approximately 60 centimeters (cm) of depth. All substrate, including gravel, cobble, boulders, woody debris, and aquatic and emergent vegetation will be searched. Reservoir sites will be surveyed by two-person teams, with one surveyor searching the water along the shoreline and one searching in deeper water, up to 60 cm in depth. Both surveyors will complete a visual search of the land adjacent to the selected shoreline. A glass-bottom (i.e., unbreakable acrylic) observation bucket will be used to increase the amount of underwater substrate searched and to look for mollusks in deeper areas.

If deeper habitat is found within a site or there is known potential special-status mollusk habitat near the site, such as a spring near the stream's edge, snorkel/scuba gear may be used. All substrate types, including silt/mud and coarser mineral substrate, woody debris, and aquatic vegetation, will be sampled or subsampled. Areas of fine substrate will be subsampled by excavating to a depth of 5-10 cm.

Each site length will be a minimum of 100 meters or searched for a minimum of 2 hours' sampling effort, whichever is less. Both length of unit and time of survey will be recorded. Each site will be surveyed by a two-person team; therefore, each site will have a minimum of a four person-hour search effort. Although these methods yield qualitative results (i.e., presence/absence and relative abundance), such timed surveys have been found to be better at determining presence or absence of the greatest number of aquatic mollusk species within an area (Brim Box 2002).

Aquatic gastropods (i.e., snails and limpets), when found, will be field identified to family, genus, or species (i.e., only to the extent necessary to rule out a special-status species). Mussel shells, if present, will be collected as voucher specimens (due to their characteristic shells, it will not be necessary to collect live mussels). Physical habitat characteristics will be recorded, including water temperature, substrate composition, estimated mean water velocity, estimated discharge, channel gradient, width, and mean depth. The location at which the specimens are found will be noted using GPS coordinates.

Species identifications and verification of field identifications for bivalves will be made using the keys in Burch (1975a, 1975b) and McMahon (1991) to the extent necessary to rule out a special-status species. Identifications and verification of field identifications for gastropods will be made using the keys in Burch (1989), McMahon (1991), and Frest and Johannes (1999).

5.3.3 Step 3 – Prepare, Format and Quality Assurance/Quality Control Data

Following field surveys, YCWA will develop GIS maps depicting the location of surveys, special-status mollusk occurrences, project facilities and features, and other information collected during the study. Field data will then be subject to quality assurance and quality control (QA/QC) procedures, including spot-checks of transcription and comparison of GIS maps with field notes on locations of any special-status mollusk occurrences.

5.3.4 Step 4 – Prepare Report

YCWA will prepare a report that includes the following sections: 1) Study Goals and Objectives; 2) Methods and Analysis; 3) Results; 4) Discussion; and 5) Description of Variances from the FERC-approved study proposal, if any. YCWA plans to make the report available to Relicensing Participants when completed. The report will be included in YCWA's License Applications as appropriate.

6.0 Study-Specific Consultation

This study proposal includes the following study-specific consultation:

- YCWA will invite interested and available Relicensing Participants into the field to comment on the selected Forest Sensitive mollusk sampling sites.
- YCWA will consult with the Forest Service prior to initiating fieldwork and final report preparation to confirm the status of the 10 species listed in Table 3.0-2.

7.0 Schedule

YCWA anticipates the schedule to complete the study as follows assuming FERC issues its Study Determination by September 16, 2011 and the study is not disputed by a mandatory conditioning agency:

Select sample sites (Step 1)..... May 2012
Conduct field surveys (Step 2)..... June - July 2012
Data QA/QC (Step 3)..... August 2012
Prepare Report (Step 5)..... September 2012

8.0 Consistency of Methodology with Generally Accepted Scientific Practices

The methodologies described above for water temperature monitoring, reservoir profiling, and meteorological data collection are typical of recent relicensings in California.

9.0 Level of Effort and Cost

YCWA estimates the cost to complete this study in 2011 dollars is between $35,000 and $45,000.

10.0 References Cited

Brim Box, J. 2002. A survey of the aquatic mollusk species of the Lassen National Forest, Final Report submitted to the USDA/FS, June 21, 2002. Contract FSA 01-IA-11050650-020. Susanville, CA.

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