

Truckee Regional Aquatic Invasive Species Prevention Program

2011 Annual Report



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INTRODUCTION

The prevention and control of aquatic invasive species (AIS) continues to be one of the most challenging issues facing resource managers in the western United States. While state and federal officials have implemented control measures and programs on a broad scale, the implementation of programs to protect specific water bodies has primarily been left to local governments and resource managers. The discovery of quagga mussels in Lake Mead in January of 2007, and their subsequent spread into Southern California, has placed significant responsibilities on local agencies to determine how best to protect local water resources from potentially devastating infestations. While quagga mussels, and the closely related zebra mussel, have been in the Great Lakes since the late 1980's their relatively recent introduction and spread in western states has elevated the importance of aquatic invasive species in general and motivated many resource managers to evaluate the risks associated with other invasive species. The potential spread of invasive species such as Asian clam, Eurasian watermilfoil, New Zealand mudsnail, Hydrilla, and other mobilizing invasive species present their own resource and management concerns that are best addressed on a watershed scale. This is particularly true for AIS given their ability to travel through open water systems within a watershed.

In 2010, the Tahoe Resource Conservation District (Tahoe RCD) piloted the Truckee Regional Aquatic Invasive Species Prevention Program (TRAISPP) with funding provided by the Truckee River Fund (TRF). The principle objectives of the pilot program were to better understand invasive species issues in the region, provide outreach and education on invasive species, organize regional resource managers, evaluate usage patterns, and evaluate the feasibility of watercraft inspections and decontaminations. The eight water bodies included in the program are listed in Table 1 and identified on the regional map below. The 2010 season benefited from broad support amongst resource managers, county representatives, utility managers and boaters.

Table 1. Program Waterbodies	
Donner Lake	Stampede Reservoir
Independence Lake	Boca Reservoir
Webber Lake	Prosser Reservoir
Martis Creek Lake	Lake of the Woods

Building on the success of the program's first year, Tahoe RCD set goals and obtained funding from TRF for continued implementation of the TRAISPP in 2011. Tahoe RCD hired a program coordinator and 6 seasonal watercraft inspectors.

Coordination efforts have resulted in a formal Memorandum of Understanding and letters of support, as well as, funding and in-kind contributions from partner agencies. The geographical scope of coordination has extended through the entire Truckee River watershed, from Lake Tahoe to Pyramid Lake. The degree of coordination and cooperation among partner agencies underscores the importance and need for regional management efforts.

PROGRAM OBJECTIVES

In 2011, the principle objectives of the program were to better understand invasive species issues in the region, provide outreach and education on invasive species, organize regional resource managers, evaluate usage patterns, and evaluate the feasibility of watercraft inspections and decontaminations. More specifically, the proposal submitted to the Truckee River Fund identified Project Goals which are presented in this section of the report. Compliment to these is a brief summary of accomplishments for each of the identified Project Goals. Greater detail is provided in the following sections of the report that specifically address many of the identified goals and outcomes.

Project Goals

- 1) Utilize experience of pilot program to develop and solidify a long-term, multi-source funding structure for the sustainable implementation of the Aquatic Invasive Species (AIS) program.*

Accomplishments: Tahoe RCD partnered with the Truckee River Watershed Council to develop an AIS ordinance and to work directly with staff in Placer, Sierra and Nevada Counties and the Town of Truckee to introduce this ordinance for County or Town approval. Enactment of the ordinance will enable the County/Town to charge annual fees for the watercraft inspection program, thereby facilitating a sustained funding stream for the program.

- 2) *Solidify multi-party collaboration and management of the Truckee Regional Aquatic Invasive Species Prevention Program (TRAISPP).*

Accomplishments: Tahoe RCD and the Truckee River Watershed Council (TRWC) organized a jurisdictional working group comprised of the Town of Truckee and Nevada, Placer and Sierra Counties. Through the efforts of this group, a Draft Ordinance for mandatory inspections was produced as well as the framework for a governing structure for the administration of the program.

- 3) *Build on the success of the AIS pilot prevention program and coordination efforts within the Truckee River Watershed.*

Accomplishments: The stakeholder group developed during the 2010 program was expanded in 2011. Interest and support of the program is considerable and fostering regular participation at stakeholder meetings was achieved remarkably more this year than in 2010. Stakeholder meetings included interactive discussions with input and information sharing promoted and cultivated to create a mechanism for collaboration in the evolution of the program throughout the season.

- 4) *Continue to minimize risk of infestation with implementation of the watercraft inspection program.*

Accomplishments: Tahoe RCD inspectors provided free voluntary watercraft inspections at Boca, Prosser and Stampede Reservoirs and Donner Lake. There were 7,757 interactions with boaters and 4,197 pledges signed. Of these, 85 vessels were identified as high risk and offered a free decontamination. No vessels were found to have quagga or zebra mussels aboard, and many dozens of boaters were served by having their vessels bleach decontaminated by TRAISPP inspectors.



- 5) *Continue to develop community support and understanding with implementation and refinement of a comprehensive AIS education and outreach plan in the Truckee River Watershed region.*

Accomplishments: In 2011, ramp-side boater education was complemented by public AIS forums in July and November.

- 6) *Develop a professionally facilitated Strategic Plan for the TRAISPP to direct future implementation and funding strategies.*

Accomplishments: TRAISPP members engaged in a planning process to identify the program's direction, allocation of resources and operational procedures. TRAISPP adopted a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) as a beginning point of reference. This should be considered a preliminary effort as greater planning will need to occur as the program matures and continues. Utilizing results from the risk analysis and proposed management alternative, a Strategic Plan was developed to guide implementation over a 5-year period.

Program Development

The presence of watercraft inspectors at Donner Lake and Prosser, Boca and Stampede Reservoirs was a key objective for the 2011 program work plan. Following the 2010 pilot season, the Tahoe RCD felt confident that maintaining watercraft inspectors at those four water bodies was community-supported and contributed to the prevention of aquatic invasive species introductions. Therefore, six full-time, seasonal inspectors were hired in addition to one full-time, year-round Program Coordinator. In addition to maintaining the momentum of watercraft inspections, a significant focus was on program development to identify the program components needed to create a sustainable and functional program. A necessary first step was to complete a comprehensive risk analysis based on extensive review of the best available science. Utilizing data gathered from the "Inventory of aquatic invasive species and water quality in lakes in the Lower Truckee River Region: 2010" conducted by University of Nevada, Reno (UNR), risk of introduction and establishment for specific AIS in specific water bodies within the Truckee River watershed was identified and ranked through a facilitated stakeholder process. In this process presentations were given by Dr. Sudeep Chandra with University of Reno, NV (UNR) and DR. Lars Anderson with USDA Agricultural Research Service to provide an overview of existing and potential aquatic

invasive species threatening the Truckee area. This information was used to develop management alternatives.

The development and selection of a management alternative or strategy for TRAISP followed the risk analysis discussions. In general, it was determined that the aquatic invasive species risk of introduction is high in Truckee due to boater use patterns and the risk of establishment is moderate based on habitat suitability. With this information as a foundation, a menu of program options was presented to the stakeholders. These program options spanned a continuum of low to high risk programs. For example, a low risk program includes options like lake closure and restricted access, whereas a high risk program includes options like voluntary inspections and education only. From selected program options, a range of management alternatives were selected and fell within the low to moderate risk level. This decision was based on two factors – cost and risk of establishment. The selected management alternative for TRAISPP is broad in scope and includes not only possibilities for the Watercraft Inspection Program but also early detection monitoring and control components for a full integrated AIS program. Appendix A represents the proposed management approach used to advance discussions of program development with jurisdictional agencies.

Following the development of Management Alternatives with the stakeholder group, the Tahoe RCD and Truckee River Watershed Council (TRWC) organized a jurisdictional working group comprised of the Town of Truckee and Nevada, Placer and Sierra Counties. Through efforts of this group, a Draft Ordinance for mandatory inspections was produced as well as the framework for a governing structure for the administration of the program. The Draft Ordinance can be found in Appendix B. Recognizing the need for a formal governing structure, this working group advocated for the development of a Joint Powers Authority (JPA) between the Town of Truckee and the 3 counties. The purpose and need for the formation of a governing body is to 1) simplify the adoption of one cross-jurisdictional ordinance, 2) streamline program administration including fee collection and protocol development, and 3) coordinate enforcement action. This concept was submitted to the legal councils of each jurisdictional at the end of 2011 and the Tahoe RCD and TRWC will

continue to pursue this direction in 2012. Preliminary meetings indicate that there is support for the proposed management alternative, draft ordinance and governing structure. The primary goal for 2012 is to finalize these components by June 2012.

Agency Coordination

Agency coordination and stakeholder collaboration was an important part of program development. It is central to the success of a program that involves multiple jurisdictions, landowners/managers and public interest. The stakeholder list that began during 2010 program development grew in 2011 and can be found in Appendix C of this report. Interest and support of the program is considerable and fostering regular participation at stakeholder meetings was achieved remarkably more this year than in 2010. Stakeholder meetings were held monthly to facilitate discussions on risk analysis, programmatic direction, strategic planning and funding opportunities for regional AIS prevention. The meetings included interactive discussions with input and information sharing promoted and cultivated to create a mechanism for collaboration in the evolution of the program throughout the season.

Watercraft Inspections



Watercraft Inspections & Boater Education

Extensive coordination and cooperation occurred with the Tahoe program including the use of the same inspection protocols, decontamination procedures and stations, boater surveys and potential ordinance language. Watercraft inspections were an explicit objective of TRAISPP during 2011 such that measures were implemented to provide some protection against AIS introduction in

the region. The inspection program was implemented on May 1, 2011 and continued through the middle of October 2011. Boating was observed continuously on Boca, Stampede and Prosser Reservoirs and Donner Lake from the time when snow first melted off the access roads in the spring, to the time when snowfall blocked access in the fall. Boaters in this region are hardy and on the waters even during periods of snowfall and rain. The realization of this dynamic was integrated into every aspect of the inspection program and the TRAISPP Pass sticker was implemented for a second year under this philosophy. The TRAISPP Pass solicited participation and commitment from boaters to ensure that their boats were Clean, Drained and Dry prior to launching. Boaters were given the opportunity to sign a pledge and receive the sticker which streamlined access on their subsequent visits. By giving the inspector the ability to empower the boater with knowledge of how to prevent the spread of AIS the interaction between the inspectors, boaters and anglers was far more productive. In total, 4,197 pledges were signed.

At the 4 primary boat ramps in the region, which include Donner Lake, Stampede, Prosser and Boca Reservoirs, inspectors interacted with 7,757 times with boaters while conducting inspections, surveys and boater education. Of these boaters, 85 vessels were identified as high risk and offered a free decontamination. No vessels were found to have quagga or zebra mussels aboard, and many dozens of boaters were served by having their vessels bleach decontaminated by TRAISPP inspectors on the ramps. A number of vessels were cleaned of aquatic weeds prior to launching. The prevention of aquatic invasive weeds into Donner, Stampede, Prosser and Boca water bodies is a significant accomplishment considering no aquatic weeds were found in the 2010 or 2011 survey of these water bodies. In general, staff observations indicated that the majority of boaters were aware of AIS prevention measure and have been practicing the standard “Clean, Drain and Dry” protocols. Boater response and community support show that boater education programs are very successful in the Truckee region. Consequently, the presence of watercraft inspectors at launch sites provided and excellent opportunity to interact with the various user groups present at each of the waterbodies. In addition to performing inspections, boaters were asked questions related to launching as to better understand boater usage patterns at each of the water bodies.

Watercraft inspections were performed during peak days and times; therefore, not all boaters or activities can be accounted for in the results presented. Stampede Reservoir was consistently the busiest of all the waters throughout the season, with 4,760 interactions. Donner Lake was second most utilized water body in the region with 2,572 interactions, followed by Prosser and Boca Reservoirs. These use patterns mirror the 2010 data. It is likely that the closure of the dam road at Boca Reservoir caused interaction numbers to drop at Boca Reservoir. Access to the developed launch facility at Boca was difficult due to the road closure, which resulted in boaters launching directly from the eastern shoreline. Shoreline launching at Boca Reservoir has been identified as a “risk point” for that water body as it is difficult to intercept and inspect boats that are not funneled through a designated launch site. This issue was addressed in 2011 by having a roving watercraft inspector walk the shoreline and interact with as many boaters as possible. In addition, the Tahoe RCD will begin facilitating conversations with the USFS Truckee Ranger District to identify possible opportunities for access management at this location.



Boca Reservoir: Shoreline Launching on East Shore

Early Detection Monitoring

Early detection monitoring is an important part of AIS management as it allows for the quick response necessary to prevent further spread and impact by catching the establishment of AIS early. The objective of this project is to identify water bodies within the Truckee River region (Donner Lake, Stampede Reservoir, Boca Reservoir, Prosser Reservoir, Marlette Lake, Martis Creek Lake, Rye Patch Reservoir, Spooner Lake, Lahontan Reservoir) that have already established invasive invertebrate and plant communities, and to identify and document recent

invasions. Additionally, the project will test the hypothesis that bivalve invasion is dependent not only on calcium concentration in the water column but also on the concentration of calcium in sediment pore-water. This is year two of the project and built upon data collected in 2010. Specifically, the goals were to:

1. Use the method developed by Rammer and Chandra (2010) to continue shoreline surveys for invasive invertebrates (Dreissenid mussels, New Zealand mudsnail, Asian clam and crayfish) and invasive plant (Hydrilla and Eurasian water milfoil) species.
2. Sample lakes for the DNA of Dreissenid mussel veligers to document invasions using zooplankton net hauls.
3. Quantify the concentration of calcium in the water column of each lake.
4. Collect sediment pore-water from Donner Lake's "clam patch" and from other locations around the lake to determine if the concentration in the sediment pore-water can influence bivalve introduction.

The results of the invasive species shoreline surveys suggest that no new invasive species have arrived since 2010. Additionally, veliger DNA has not been detected in any of the lakes indicating that Dreissenid mussels have not been introduced. This project provides baseline data on the status of invasive species in the lakes of the Truckee River Watershed. It is important to continue this monitoring to document any new invasions. Knowledge of the time of invasions can give researchers and managers the opportunity to document changes in lake processes caused by the invasion of exotic species. "Inventory of Aquatic Invasive Species and Water Quality in the Lower Truckee River Region: 2011" provides detailed descriptions of the methods and results and can be found at TruckeeBoatInspections.com.

Boater Surveys

The presence of watercraft inspectors at launch sites provided an excellent opportunity to interact with the user groups of each of the water bodies. In addition to performing inspections,

Table 2. Total Boater Interactions	
Water Body	Interactions
Stampede Reservoir	4,760
Boca Reservoir	172
Prosser Reservoir	253
Donner Lake	2,572
Total	7,757

boaters were surveyed to better understand the usage patterns at each of the water bodies. The summary of results characterizes a general representation of boater information in the four water bodies where inspections/interactions occurred during 2011.

Table 3. Boater Registration	
Alaska	14
Arizona	7
California	3,170
Colorado	5
Idaho	2
Illinois	1
Montana	3
New Mexico	3
Nevada	2,173
North Carolina	2
Oregon	24
South Dakota	1
Texas	2
Utah	4
West Virginia	1
Wisconsin	5
Unknown	2,340

Watercraft inspections were performed during peak days and times; therefore, not all boaters or activities can be accounted for in the results presented. However, after careful consideration of the data analysis, the results do seem reasonable. Table 2 provides a breakdown of inspections/interactions at each of the 4 water bodies. Stampede was the busiest of all of the waters consistently throughout the entire season. Donner Lake was busy primarily during the heart of the season, but was slow early and late in the season. Prosser is a much less visited water overall and is primarily used by anglers. The road that crosses Boca dam was closed from April through December of 2011 to help provide protection to the public and lands downstream; therefore the launch ramp was not accessible to boaters. The small number of Boca launches

represents those shoreline launches that inspectors were able to intercept.

The majority of boaters originated in California with the next largest visitation from Nevada. Interestingly, boaters traveled from as far away as Alaska and West Virginia, and also traveled from areas with notoriously infected water bodies such as Wisconsin and Illinois.

Table 4 provides a breakdown of use across different activities and water bodies. AIS prevention efforts are most effective when they can be tailored to the specific type of boater using the water. Each boating type has a different pattern of use and vector types for transmission of AIS to other

waters. Staff often noted different attitudes associated with different user groups with respect to AIS prevention.

Angler's vessels are typically quick to inspect due to their general simplicity and smaller size. Personal watercraft (PWC) boaters can launch off shorelines easily in the Truckee region so with the limitations in the inspection program, capturing all these users probably fell short. Of the users in this group that inspectors interacted with, they were generally less aware of AIS issues than the other boaters and typically were on the water in the mid-day hours. Pleasure boaters were often educated on the issues, supportive of the program goals and on the water in the mid-day hours. Ski/Wakeboard boaters also were generally knowledgeable and supportive. Stampede and Prosser had the most use by anglers. Boca was found to be the most popular for skiing, wakeboarding, and PWC boaters. Donner was the most popular for the pleasure boaters, but also had the most diverse mix of boaters.

Table 4. Water Body Usage

Water Body	Angling	Canoe	Personal	Pleasure	Pontoon	Sail	Wakeboard	N/A
Stampede Reservoir	1,185	1	1	418	13		454	2,688
Boca Reservoir	96			5	1		1	69
Prosser Reservoir	5	1		1				246
Donner Lake	348	1	162	284	10	42	257	1,468
TOTAL:	1,634	3	162	708	24	42	712	4,471

STRATEGIC PLAN

Strategic planning is important to the continued success of the program and facilitates good management of a process. The Tahoe RCD recognizes that a good strategic framework outlines the overall goals, objectives and direction of a program, which is appropriate for the initiation and development of a program. For the purposes of TRAISPP a simplified strategic planning process was developed as a tool for guiding the pilot program. TRAISPP members engaged in a planning process to identify the program's direction, allocation of resources and operational procedures.

Various analysis techniques are used in strategic planning and TRAISPP adopted a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) as a beginning point of reference. This should be considered a draft effort as much greater planning will need to occur as the program matures and continues. Utilizing results from the risk analysis and proposed management alternatives, a Strategic Plan was developed to guide implementation over a 5-year period. This Plan can be found in Appendix D.

PROJECT GOALS - 2012

TRAISPP intends to maintain the implementation of watercraft inspections and decontaminations, refine a comprehensive education and outreach program for AIS prevention and continue early detection monitoring over the next year. Fundamental goals of the program are to establish a mandatory inspection program, identify an organizational entity to lead the TRAISPP, secure additional MOU agreements from stakeholder entities. Identify locations for inspections and decontaminations of infested vessels, increase monitoring of area waters and document the results of early detection monitoring.

ACKNOWLEDGMENTS

The ongoing success of this program will be the result of the continued support and contributions from the agencies, jurisdictions, stakeholders and community members of the Truckee Region. In 2011, the Truckee River Watershed Council contributed significantly to program development by working with Tahoe RCD and local jurisdictions to create and implement AIS ordinances. The Tahoe RCD would like to extend its sincere appreciation to all of the individuals and agencies that participated in stakeholder meetings, and those that provided resources, suggestions, comments and encouragement to the program. In particular, the Tahoe RCD would like to thank the Truckee River Fund for providing the resources to initiate this program and the boating community for their patience, understanding, and input.

