

# AQUATIC INVASIVE SPECIES UPDATE

LAKE TAHOE FEDERAL ADVISORY  
COMMITTEE 11-06-08

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# AIS UPDATE

- STATUS
- ROLES-FIP AND TRPA
- FUNDING ALLOCATED AND PLANNED
- FEDERAL SHARE RESPONSIBILITY

# THE THREAT

- Quagga mussels were first detected in Lake Mead on the Colorado River in January of 2007, followed almost immediately with detections in Lake Havasu and Lake Mohave. Recent detections in five Colorado lakes, the Central Arizona Project Aqueduct, the Lower Colorado and Arkansas Rivers and Lake Justo in San Benito County, CA illustrate the mobile nature of these invaders. A single quagga mussel can produce 30,000 to 40,000 fertilized eggs in a single breeding cycle. One adult female quagga can release up to 1 million eggs each year.

# QUAGGA ON DOCK LINE LAKE MEAD



# THE THREAT

- Currently, Lake Tahoe and other lakes of the Tahoe Region are believed to be free of quagga and zebra mussels. However, zebra and quagga mussels and New Zealand mud snails pose a major threat to Lake Tahoe and other lakes of the Tahoe Region if they were to become established. Experts fear that these invertebrates could spread quickly through the Truckee River watershed and become a downstream threat to the City of Reno and Pyramid Lake.

# IF ZEBRA OR QUAGGA MUSSELS OR THE NEW ZEALAND MUD SNAIL WERE TO INFEST LAKE TAHOE, THEY COULD:

- Have severe impacts on aquatic biologic communities, fishing and recreation.
  - Foul facilities such as docks and ramps.
  - Encrust boats and clog engines.
  - Litter beaches with sharp odiferous shells.
  - Clog drinking water and other intake pipes, increasing maintenance costs to these systems.
- In addition, other AIS such as asian clams, Eurasian watermilfoil, curlyleaf pondweed, large mouth bass, bullfrogs and other warm water fish species currently exist in Lake Tahoe. The existence of these species in the Lake has started to disrupt the food web, has impacted water clarity and has had a deleterious effect on native fish populations such as the Lahontan redbside shiner and speckled dace. Milfoil also creates a habitat that the New Zealand mud snail and these warm water fishes can thrive in.



# THE RESPONSE

- The 2007 discovery of quagga mussels in Lake Havasu, Lake Mead, and the Colorado River Basin, have prompted rapid cooperation and action by regional, bi-state, and federal agencies and non-governmental organizations in the Tahoe Basin. The result has been a tremendous ramping up of education and outreach campaigns, grassroots control efforts, and research on the biology and distribution of existing AIS populations. The Tahoe Regional Planning Agency (TRPA) has purchased boat washing stations and partnered with the Tahoe Resource Conservation District (RCD) to staff watercraft inspectors at boat launches. Additional volunteers (e.g. marina operators) and partners (e.g. the Incline Village Water Improvement District) are contributing to this effort. Researchers have conducted extensive surveys for invasive invertebrates and aquatic plants. Efforts to manually control these species include diver-operated suction (proposed for Asian clam control) and benthic barriers to control Eurasian watermilfoil and curlyleaf pondweed. The movement of warm water fish is currently being tracked in an effort to improve control measures.

# AIS Coordination Committee


- Cal State Parks
  - Lahontan Water Quality Control Board
  - Tahoe Regional Planning Agency
  - Tahoe Resource Conservation District (TRCD)
  - US Forest Service, Lake Tahoe Basin Management Unit
  - US Fish and Wildlife Service
  - NV Dept. of Natural Resources
  - NV Dept. of Wildlife (NDOW)
  - Cal Dept. of Fish and Game (CDFG)
  - US Dept. of Agriculture - Agricultural Research Service
  - Cal. State Lands Commission
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- Members of the science community also attend as needed



# Aug 22<sup>nd</sup> Incident

- Boat from Lake Mead
- Boat decontaminated at Lake Mead
- Mussels discovered by Tahoe Keys Marina Harbor Master
- Boat not allowed to launch until cleared by CDFG






# QUAGGA MUSSELS ON LAKE ERIE



# LAKE GRANBY EXAMPLE

(IT CAN'T HAPPEN HERE)

- LAKE GRANBY ELEVATION 8,500 FEET
  - LOW CALCIUM LEVELS
  - MAXIMUM WATER TEMP 60°
  - ASIAN CLAM BEDS!
    - 3 TIMES THE CALCIUM LEVELS AS NEARSHORE (WELL WITHIN SURVIVABILITY AND COLONIZATION LIMITS)
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# ASIAN CLAMS IN LAKE TAHOE



# ASIAN CLAM RESPONSE

- ONGOING RESEARCH BY UNR/UCD
- INCREASED CALCIUM AND ALGAE
- PILOT CLAM REMOVAL PROJECT

# RECENT TRPA CODE AMENDMENTS

- REQUIRES THE INSPECTION OF ALL WATERCRAFT AND CLOSES LAUNCH FACILITIES WHEN INSPECTORS ARE NOT PRESENT
- REQUIRES DECONTAMINATION OF A WATERCRAFT IF AN INSPECTOR DETERMINES THE BOAT IS AT RISK



# INSPECTION IMPLEMENTATION PLAN

- Goal is to inspect all watercraft prior to launching
- Training of facility staff
- Dedicated AIS inspectors
- Schedule of operation
- Inspection seal program
- Off-hour launch and haul-out
- Infrastructure





# AQUATIC INVASIVE WEEDS

Invasive weeds can alter ecosystem dynamics by competing with native flora and changing the habitat suitability for a number of species.

Species, such as Eurasian Watermilfoil (*Myriophyllum spicatum*), have infested Lake Tahoe and other waterbodies in the basin. Intensive inventory efforts should take place to locate infestations of invasive weeds, new introductions should be reduced, and existing populations need to be eradicated.

# FEDERAL INTERAGENCY PARTNERSHIP ROLES

- USACOE
- BOR
- USFS
- USF&WS
- TRPA (NON-FEDERAL)

# AGENCY ROLES

- USACOE: The Corps provides program and project level technical assistance to non-Federal agencies in implementation of authorized programs including stream and wetland restoration, storm water management and treatment effectiveness, shorezone sanitary sewer line replacement, water quality assessment, and management of aquatic invasive species. Additionally, USACE has responsibility for CWA Section 404 permitting and Section 10 navigation hazards permitting.



➤ BOR: Reclamation's role with regard to AIS began in 2006 with a \$340,000 grant to the Tahoe Resource Conservation District to survey Lake Tahoe to determine the extent of infestation by aquatic invasives, develop removal methods and protocols to monitor turbidity during removal, and conduct pilot removal projects in Emerald Bay and Ski Run Marina over a 4 year period.

Subsequent to the awarding of this initial grant, the potential for quagga mussel invasion became of grave concern to agencies and stakeholders in the Basin. Reclamation awarded a \$500,000 grant to the Tahoe Resource Conservation District in 2008 to conduct watercraft inspections and decontamination at boat ramps to prevent new aquatic invasive species introductions, conduct research on Asian clams to determine the best strategy for elimination of this emerging invasion, and develop treatment prescriptions for areas with existing invasions of aquatic weeds and Asian clams. Public education and outreach was also included in this grant. This work is expected to continue under this grant through 2011.

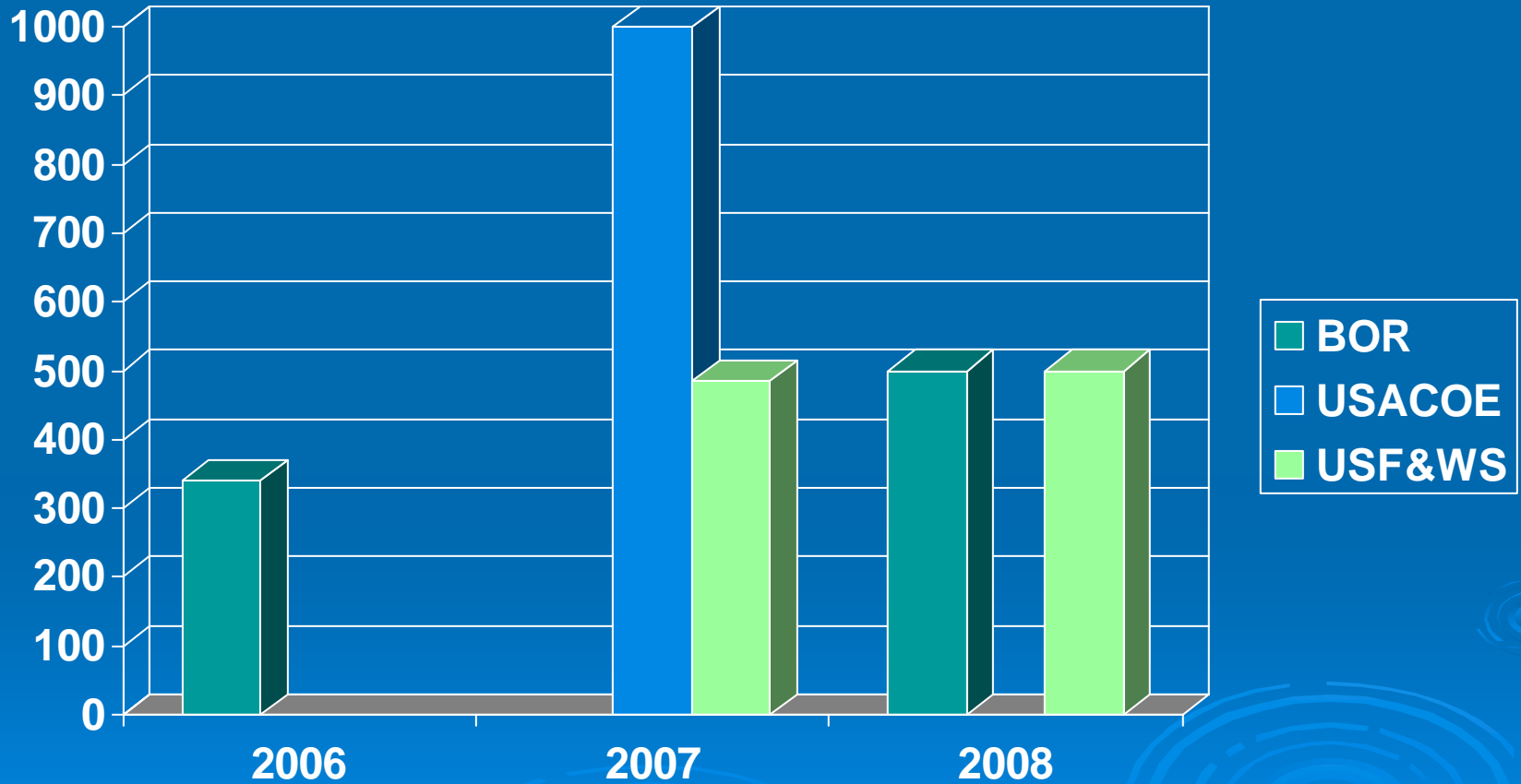
- **USFS:** The USFS - Lake Tahoe Basin Management Unit (LTBMU) is an integral part of both the Lake Tahoe AIS Working Group (LTAISWG) and Coordination Committee (LTAISCC), which are a diverse group of agencies, community members, and scientists. The LTBMU is currently involved in rapid response, which includes initiating AIS prevention measures at Forest Service recreation facilities. To-date prevention measures have included providing AIS education and outreach materials to the public, conducting boat inspections at Echo Lake, providing a boat wash station site at Meeks Bay campground and conducting modified boat inspection/screening for non-motorized watercraft at selected recreation sites. The LTBMU is also involved in active management of AIS and over the last 4 years has worked in cooperation with California Department of Fish and Game (CDFG) and University of Nevada, Reno (UNR) to undertake research in the Tahoe Keys and Taylor Marsh, which specifically looks at warm water fish invasions and their effects on the native aquatic ecosystem. LTBMU staff are leading the Tahoe Keys AIS Subcommittee in which experimental aquatic weed and warm-water fish treatments are being planned. LTBMU staff is providing input on the Integrated AIS Management Plan with emphasis on continued efforts to conduct prevention activities at boat launch facilities, education/outreach, risks of non-motorized watercraft, ecological consequences and management of warm-water fishes, aquatic weeds and current mollusk invasions (*Corbicula*) and identifying other potential conduits of AIS introduction (i.e. wildfire suppression activities, such as helicopter operations).



➤ TRPA: TRPA has several existing AIS prevention efforts, most notably on May 29, 2008, TRPA's Governing Board amended their Code of Ordinances to require all watercraft entering the waters of the Lake Tahoe Region be subject to inspection to prevent the introduction of AIS or owners face penalties starting at \$5,000 (TRPA Code of Ordinances Chapter 79.3. B). And, beginning November 1, 2008, all boat launches (public and private) without a trained inspector are closed (TRPA Code of Ordinances, Chapter 79.3.B (1) and (2)). The TRPA has purchased six portable, high-pressure, hot water boat washing facilities and is in the process of upgrading the facility at Fallen Leaf Lake which is presently free of invasive species.

➤ USF&WS: The U.S. Fish & Wildlife Service provides the AIS effort with coordination, funding, input on control strategies, contract assistance, outreach support and the national perspective. The Service has established an AIS Coordinator position for Lake Tahoe and Northern Nevada and chairs the AIS Coordination Committee and Working Group and is closely involved in the development of the Lake Tahoe AIS Integrated Management Plan that will be acted on by the national Aquatic Nuisance Species Task Force. Adoption will open another funding avenue. The Service implements the Endangered Species Act and the Lacey Act, both regulatory strategies as well as the 100th Meridian Initiative and the nation-wide hotline 877-STOP-ANS and the Stop Aquatic Hitchhikers! Campaign. The Service has closely coordinated with our partners in implementing AIS prevention, control and eradication efforts.

# FEDERAL AGENCY FUNDING



# AIS EIP FUNDING REQUIREMENTS

- BOAT INSPECTIONS
  - \$1.0m PER YEAR
  - 30 INSPECTORS HIGH SEASON
  - 10 INSPECTORS WINTER
- AIS CONTROL/ERADICATION
  - \$800K PER YEAR
  - MILFOIL/PONDWEED
  - ASIAN CLAM
  - BASS/BLUE GILL
  - BULLFROGS

# CONTINUING, UNCONSTRAINED COSTS

- CONTINUING @ \$1.8M RATE ADJUSTED FOR INFLATION
- COSTS COULD EXPONENTIALLY INCREASE IF ZEBRA OR QUAGGA MUSSELS ARE DETECTED

# FEDERAL SHARE RESPONSIBILITY

- SNPLMA: 35%
- OTHER FEDERAL FUNDING: 65%



# PRIVATE & LOCAL FUNDING

- BEGINNING IN 2009, TRPA WILL BEGIN ISSUING “BLUE-BOATING” OR LAUNCH TAGS AND COLLECT A FEE
- THE FEE WOULD GO TOWARDS FUNDING THE BOAT INSPECTION PROGRAM

QUESTIONS?