

Zebra Mussel Volunteer Monitoring Program in California

Final Report

Project period: January 1, 2005 through December 31, 2005

Submitted to:

Pacific States Marine Fisheries contract # 05-80

USFWS Grant Number #113322J009

Submitted by:

Mary Pfauth, Steve Wells, and Mark Sytsma

Zebra Mussel Substrate Project in California:

Final Report for Period January 1 through December 31, 2005

Introduction

The zebra mussel (*Dreissena polymorpha*), an invasive freshwater bivalve, is responsible for extensive ecological and economic impacts in areas in which they are not native. Since its initial discovery in the Great Lakes region of the U.S. in the late 1980's, this species has spread to more than 20 states. Its rapid spread has been facilitated by transport of adult mussels on boats, and veliger movement by water current from infested to uninfested portions of watersheds. The primary goal of the Zebra Mussel Monitoring Program is early detection of zebra mussels in western waterways through volunteer monitoring and public outreach and education. One of the specific goals for 2005 was to expand the geographic coverage of the program into California.

Integration into existing volunteer monitoring network

In 2005, the state of California became the twelfth state enrolled in the PSU Zebra Mussel Monitoring Program with 13 new active volunteers monitoring 22 substrates (Figure 1). There are currently 117 total active volunteers monitoring 235 total substrates in the states of Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, and Washington. There was a 20% (ca.) increase from 2004 to 2005 regarding both the number of volunteers and substrates actively enrolled in the Zebra Mussel Monitoring Program. New enrollment in 2005 was greatest in California in relation to the 11 other states involved in the Zebra Mussel Monitoring Program. In California, no zebra mussels were reported on the substrates between January 1 and December 31, 2005. The Los Angeles Department of Water and Power reported a positive sighting for New Zealand mudsnails in the Bishop Creek below Pleasant Valley Reservoir on 10/18/05.

Volunteer monitors are effective in education and outreach. The majority of volunteers in California represent private marinas (77%) and hence, an important link to the California boating community. California volunteer monitors talked with a total of

2005 Final Report – CA Zebra Mussel Monitoring

106 people about zebra mussels during 2005 – thus effectively expanding the volunteer monitoring population well beyond the number officially participating in the program.

Reporting of monitoring data is highest in July and lowest in November and December. This is typical of reporting patterns in past years and reflects increased activity during warmer weather and restricted activity during cold, winter months. Those monitors who do not wish to check the substrate during winter are put on a “Winter Hold” status during which they are not sent the monthly reminder.

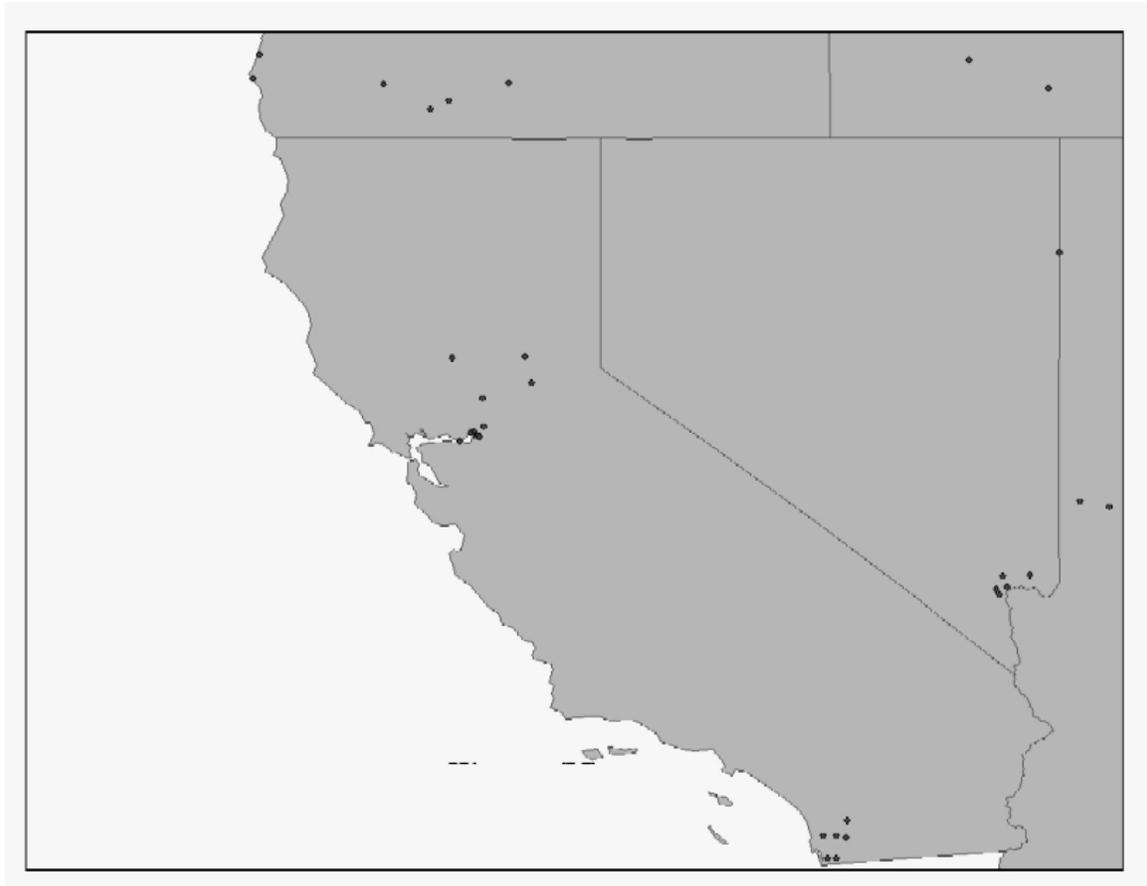


Figure 1. PSU Zebra Mussel Monitoring locations in California for 2005.

New volunteer recruitment in California

A total of 39 new zebra mussel substrates were sent to 28 new volunteers in California between January 1, 2005 and December 31, 2005. Thirteen of these new volunteers are officially enrolled and are actively monitoring 22 substrates throughout

2005 Final Report – CA Zebra Mussel Monitoring

California. Fifty percent (11) of active substrates in California were deployed in the Central Valley of California, while southern California received 41% (9) of new active substrates. Rollins Lake, located in Nevada County, received the remaining 9% (2) of new active substrates. In the Central Valley, active monitoring has been established in the Sacramento River, San Joaquin River, South Fork of the American River and the Mokelumne River. In southern California, the Owens Valley Aqueduct, Lake Sutherland, Haiwee Reservoir, Crowley Lake, Murray Reservoir, Miramar Reservoir, El Capitan Reservoir, Lower Otoy Lake and the San Vicente reservoir are actively being monitored. Currently, 8 California counties have active zebra mussel monitoring within the PSU program (Table 1). Seventy-seven percent (10) of new active California volunteers represent marinas, 15% (2) are water and power companies and 8% (1) represent private citizens.

A statewide monitoring and reporting strategy has been developed for California to ensure collaboration with national and regional zebra mussel monitoring. The California Department of Water Resources (DWR) has a monitoring program in place in the Sacramento-San Joaquin River Delta. The DWR, PSU, the 100th Meridian Initiative and the USFWS are working to augment the zebra mussel monitoring within the state of California. Pertinent information such as monitoring locations, risk analyses of state waters, reports and new developments, are shared between parties. DWR contact information has been added to informational brochures (via stickers) sent to PSU zebra mussel volunteers in California. DWR was provided a copy of the “Letter Permit” sent to all California volunteer monitors.

County	# New substrates	%*	# New volunteers	%*
Sacramento	8	36	6	46
Colusa	1	5	1	8
Mono	1	5	1	8
Nevada	2	9	1	8
Contra Costa	1	5	1	8
El Dorado	1	5	1	8
San Diego	7	32	1	8
Inyo	1	5	1	8
Total	22		13	

Table 1. 2005 distribution of active substrates and new volunteer monitors in California.

* Percentages rounded to whole numbers

In addition to expanding substrate monitoring for adult zebra mussels in California, PSU is developing a veliger monitoring strategy, focusing on the highest risk areas of California (San Joaquin-Sacramento River Delta and the Colorado River Basin). Veliger sampling does not replace substrate monitoring but enables more thorough presence/absence monitoring- especially in high-risk areas. A similar veliger sampling program was initiated for the Columbia River Basin in 2004 by USACE and PSU.

PSU responded to concerns raised by volunteers regarding California Department of Fish and Game Restricted Species Laws and Regulations, Section 671, through the development and distribution of a “Letter permit”. This permit mitigates legal concerns without requiring each individual volunteer in California to obtain a “Scientific Collector’s permit”.

Public Outreach and Education

A recruitment brochure for the Zebra Mussel Monitoring Network, “Keep the West a Zero Zebra Zone” is being distributed in California. “Zebra Mussel Watchcards” were modified for distribution in California by adding the DWR hotline for zebra mussel sightings. Information, including brochures (“Keep the West a Zero Zebra Zone”, “Threats to the West” and “Zap the Zebra Mussel”), Watchcards (zebra mussel, New Zealand mud snail) and journal articles have been provided to marinas, fishing guides, private citizens, water and power companies and private organizations.

PSU acted as the liaison between the American River Conservancy in California, the USFWS and the University of California -Davis Extension system regarding a native vegetation-landscaping workshop focusing on pesticides and aquatic nuisance species such as zebra mussels and water hyacinth. PSU also provided information to the Cache Creek Conservancy relevant to the ecology and biology of zebra mussels.

Zebra Mussel Monitoring Database

Geographic coordinates (latitude and longitude), waterbody name, Hydrologic Unit Codes, county, and state data for each of the substrates were sent to David Britton (100th Meridian Initiative) for integration into a monitoring map on the 100th Meridian Initiative website. The map is intended to be interactive, i.e., a visitor to the web page will be able to click on a point on the map of the U.S. and find the locations of monitoring substrates in that area. The CLR MS ACCESS database of monitoring data is being transferred to a MySQL database. This software is more robust and better lends itself to on-line input of monitoring data. In addition, MySQL has more institutional support available at PSU.

Regional Coordination

Mary Pfauth continues to function as the point of contact for the volunteer monitors, to send out the monthly newsletter/reminder notices, and to maintain the volunteer monitor database. Steve Wells, a master's student at the PSU Center for Lakes and Reservoirs, was hired to work primarily on expanding the program to California and other states. Both have participated in the Columbia River Basin Team meeting of the 100th Meridian Initiative. Robyn Draheim, Assistant Aquatic Nuisance Species Coordinator in Oregon, made two presentations to the Washington Aquatic Invasive Species Committee. In addition, CLR staff met with Notre Dame researchers on a habitat risk assessment model developed by them (Drake and Bossenbroek 2004).

Recommendations

1. Expansion of the substrate monitoring program should continue in California, focusing on areas identified as high risk, such as the Central Valley and the Colorado

2005 Final Report – CA Zebra Mussel Monitoring

River Basin. Inactive volunteers should be contacted to update monitoring status and contact information.

2. Veliger sampling should be incorporated into the volunteer monitoring program and should focus on the same high risk areas identified above. Veliger sampling collection could be done by CLR personnel and, if and where possible, by volunteers. Sample processing could be done by CLR.

3. Coordination with the California DWR monitoring program should be maintained.

References

Drake, John M. and Jonathan M. Bossenbroek (2004), "The potential distribution of zebra mussels in the United States," *Bioscience* 54(10):931-941.