Quagga/Zebra Mussel Program Update

October 2010 - Present

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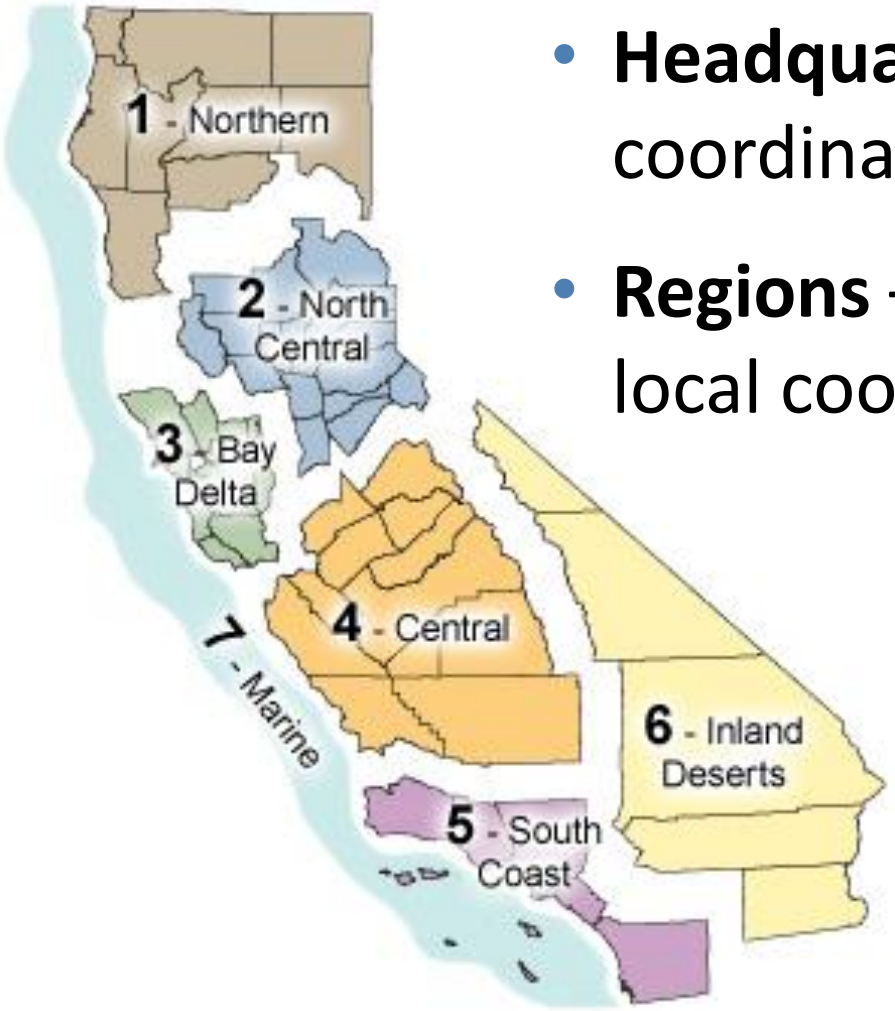
May 15, 2013

CALIFORNIA DEPARTMENT OF
Fish and Wildlife

CDFW Organization



- **Headquarters** – Policy and CDFW coordination
- **Regions** – Implementation and local coordination

CDFW's Mussel Management Strategy

- Prevent further introductions into the State
- Contain mussels within currently infested waters
- Eradicate mussels from infested waters, if feasible

Mussel Strategy

Objectives

- Collaboration and Coordination
- Prevention
- Detection
- Control and Eradication
- Information Dissemination

Coordination and Collaboration

National Level

- National Invasive Species Council
- Invasive Species Advisory Committee
- Aquatic Nuisance Species Task Force
- Western Regional Panel on Aquatic Nuisance Species

Coordination and Collaboration

Regional Level

- 100th Meridian Initiative
- Association of Western Water Agencies
- Western Association of Fish and Wildlife Agencies
- Western Invasive Species Coordination Effort (states)
- Western Regional Panel on Aquatic Nuisance Species
  - Outreach
  - Lacey Act
  - Attorney Generals/Law Enforcement Workshop
  - Laboratory certification
  - Consistency (bands, terminology)

Coordination and Collaboration

State Level

- Quagga/Zebra Mussel Interagency Team
  - Formed Outreach Action Subcommittee
- County Concerns
- Legislation

Local Level

- CDFW Regional Scientists coordinate with and assist local agencies

Prevention

- No new infestations as a result of over-land transport
- 499 vessels quarantined at the Border Protection Stations
- Revised “Don’t Move a Mussel” Video

Prevention – Inspection Programs

- Revised UMPS
- WIT Level I and Level II
- Bay Area Consortium Funding Administration
- Inspection Programs

Photo by East Bay Municipal Utility District

Prevention

- New regulations (DBW)
- Research
  - Sport fishing SFRA study
  - Ballast technology
- CDFW Volunteers
- Vectors

Prevention

Vector	Agency	Action
Tournaments	CDFW	Special Conditions Watercraft Inspections
Marinas	CDFW	Mailing to Marinas
Commercial Haulers	CDFW & PSMFC	Survey and Letter
Sea Planes	Multi-Agency	DVD and Critical Waters Guidance
Live Bait	CDFW	Modified Regulations
Aquaculture	CDFW	Meeting and Guidance Document CDFW Hatcheries Monitoring
Researchers	CDFW	Scientific Collecting Permits
Fire Equipment	CalFire & US Forest Service	Guidelines

Prevention – Other's Efforts

- UC Extension Water Agency Eurasian Mussel Action Program (WAEMAP)

Detection

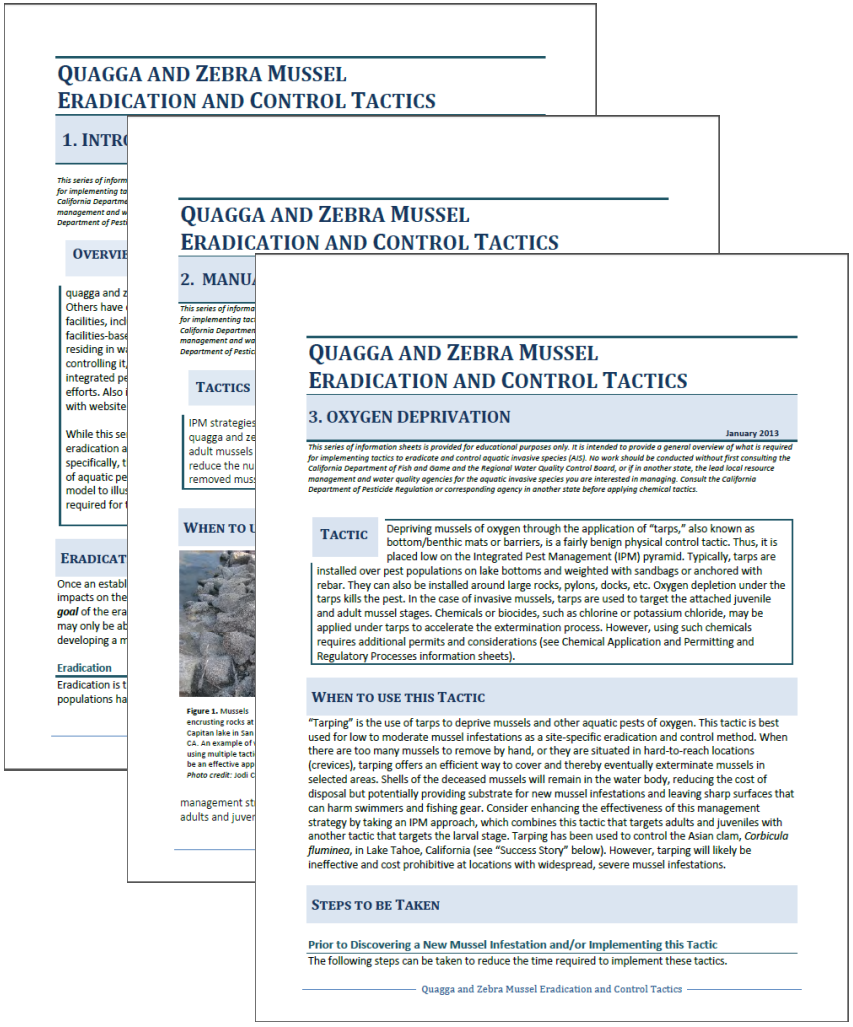
- Early Detection Monitoring
  - Waterbodies
  - Hatcheries
- Database
- Bodega Marine Lab
  - Sample analysis
  - Refinement of plankton tow preservation method

Control and Eradication

- Control Plans - 23
- Infested Reservoir Report
- Facilitated Research
  - Marrone Bio Innovations
    - Zequanox
  - DWR/RNT Consulting, Inc.
    - pH Manipulation Study
- Bay-Delta Rapid Response Plan

Control and Eradication – Other's Efforts

- Sea Grant/UCCE Control Information Sheets
  - Introduction
  - Manual and Mechanical
  - Oxygen Deprivation
  - Emerging Technologies
  - Chemical
  - Permits and Regulations



QUAGGA AND ZEBRA MUSSEL
ERADICATION AND CONTROL TACTICS

1. INTRO

QUAGGA AND ZEBRA MUSSEL
ERADICATION AND CONTROL TACTICS

2. MANU

TACTICS

QUAGGA AND ZEBRA MUSSEL
ERADICATION AND CONTROL TACTICS

3. OXYGEN DEPRIVATION

January 2013

This series of information sheets is provided for educational purposes only. It is intended to provide a general overview of what is required for implementing tactics to eradicate and control aquatic invasive species (AIS). No work should be conducted without first consulting the California Department of Fish and Game and the Regional Water Quality Control Board, or if in another state, the lead local resource management and water quality agencies for the aquatic invasive species you are interested in managing. Consult the California Department of Pesticide Regulation or corresponding agency in another state before applying chemical tactics.

TACTIC

Depriving mussels of oxygen through the application of "tarps," also known as bottom/benthic mats or barriers, is a fairly benign physical control tactic. Thus, it is placed low on the Integrated Pest Management (IPM) pyramid. Typically, tarps are installed over pest populations on lake bottoms and weighted with sandbags or anchored with rebar. They can also be installed around large rocks, pylons, docks, etc. Oxygen depletion under the tarps kills the pest. In the case of invasive mussels, tarps are used to target the attached juvenile and adult mussel stages. Chemicals or biocides, such as chlorine or potassium chloride, may be applied under tarps to accelerate the extermination process. However, using such chemicals requires additional permits and considerations (see Chemical Application and Permitting and Regulatory Processes information sheets).

WHEN TO USE THIS TACTIC

"Tarping" is the use of tarps to deprive mussels and other aquatic pests of oxygen. This tactic is best used for low to moderate mussel infestations as a site-specific eradication and control method. When there are too many mussels to remove by hand, or they are situated in hard-to-reach locations (crevices), tarping offers an efficient way to cover and thereby eventually exterminate mussels in selected areas. Shells of the deceased mussels will remain in the water body, reducing the cost of disposal but potentially providing substrate for new mussel infestations and leaving sharp surfaces that can harm swimmers and fishing gear. Consider enhancing the effectiveness of this management strategy by taking an IPM approach, which combines this tactic that targets adults and juveniles with another tactic that targets the larval stage. Tarping has been used to control the Asian clam, *Corbicula fluminea*, in Lake Tahoe, California (see "Success Story" below). However, tarping will likely be ineffective and cost prohibitive at locations with widespread, severe mussel infestations.

STEPS TO BE TAKEN

Prior to Discovering a New Mussel Infestation and/or Implementing this Tactic

The following steps can be taken to reduce the time required to implement these tactics.

Quagga and Zebra Mussel Eradication and Control Tactics

Information Dissemination

- Website
  - Mobile-user accessible
  - Inspection programs
- YouTube video
- Sportsmens Expos, boat shows
- Native American Tribes

Information Dissemination

- Revised poster and rack card
- Distributed outreach material
- News releases
- Newsletter

Current and Future Efforts

- Guidance for assessing vulnerability
- Regulations for Sections 2301 and 2302
- Targeted outreach for specific user groups
- Revise website
- Prevention Programs

CDFW Contact Information

Information Hotline
(866) 440-9530

Website
http://www.dfg.ca.gov/quaggamussel/

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