



## **Joint Missouri Basin/South Central Basin ANS (100<sup>th</sup> Meridian Initiative) Meeting**

***Bass Pro Shop – Independence Missouri  
July 19-20, 2011***

**Day 1: July 19**

### **Intro/Business**

Field trip tomorrow to see zebra mussels, mystery snails, and Asian carp.

### **Agency Updates**

#### **USFWS Southwest Region (R2)**

- Developed and updated a national HACCP program.
- Announced a HACCP Train the Trainer course that is tentatively scheduled for Jan/Feb 2012.
  - Dave will keep members informed about the HACCP Train the Trainer course
- Supplied funding to help Texas Parks and Wildlife attempt to eradicate mussels in Sister Grove Creek (Trinity River Basin).

#### **Missouri Department of Conservation**

- Zebra mussels are limited to the big rivers and a few interior lakes in Missouri. They recently took Lake Pomme de Terre off the infested list. It is thought that the spring 2009 detections might have been a false positive. No veligers have been found in multiple samples since 2009 and zebra mussel veligers were undetected in the USACE and MDC samples collected in June 2011.
- Harry S. Truman Reservoir is a potentially infested lake because Lake Melvern in Kansas (upstream) is now infested.
- The state (MO) is mostly zebra-mussel free.
- One warm-water hatchery has been invaded by the White River crayfish (*Procambarus acutus*). The hatchery is using HACCP to prevent spreading the crayfish. They are working with USGS to develop a research project to look at chemical control and eradication.
- New regulations proposed: one to prohibit live crayfish for bait ; one to prohibit porous soled waders in managed trout areas. (There is no didymo in the state, but there is didymo in Arkansas.
- MDC is concerned about bait-bucket introduction. Have developed a sign to educate anglers and tell them that Asian carp are illegal as live bait in MO. Signs posted near areas of concern.



- New publications and outreach materials have been produced and were distributed to team members.
- Partnered with Habitattitude and will contact retailers to promote this campaign.
- Have developed fact sheets for several invaders.
- MDC had a first successful prosecution of a prohibited species. A man moved a boat lift from Lake of the Ozarks to Smithville Lake. Sentence was a \$1000 fine and six-months probation

#### **USFWS Mountain/Prairie Region (R6)**

- Joanne Grady is just coming on the job (New Regional AIS Coordinator)
- She is working to get funding out to those who need it.
- She is working also as the Western Regional Panel Coordinator
  - Next meeting October 12-13 in Oakland, California
  - Joanne will keep members posted as to the WRP meeting details

#### **South Dakota**

- Sampling every water body in the state.
  - High risk lakes are sampled every year
  - Med risk every two years
  - Low risk every three
- Outreach and education continues.
- There are no ANS regulations in the state.
  - As it stands, they cannot stop a boat even if mussels are seen on it.
- Asian carp are all over the eastern half of the state.
- Trying to get permission for conservation officers to inspect and impound boats
- Trying to prohibit importation of crayfish
- No new vegetation
- One new location with Asian clam

#### **Nebraska**

- ANS management plan approved in Fall 2009
- Now have an Invasive Species Project at University of Nebraska headed by Karie Decker.
- Offutt Base Lake was an attempt to eradicate a population in a 200-surface-acre lake with copper sulfate.
  - Live zebra mussels were found recently (even after the supposed successful eradication)
- Zebra mussels were also found in second lake in an urban area (Zorinsky Reservoir). Lake was lowered some 20 feet over the winter in an attempt to freeze them out before they got established. The lake is now being refilled and veliger sampling is going on but current status is unknown.



- Boater surveys and inspections have been conducted at Lake McConaughy due to high use by Colorado boaters.
- They have ramped up their monitoring for zebra mussels state-wide.
  - Samples reviewed by Montana's Veliger Lab
  - Karie Decker's lab at UNL looks at samples from SE corner of the state
- There is a dot on the zebra-mussel map above Sioux City where veligers were supposedly discovered once. They may have been Asian clams. No zebra mussels have been found there since.
  - The team will follow up with USGS regarding the removal of points on the official map or distinguishing between "found" and "established"
- There was a report of rusty crayfish in a city lake (Benson Park Lagoon) in Omaha. These were confirmed in 2010. But, these crayfish were found in another lake [Lakeside].
  - A survey of several lakes in the Omaha metro area found crayfish in only the two lakes. They are common in Lakeside, but in very low numbers in Benson. Note that Lakeside drains into Zorinsky Reservoir (see above).

## Iowa

- Lake Rathmun had a boat with mussels on it.
  - Veligers have been found in low numbers, but no adults have been found.
  - IA considers it "infested."
  - The lake level is variable.
  - No one is really sure what the status is for this population.
- Lake Delhi had the dam blow out.
  - The lake is now just a river.
  - No live zebra mussels have been found.
  - The lake was infested before.
  - Veliger sampling downriver should reveal whether they persist.
  - Kim will keep members abreast of status of Lake Delhi
- Clear Lake in north/central Iowa has population of zebra mussels that is now leveling off.
- Last year Kim had a crew of 18. This year she has a crew of 5.
  - Two sample vegetation
  - Three inspect boats and do outreach
    - Boats inspected get a sticker
    - Questions are asked to judge awareness
- Settlement samplers are in 24 lakes and reservoirs
  - Nothing new found
- Asian carp in Missouri and Mississippi (Bighead and Silver)
  - Bighead carp also in rivers and streams throughout southern Iowa
  - Silver carp also in Des Moines River
- Iowa did a six-minute Video with public TV
  - Kim will share, if possible, the public TV spot with team members



- Billboards and banners were produced
- A Traveler Information System is now running in Iowa
- ANS info is put out with Fishing report

#### **US Army Corps of Engineers (Kansas City District)**

- Continued public information program
- Standardized their adult mussel settling samplers
- Continuing veliger sampling at all project lakes.
- Developed prevention protocols
  - The basic policy says KC District will not move equipment without inspection and decontamination
  - Training was provided with project managers, rangers, and other divisions within the Kansas City District (anyone who will be on water with equipment)
- Contract Specifications
  - Required to keep contractors compliant with new policies
  - Developed an equipment check-in sheet and check-out sheet
  - All equipment must be clean and ANS free prior to arrival and must be cleaned prior to leaving the job site.
    - At Truman Lake, a project had over 1000 pieces of equipment from all over the country. Several subcontractors were involved. All contractors and subcontractors had to sit through a 30 minute presentation and watch a video.
    - Decontamination was done with cold water at 3,000 psi and inspected after. Chlorine was also used at 200 ppm, coated after high-pressure spray was complete.
    - Ropes and other materials that were not decontaminated were disposed of in a landfill.
  - Smithville Rapid Response to a boat lift moved in with zebra mussels on it. Tim will discuss this later.
- Facility Vulnerability Assessments
  - BOR was partnered to assess 18 lake projects
  - Cost \$112,000
  - 14 of 18 are completed. The last four should be done by September.
  - Vulnerability assessments rate pieces of equipment (pipes, gates, valves and such) within a lake project.

#### **Montana**

- Legislative session in 2011, cuts across the board, with the exception of the AIS program, which got new dollars
  - At peak there were 6 AIS bills, 1 made it through
  - It was an amalgamation of other bills
    - On paper there is no lead agency for the AIS program



- FW&P is not the “coordination” agency, but the “facilitating” agency
- \$749,000 per year comes to the program
- Distribution is decided by the governor
- On paper FW&P gets about \$100,000, but the governor asks other agencies to give their money to FW&P
- FW&P has overall authority for all invaders except for noxious weeds (Dept. of Ag).
- Most money goes to watercraft inspections
- There is little money for monitoring
- Most of the rest of the money goes for control of Eurasian water milfoil.
- FW&P has four full-time positions, about 20 seasonal employees
- A bill to ban felt-soled waders was killed early on
- Regulations Updates
  - More administrative rule authority, mandatory authority for all watercraft inspections. If it floats on the water, it must stop at an inspection station – used to be just anglers and boaters.
  - Inspection Stations
    - Wanted then to be open 7 days a week
    - Staffing issues led to 3 days a week at several stations
    - Western stations are open 7 days a week
    - Others are open only 3 days a week or less.
    - The law requires that watercraft must stop if they pass an inspection station, but they do not necessarily need to be inspected prior to launch if they do not pass a station.
    - FW&P will evaluate this year what is the best way to implement the stations (near the water body vs. at the border)
    - Stickers are issued unique to a particular location if a boat is inspected
    - Boat ties are also used to indicate that a boat is cleaned
    - Decontamination is usually done at the site with high-pressure hot water
      - They do have the ability to escort the watercraft to other areas if necessary
      - Everything this year has been dealt with on site
- Yellowstone River Oil Spill
  - ExxonMobil’s oil pipeline on the Yellowstone River had a dramatic failure
    - 1000 barrels of oil ended up in the river
    - Airboats from around the country are coming to help with the clean-up
    - No boats are allowed to work until they have been inspected
    - FW&P decontaminates equipment before it leaves, but they do not “certify” that is clean.
- Monitoring
  - No monitoring has started yet. They hope to start in August.
  - Most rivers are too dangerous to work on due to flooding



- Normally sample 600 sites in a year. This year will be only a fraction of that.
- Second year of “Inspect, Clean, Dry” campaign
  - Have seen an increase in awareness
  - Have not seen a change in behavior, but that may take more time
  - MT will continue to assess awareness and behavior from Inspect, Clean, Dry campaign
- Outreach
  - New billboards
  - New TV spots
  - Tailgate Wraps
  - Signage, brochures
  - Active K-12 programs (5000 kids), kits for Teachers
- Bait Regulations
  - In a 4-year cycle for doing an overhaul of the regulations
  - New regulations for bait were not approved
- Bullfrog removal effort (pre-oil spill) was going well.
  - USGS helped
- Milfoil control was going well but stopped for high flows.
- MT will participate in the Rapid Response exercise this fall with the Columbia River Basin team.

## **Kansas**

- Kansas Department of Wildlife and Parks is now the Kansas Department of Wildlife, Parks, and Tourism.
- Melvern Lake now has confirmed zebra mussels.
  - This reservoir flows into Missouri
- First mussels found in 2003 (probably arrived in 2001) in El Dorado Reservoir
  - A 3 ½ foot drawdown did not kill the mussels in El Dorado Reservoir
  - June/July is the peak for veliger densities
  - El Dorado Reservoir had a boom and then a bust after 2007, but has flattened for 3 years... but is now demonstrating an increase in densities. (Note: An increase in densities was detected after the meeting and added by Goeckler as an amendment to these notes.)
- Winfield City Lake (the second lake infested in Kansas), has had a crash just this year. They are watching to see if it will recover.
  - Bob McMahon suggested that above 25 degrees C, the mussels cannot filter fast enough to keep up with metabolism. A study started at Lake Oologah in Oklahoma, where a similar crash occurred, suggested that the mussels were in poor body condition in the heat of summer. Over time, the mussels reach a population level that lowers the productivity of the lake. This increases to a point until the population crashes. This is an untested hypothesis, but now three lakes (Oologah, El Dorado, and now Winfield City Lake) have had population crashes.



All three lakes are near the southernmost populations at this longitude (near 100 degrees longitude).

- Monitoring is done by one person who did 360 samples for presence/absence, analyzed by the Montana Veliger Lab
- Research
  - University of Toledo determined that the mussels in Kansas most closely resemble those from Lake St. Clair (and San Justo Reservoir in California)
  - No difference in littoral zooplankton, but fish were fewer and skinnier
  - Zebra mussels reduce turbidity, algal biomass, and even blue-greens (contrary to earlier research). This requires more research as microcystins were not present during the study period.
  - Standing water: found proof to show that veligers are present in standing water in boats: Angling boats had 10 veligers per liter, jet skis 9 veliger per liter, pleasure boats has 5 veligers per liter
  - Found good compliance in draining their boats at El Dorado
  - Developed filters for cleaning water if fish stocks. They found that the filters were not 100% effective and did not filter water to below IMO ballast water standards.
    - They are 99% effective, however, and are still being used
- Boat Inspections
  - Done randomly at different sites (high risk lakes)
  - No boats with ANS have been found
  - Campaign continues with Law Enforcement support
- Asian Carp
  - 2010 young Silvers, Bighead, and Grass all in Kansas River
  - People are using these for bait (it is illegal to possess alive)
  - Northeast Kansas has the most locations, but there are Asian carp at many places throughout the state
  - Outreach through TV/Print Media and regular materials
- New proposal on live bait
  - Restrict the transport of live baitfish and water (option 1)
  - Restrict the transport of live baitfish and ANS infested water with 4 species excepted (option 2)
    - This would prohibit the transport of live sportfish or baitfish from any water designated as infested with ANS
- QZAP project will test hot water to kill zebra mussels at Wilson Reservoir
  - Jason will keep us posted on Hot-Water project to kill zebra mussels at Wilson Res.
- A student at ESU will look into ecological and economic impacts of zebra mussels in the Neosho River Basin



### **USFWS Oklahoma Fish & Wildlife Conservation Office**

- Works with the Oklahoma Department of Wildlife Conservation
- Provides funding for ODWC and the University of Oklahoma
- Purchased 20 power washers for every field station that ODWC has, coop units and are looking to partner with marinas
- They are trying to give local car washes an incentive to bring their facilities up to standards for killing zebra mussels
- Have a new lab for cross-polarized light microscopy detection of zebra mussel veligers

### **Ryan Liang (Oklahoma)**

- Looking into ranking water bodies for risk assessment
  - Using human activity
  - Potential ANS Sources (proximity)
  - Location (lat/long) and size of reservoirs
  - Water quality
- Model works well in Oklahoma. They will expand it to include other waters outside of Oklahoma

### **Texas Parks and Wildlife Department**

- Texas has some Asian carp
  - Triploid Grass carp are legal in Texas
  - Bighead carp have been introduced in a few places
- A big outreach campaign is in the works
  - Main focus is North Texas
  - Billboards/signs/posters/TV/Radio/Internet
- Partnerships have been made with water authorities
- Law is in place making it illegal to possess zebra mussels in the state.
  - It is an automatic jail-able offense, so game wardens are reluctant to enforce it
- Texas passed a law a few years ago requiring a white-list for aquatic weeds
  - This took a lot of time
  - But then it was retracted
- New possession laws will be tiered so that it is not automatically an offense that requires jail time, although if possession leads to an introduction, jail time is still on the table.
- TPWD lab in San Marcos is developing eDNA techniques for early detection
- Sister Grove Creek eradication will be discussed tomorrow (not 100% successful)
- TPWD has reached out to the marinas and the state marina association
- A aquatic invasive weed team is treating for giant salvinia and other weeds



### **The University of Texas at Arlington**

- Has worked on early population structure of quagga mussels at Lake Mead
- Now focused on monitoring North Texas Lakes
- Bob will keep the team updated on the status of North Texas Lakes and will share his risk assessment when completed.

### **Pacific States Marine Fisheries Commission**

- A Double Blind study led by Dr. Kevin Kelly (BOR, Denver) showed that PCR analysis of dreissenid veligers samples was not as effective as that of polarized light microscopy and FlowCam (by participating labs)
- ISAC is in the process of developing an outline for a program for standards and protocols for PCR analysis, this will be a massive undertaking if implemented on a national scale, and maybe require millions of dollars.
  - This is particularly important for the Asian carp work in the Great Lakes as well quagga mussels in the west, where management decisions can sometimes be passed on PCR results.

### **Funding Priorities and Forecast**

FY2010 QZAP: \$2M (\$800K to Lake Tahoe, \$600K for State Plans, \$600K for top priorities)

FY2011 QZAP: Continuing Resolution, which provides funding at the same level as the previous fiscal year, but no money for QZAP

FY2012 QZAP: Possibly \$1M for inspection, decontamination, and law enforcement.

USFWS possibly facing large program cuts in FY2012 (as is DOI)

#### **USFWS Region 2**

Supports the 100<sup>th</sup> Meridian Initiative Website

Supports Boater Survey Database

Supports 1-877-STOP-ANS Invasive Species Hotline

Provided support for TPWD's eradication project at Sister Grove Creek

Provided support for TPWD's biocontrol weevil production at Caddo Lake

Provided support for Lower Colorado River Aquatic Invasive Species Task Force

Provided support for the University of Arizona to complete an ANS management plan

#### **USFWS Region 6**

Supports the meetings for the 100<sup>th</sup> Meridian Initiative Missouri River Basin Team

Supports the Veliger ID Lab in Montana

R6 plans to fund the MT Lab (if funds are available) for the next 2 years



### **Missouri River States Priorities**

Montana's Veliger ID Lab

Common outreach campaign

Jason will lead a group of states to come up with a priority plan.

Conference call in Mid September

### **100<sup>th</sup> Meridian Website Update**

- Links to all state agencies
  - States should check for correct AIS web sites
- Videos all now on YouTube
  - Dave to look into access problems for some agencies to YouTube.
- 2011 *Zap the Zebra* brochures now available
  - Thanks to PSMFC & USGS
- Photos needed for media
  - All members will look for and submit photos to the 100<sup>th</sup> MI Website (Dave will follow up)
- Database is still growing, Marion Wittman at UC Davis is doing an analysis of the database as a project for the WRP

### **Veliger Lab Update**

- Does work for many states in the basin
- Kansas is the best customer
- One week to two week turn-around time
- Scored 100% on double-blind study (both + and -)
- Also independently tested by Kansas
- No Montana samples have come in recently, so they have been able to put priority on out-of-state samples
- They can put a rush on samples if requested
- If Missouri River Basin is covered, they are happy to discuss getting samples from the South-Central Basins (Texas. Oklahoma)

### **Watercraft Inspection Training/UMPS/New Video**

- New *Don't Move a Mussel* Video
  - 6000 copies have been sent by request of original version
  - An update corrects some weaknesses in the original
    - Filming was done in Lower Colorado River Basin, in the Mid-West, in the Columbia Basin, and in the Great Lakes area.



- There is a new inspection and decontamination section with Sgt. Eric Anderson (Washington)
  - More detailed
  - Better visuals
  - Longer
- Sen. Diane Feinstein (CA) did the introduction
- Scripting and editing should be done by August 15
- First cut should be available by August 20
- Final version available September 30, 2011
- Video Catalog of extra footage
  - See all the interviews that were not completely used
  - Pick a still image from the interviews
  - Catalog will be available on the 100<sup>th</sup> Meridian Initiative web site with descriptions of the content
    - Bill will provide extra video from his projects to the 100<sup>th</sup> MI web site
    - States can use this footage to create their own videos
    - May be available by mid-September
- Uniform Minimum Protocols and Standards
  - Working with PSMFC to update
  - QZAP funded through USFWS
  - Survey was done in September 2010
  - Draft update expected to be done by mid-August
  - Stephen will provide Minimum Protocols and Standards once completed



## Day 2: July 20

### Bowling Results

#### *Bowling teams*

#### **West**

Eileen Ryce – C  
Stephen Phillips  
Steve Schainost  
Bill Zook

#### **South**

David Britton – C  
Brian Van Zee  
Ryan Liang  
Bob McMahon

#### **Central**

Jason Goeckler – C  
Joanne Grady  
Tim Banek  
Ryan Dunwoody  
Chris Churchill

#### **North**

Kim Bogenschutz – C  
Mike Smith  
Jason Euchner  
Rob Klumb

#### **Round 1**

North vs. West: West Wins

South vs. Central: Central Wins

#### **Round 2**

West vs. Central: West Wins

North vs. South: North Wins

Highest Individual Game: Kim Bogenschutz (174)

Highest Individual Series: Dave Britton (142.5 avg)

High Team Score for Combined Series: North Team (Kim Bogenschutz's Team)

Team Champions\*: West Team (Eileen Ryce's Team) – Undefeated in Series

\*based on rules of tournament agreed to by all parties before play (winners of round 1 compete in round 2 for championship)

### **Asian Carp Update** – Rob Klumb

Two studies

- Population Genetics
  - Not a lot of genetic divergence between the Asian population and the lower Missouri River population, but some were detected between lower and upper Missouri River
- Asian Carps in Missouri River Tributaries
  - Looked into how exotic carps fit into the food web
    - Algae and vegetation goes into grass carp
    - Zooplankton goes into bighead carp
    - How does this impact the food web?
    - Used isotopes of Nitrogen and Carbon to assess what species were feeding on
    - Found that Asian carps overlap significantly with native fishes in what they eat
  - Assessment of Use of Tributaries for Spawning
    - Sampled 10 sites on 3 rivers



- Used a larval drift net
    - Found larval fish into early September
    - 50% of samples had larval fish
    - Work is in progress, stay tuned...
  - Carps are moving North into South Dakota
  - Huron, Vermillion, Big Sioux below Sioux Falls
  - Long Term Monitoring at Lewis & Clark Lake
    - Part of a large effort throughout the Missouri River Basin
    - Look at 9 target native species
    - Sample two times a year (Fall to Spring and Summer Season)
      - Gill nets
      - Trammel nets
      - Otter Trawl
      - Trap nets
    - They have data from 2003 to 2010
    - See [www.fws.gov/greatplainsfishandwildlife/](http://www.fws.gov/greatplainsfishandwildlife/)
      - To see the report
- Asian clam sampling 2010
  - Discovered in Gavins Point NFH ponds in 2009
  - Fish are stocked at Lake Francis Case and in tribal waters
    - Concern was that Asian clams would be spread to areas where fish were stocked
  - Sampling for Asian clams occurred at 5 South Dakota Indian Reservations
    - Oglalla Sioux (Pine Ridge)
    - Lower Brule Sioux
    - Cheyenne River Sioux
    - Rosebud Sioux
    - Yankton Sioux
  - Also sampled Lake Francis Case
  - No clams were found on reservation lakes
  - No Asian clams were found in Lake Francis Case either
  - Stocking of paddlefish has resumed (it was on hold after concerns of spreading Asian clams)

### **How states can reduce the risk of Asian carp establishing in reservoirs**

- Lake o' the Ozarks and Truman Reservoirs are the lakes that provide the best habitat for spawning in Missouri.
- MDC is concerned about this and is looking for advice on how to deal with this issue
  - There are credible reports from the public that silver carp are in Truman Reservoir
  - Discussions were made of funding
    - Missouri is FWS Region 3, with no representatives at this meeting



- FWS Region 3 includes the Great Lakes, which get more attention
- Tim and Jason will put a proposal for Joanne to review
- Joanne will inquire with FWS R3 about potential funding from there Asian Carp Money, which predominantly goes to the Great Lakes

### **Smithville Reservoir Eradication Project – Tim Banek**

- Smithville Lake is near Kansas City
- 7100 surface acres
- Corps of Engineers Reservoir
- Zebra mussels discovered on a boat lift in June 2010
- The boat lift came from Lake of the Ozarks (already infested with zebra mussels)
- The boat lift had been in Smithville since the previous October (2009)
- The only place that they found zebra mussels was on the boat lift.
- Looked into targeting the site with  $\text{CuSO}_4$  or Potash
- Concerns
  - Damage to property
  - Public safety
  - Fish kills
  - Effectiveness of control strategy
  - Funding
- The lift was removed and decontaminated
  - Some live mussels were found on the lift
  - Some mussels were dead or stressed
- Divers looked for mussels in other places
- Veliger mussel sampling were negative for the reservoir
- The area was treated with Cutrine Plus (a liquid algaecide)
- Clay County Parks and Corps of Engineers help provide funds
- Most funds were provided by MDC through emergency funds
- Treatment began August 10, 2010
  - No fish were killed
  - Increased public awareness through news coverage
- First time MDC was able to prosecute the transport company (not the boat owner)
  - An independence man received the maximum fine of \$1,000 and six months probation for possession and transportation of a prohibited species
- Monitoring is on-going
- The marina now requires a release t be signed before renting slips
- A new chemical called Natrix by SePro is being labeled to treat mussels



### **Stocking Fish when Veligers are Present** – Catherine Sykes

- Work was done at Willow Beach NFH
- Research was focused on conserving threatened and endangered species
- Quagga mussels led to a cease in fish stocking and fish movement
- Formalin and KCl efficacy was tested
  - Standard treatments did not work to kill quagga mussels
  - Increased concentrations still did not work to kill mussels
  - Results were highly variable
    - Discovered that standard determinations of mortality did not include a recovery period
    - After adding a recovery period of 24 hours, she found 100% recovery at all KCl/Formalin concentrations tested.
      - Some labs have found recovery after 72 hours
    - Reducing water hardness (calcium concentration) did not improve mortality
  - Bureau of Reclamation increased exposure time from 2 hours to 12 hours
    - Found mortality of mussels, but also fish
    - Not a viable solution for treating fish
  - KCl/Formalin treatment has been stopped at Willow Beach NFH, but continues at other hatcheries (e.g., the Pueblo Fish Hatchery in Colorado)
  - Three additional chemicals were tested
    - Cutrine-Ulta was not effective
    - Quaternary Ammonium compound was not completely effective
    - Peracetic acid was effective but only at high concentrations
  - Native fish could not survive the concentrations tested for any of the three tested chemicals
  - A third round of research will focus on relaxing the mussels
    - Clove oil
    - Menthol
    - Benzocaine
    - Magnesium Chloride
    - Propylene Phenoxetol
  - Research is on-going

### **Eradication of Zebra Mussels in Flowing Water in Texas** – Brain Van Zee

- In 2006, zebra mussels were found on a boat that came into Texas (Lake Texoma)
  - It was supposedly cleaned when it left Wisconsin
  - A marina operator caught it before it hit the water
- Four more boats were intercepted between 2006 and 2009
- In April 2009, zebra mussels were found in Lake Texoma



- Lake Texoma is on the Red River Basin but a pipeline moves water to the Trinity River Basin through Sister Grove Creek.
  - The pipeline is now closed
- Mussels were found in in Sister Grove Creek
- Permits were obtained through EPA, TCEQ and TDA
  - Took about 4 months
- Did numerous pre-treatment surveys
  - Found 635 zebra mussels in the creek
- Did dye tests to asses flow rates
- Bio-Assays
  - Chelated copper (1 & 2 mg/l) – not effective due to rapid uptake, tough to maintain target concentration
  - KCl (100, 150, 200 mg/l) – was effective at 150 and 200 mg/l
  - Water temps were 24 to 29 degrees C
- KCL was used at several stations along the creek at staggered start times
- “Canaries” were used to assess effectiveness
- Each station was dosed for 48 hours
- 21,150 lbs of KCl were used
- On the top end of the creek, most of the “canaries” survived
  - May not have hit the target concentration of KCl
- A second treatment was conducted, this time focusing on the upper stretch of the creek
  - Used 13,850 lbs of KCl
  - Met the target concentration this time
  - Still found live zebra mussels
- Estimated cost was \$111,500
- Total KCl used was 35,000 lbs (700 bags)
- Looks like temperature may play a role in effectiveness of KCl treatments

### **Monitoring & Early Detection Efforts in Texas** – Chris Churchill & Bob McMahon

- USGS
  - Looking for all life stages
  - Collect water quality data and light data
  - Sampling coincides with the reproductive cycles
    - Larvae is sampled by plankton tows
      - Cross-polarized light microscopy
      - PCR assays with BOR in Denver
    - Juveniles/Adults
      - SCUBA surveys
      - Passive samplers
      - Pipeline inspections



- Mussels have been detected in Sister Grove Creek, within the inter-basin pipeline, and have been found on boats in Lake Lavon and Lake Ray Hubbard.
- A single mussel was found at a boat launch at Lake Ray Hubbard (Trinity River)
- The University of Texas at Arlington
  - Supported by QZAP funding
  - Monitoring 14 North Texas Lakes
  - Developed a new sampler based on a scrub pad
  - Performing plankton tows, cross polarized microscopy followed by PCR assays
  - Also look for zebra mussel veliger under a microscope in the field
  - Calcium concentrations were good for zebra mussels in all 14 lakes
  - pH was also sufficient for zebra mussels in most lakes
  - Lake Texoma is cooler than all other tested lakes
  - A preliminary risk assessment matrix was presented for 14 lakes
  - No mussels were found on settlement monitors except for the one placed in Lake Texoma, where we know zebra mussels have established
  - Results
    - Only Lake Texoma shows evidence for an established population
    - 9 of 14 lakes appear to be potentially capable of sustaining zebra mussel populations
    - Found very good cooperation with marina operators

#### Moving Forward

- North Dakota is tentatively slotted for the next MRBT meeting
- South Dakota is the backup plan



### **Action Items from Joint 2011 Meeting**

- Dave will keep members informed about the HACCP Train the Trainer course
- Dave to look into access problems for some agencies to YouTube
- All members will look for and submit photos to the 100<sup>th</sup> MI Website (Dave will follow up)
- Joanne will keep members posted as to the WRP meeting details  
The team will follow up with USGS regarding the removal of points on the official map or distinguishing between “found” and “established”
- Kim will keep members abreast of status of Lake Delhi
- Kim will share, if possible, the public TV spot with team members
- MT will continue to assess awareness and behavior form Inspect, Clean, Dry campaign
- MT will participate in the Rapid Response exercise this fall with the Columbia River Basin team  
Jason will keep us posted on Hot-Water project to kill zebra mussels at Wilson Res.
- Bob will keep the team updated on the status of North Texas Lakes and will share his risk assessment when completed.
- Bill will provide extra video from his projects to the 100<sup>th</sup> MI web site
- Stephen will provide Minimum Protocols and Standards once completed



**Meeting Attendance List**

<i>Bill Zook</i>	<i>PSMFC</i>
<i>David Britton</i>	<i>USFWS – Region 2 (Southwest)</i>
<i>Stephen Phillips</i>	<i>PSMFC</i>
<i>Mick Baldys</i>	<i>USGS - Texas</i>
<i>Jason Goeckler</i>	<i>Kansas Department of Wildlife and Parks</i>
<i>Ryan Liang</i>	<i>Oklahoma State University</i>
<i>Mike Smith</i>	<i>South Dakota Game Fish and Parks</i>
<i>Brian Van Zee</i>	<i>Texas Parks and Wildlife Department</i>
<i>Steve Schainost</i>	<i>Nebraska Game and Parks Commission</i>
<i>Chris Churchill</i>	<i>USGS - Texas</i>
<i>Mike Watkins</i>	<i>US Army Corps of Engineers – KC District</i>
<i>Bob McMahon</i>	<i>University of Texas, Arlington (Retired)</i>
<i>Kim Bogenschutz</i>	<i>Iowa Department of Natural Resources</i>
<i>Curtis Tackett</i>	<i>Oklahoma Department of Wildlife Conservation</i>
<i>Tim Banek</i>	<i>Missouri Department of Conservation</i>
<i>Clayton Porter</i>	<i>USFWS – Region 2 (Southwest)</i>
<i>Rob Klumb</i>	<i>USFWS – Region 6 (Mountain/Prairie)</i>
<i>Joanne Grady</i>	<i>USFWS – Region 6 (Mountain/Prairie)</i>
<i>Ryan Dunwoody</i>	<i>Missouri Department of Conservation</i>
<i>Jason Euchner</i>	<i>Iowa Department Natural Resources</i>
<i>Eileen Ryce</i>	<i>Montana Department of Fish, Wildlife &amp; Parks</i>
<i>Catherine Sykes</i>	<i>USFWS – Region 2 (Southwest)</i>