COLUMBIA RIVER BASIN TEAM MEETING
October 7–8, 2015
Embassy Suites Portland Airport – The Cedars Meeting Room
Portland, Oregon


QUAGGA/ZEBRA MUSSEL ISSUES

2015 QUAGGA MUSSEL CONTAINMENT GLEN CANYON NATIONAL RECREATION AREA (COLEEN ALLEN, MARK ANDERSON, NATIONAL PARK SERVICE)

- **Lake-wide slipped/moored and agency controls** – restating the state laws requiring inspection and decontamination, state notification relative to transport and decontamination prior to transport
- Implemented a targeted education program in the marinas (rangers in campgrounds and marinas) – interacted with visitors at dangling rope marinas (pumpouts, trash hauling activities occur at this location – boat owners are not in a hurry launching or retrieving their boat and were receptive to messages)
- **2015 containment** – attempted to contact as many boaters launching and retrieving boats as well as screening and inspection of vessels and outreach relative to “Clean, Drain, Dry”, etc.
- **Decontamination** - MOU with State of Utah for decontaminations with NPS equipment; a local business in Page, AZ (Bulldog Boat Repair) is adept at performing decontaminations via “Mussel Busters,” a private business that is an offshoot of Bulldog Boat Repair (son of owner) – they have experience challenges with rates they charge – currently charge $85/hour; WIT Level II training will occur in March 2016 with State of Utah and NPS to expand decontamination capabilities
- **Current**
  - Working with boat owners on what they need to do to leave the site and then return next spring
  - Conducting a post-season review in late October and revisit MOU
  - Education and Outreach programs are in the works for 2016 (Jr. Ranger program will include a Lake Ranger with an AIS message; acquired a trailer that will have an AIS message wrapper on it)
  - Meetings next week with NPS will occur on the data collection system
  - All of this is taking place within an adaptive management framework
- **Spread of infestation in Glen Canyon National Recreation Area** – In the upper reaches of GCNRA (Bullfrog), they are finding isolated occurrences of veligers, likely introduced by boats from lower reaches. It is expected two populations of veligers will ultimately grow together and take over the lake in the next couple of years. Now seeing carpets of mussels in the lower reaches of the GCNRA. Mussels seem to prefer 50-foot depths versus 30-foot or 100-foot depths. There hasn’t been any overheating or system blocks in the infrastructure caused by mussels, but they are anticipating future issues.
NATHAN OWEN, UTAH DEPARTMENT OF WILDLIFE RESOURCES

Utah worked with the NPS inspecting boats for attached mussels, ensuring boats were drained and mussel-free, then sealed boats with uniquely numbered orange tags; this allows the state to determine if the boats were out of the water the required dry time as per state law. Utah inspected between 15,000-20,000 boats in 2015 in or near Lake Powell NRA. Utah entered into an MOU with NPS to decontaminate exiting boats using the NPS station – NPS trained Utah staff on use of equipment. Utah developed a screening process with Arizona and NPS to determine whether a boat should be decontaminated before it left the area – based on whether or not it had infrastructure that could not be drained, or whether it was headed to another water body.

Utah will be keeping decontamination staff off through November if staff is available to do that.

Planning to pursue a highway check station outside of Kanab at the southern end of Lake Powell; those boats not previously inspected at the lake would be checked to ensure they are not carrying water from the recreation area.

Deer Creek Reservoir - Last water sample taken in 2014 was positive for 5 veligers. Water samples are taken bi-weekly by BOR and Utah and no veligers have been detected. Dives and sediment samples have not detected mussels. There are very few, if any, boats moored at Deer Creek; most are day users.

KAREN VARGAS, NEVADA DEPARTMENT OF WILDLIFE

Lake Mead

- 371 complete decontaminations; compared to 254 in 2014. Staff has been reduced to 5 people/day this time of year.
- Next spring, with USFWS, we are focusing on people pulling their plug and draining their boats upon exiting.
- Most boats are going into Las Vegas or into storage for the winter.
- Received ZQAP funding through USFWS, which should last through 2016. Hoping to receive additional funds from NPS.
- Focusing on fishing tournaments – had 125 boats in a tournament last month. Decontaminations for large numbers of boats causes traffic jams and delays – it takes 20 minutes per decontamination. During one recent fishing tournament, NDOW decontaminated about 85 boats. Live wells are holding 10-20 gallons of water, and some boats have 3 live wells. Draining should be part of the permit.
- Regulation changes to include not being able to move

All lakes in Nevada have been negative except for the Colorado River System.

Other locations

- Wildhorse - Boat ramps were out of the water this year – few boats and few inspections. People walked the low-water lake looking for adults, and none were found. Wildhorse station will be moved to north of Elko and open into November – that will be a mandatory check station, but there will not be any law enforcement with this station – it will be open 7 days per week.
- NDOW has been operating stations at Wildhorse, Lahonton and South Fork.

Check station numbers – 10 stations statewide; 2016 – 12 stations statewide. Boater access funding has been decreasing every year and this program is in competition with other programs in NDOW. After 2017, there may be problems securing funding.

State program funding – Funds are being used for match for all federal grants – collecting about $400K per year, but it does not cover the costs of the station. Purchase of tags/compliance of boaters from the southern portion of the state is poor (coming from California – 70% noncompliant).
BUILDING CONSENSUS AND QZ FUNDING (ROBYN DRAHEIM, USFWS)

- An effort led by the National Sea Grant Law Center, WRP, USFWS, State of Arizona, National Association of Attorneys General, and others convened in 2012 in Phoenix, which has transformed into Building Consensus in the West. An action plan was produced that includes tasks to implement legal and regulatory efforts to minimize expansion of invasive mussels through watercraft movements in the western United States.
- Numerous other meetings have occurred since 2012 that have resulted in standard definitions and criteria as well as model statutory/regulatory language to implement a comprehensive watercraft inspection and decontamination program and many other activities.
- Programs in the Midwest and on the East Coast are transforming this into a Building Consensus in the United States.
- February 2-3, 2016 is the next Building Consensus meeting followed by a February 4 QZAP meeting.

QZAP

$2 million total annually

- $1 million to state ANS management plans and interstate entities with management plans approved by ANS Task Force.
- $1 million to RFP process aimed at proposals that help achieve QZAP action items. The principal areas the funding supports:
  - Limiting the spread of mussels through containment
  - Limiting the spread of mussels through compliance
  - Increasing the effectiveness of outreach and education efforts

Projects are not limited to a specific fiscal year, but they do need to start in the year in which the funding is awarded. Funding may be awarded over a three-year period. The award floor is $1,000 and the ceiling is $600,000. Match is not required but desired.

FY14 - $930,000 – Awards went to six entities.
FY15 - $941,000 – Awards went to nine entities.

FEDERAL LEGISLATION ISSUES (STEPHEN PHILLIPS, PSMFC)

- PLAQ ACT (2014) – HR. 1823 introduced by Rep. Heck, then S. 2530 introduced by Heller had a statutory exemption for public water systems. These bills died in the last Congress, so the Lake Tahoe Restoration Act S. 1724 is a bill with $45 million authorized to prevent the introduction of quaggas. But the bill does not include language that would have legislatively listed the quagga under the Lacey Act as injurious. The Dept. of Interior was opposed to the listing exemption language for public water systems, therefore all of the language was dropped. There is another Lake Tahoe Bill, HR. 3382 by Reps. McClintock and Amodei, but there’s not much AIS language in it – mostly focused on land management and forest thinning.

- Lacey Act Litigation - A ruling on snakes (US Association of Reptile Keepers vs. Sally Jewell and the USFWS) complicates the legislative quagga listing because of this ruling on snakes.

- We may need to consider an administrative addition instead of legislation, but it’s costly and takes a long time.

- The Lionfish Elimination and Preventing Act – an attempt to add lionfish to the Lacey Act.

- House Hearing on Examining Invasive Species Policy - Without federal authority, officials can’t require boat inspections and other preventive measures.
• WRRDA – Water Resources Reform and Development Act – includes $4 million – Aquatic Plant Control Program - to fund watercraft inspection stations (implement Section 1039 of 2014 WRRDA). Many entities worked on getting this accomplished.

• FY2016 House Interior Appropriations Bill – for the first time ever, we received an increased in funding for state ANS plans ($2.566 million) – which would double the amount the states receive. If the government continues the resolution, all of the language that includes the additional funding will not be included. The potential exists for WRRDA and ANSTF grant funding if the caps on existing programs are lifted.

• HF 1485 Federal Lands Invasive Species Control, Prevention and Management Act (Healthy Habitats)
  o Seeks to achieve an annual 5% net reduction of invasive species populations
  o Note less than 75% of the amount for on-the-ground control and management
  o Still in committee – one co-sponsor and no Senate companion to date

• House Drought Bill – Western Water and American Food Security Act of 2015
  o Remove, reduce, or control the effects of species, including Asiatic clams, silversides, gobies, Brazilian water weed, largemouth bass, etc.
  o Then a Senate bill was introduced by Diane Feinstein
  o Allied Fishing Groups are opposing because of panfish listed in the bill
  o Energy and Natural Resources Committee will hold a hearing tomorrow at 9:30AM EDT

• S. 373 Vessel Incidental Discharge Act provides for the establishment of a nationally uniform and environmentally sound standards governing discharges incidental to the normal operation of a vessel – OR, WA and CA are opposed to the bill because it preempts states’ authority to address incidental vessel discharges, including ballast water, and eliminate long-standing ability of states’ to protect their waters from invasive species. Legislation has a decent chance of passing.
  o S. 371 Permanent NPDES Exemption – makes permanent a temporary exemption from permit requirements of the National Pollutant Discharge Elimination System for vessels less than 79 feet in length.
  o 10/5/15 – Federal court ruled EPA’s ship Discharge Permit is illegal. The court told the EPA to reissue the 2013 Vessel General Permit. The concern for the region is that VIDA supersedes Clean Water Act Authority – would make authority totally under the authority of the Coast Guard. This will force the EPA to write the regulation in a technology-forward way.

WRRDA IMPLEMENTATION (TIM DYKSTRA, USACE)

There is a significant amount of flux with WRRDA – language and implementation. Before the USACE can do work on a project, they need authorization and appropriation. We get authority through WRRDA – but there are two parts – the language in WRRDA as well as implementation guidance directing the USACE on how to implement the language in WRRDA. Anticipation implementation guidance would prevent USACE from moving forward with watercraft inspection stations.

WRRDA Section 1039D modified an existing Aquatic Plant Control Program, a previously authorized program with implementation guidance that contained restricted guidelines (e.g., all control has to occur in a navigable waterway – inspection stations cannot occur in these locations; USACE could not purchase infrastructure with funding provided through the program based on previous implementation guidance).

USACE currently has no implementation guidance. There is a discrepancy between the House and Senate version of WRRDA – House references infrastructure, but Senate references infrastructure for research and development. If we can resolve the discrepancy and get the Assistant Secretary of the Army to agree on direction we should be heading, it is conceivable to get authorization. If the authorization is received, the USACE does not have appropriation. In the past, USACE could get earmarks –
the lack of earmarks makes this not possible. Now, USACE has funding pots – will likely be called Aquatic Plant Control Program, which means there will be discussions about who will receive those funds.

Vulnerability Assessments – the USACE is implementing VA’s through the Columbia River basin. Seattle District has completed additional VA’s (Chief Joseph, Albany Falls and Libby Dam). Lower Granite VA was completed. Currently, we have draft reports for Walla Walla District – Little Goose, Lower Monumental, Ice Harbor, McNary, Dworschak (includes dam and fish hatchery).

USACE continues to work with Portland State University to monitor via veliger sampling.

STATE/TRIBAL/CA AIS PROGRAM INFORMATIONAL REPORTS

- **Blaine Parker** (CRITFC) – Blaine has been working with tribal fishers to better understand the transfer of invasive species, asking them to look for out of state boats using common parking areas. Blaine worked with PSMFC on a national rapid response planning effort in DC, providing comments on the plan. PSU offered to provide flowering rush information to Blaine to share with tribal fishers.

- **Tom Woolf** (Idaho) – In 2015, Idaho operated 20 stations with 1 roving crew; 63,229 inspections breaking the record of 49,380 from last year. 637 were hot washed; intercepted 25 vessels with mussels, and 15 were intercepted in part because of notifications from other entities – 8 of the 25 were previously washed, and 11 were out of the water for less than 30 days; 14 were commercially hauled and 18 were recently purchased.
  - A 65-foot houseboat from Mead came through Idaho at night, but because Nevada notified Idaho, the boat was intercepted and cleaned and ensured it had adequate dry time.
  - In June, a boat from Lake Erie came through Montana and notified Idaho – the follow-up inspection found 2 adults on the hull, but the interior infrastructure of the boat was infested with mussels.
  - In June, 20 barges were moved from Iowa, and 4 barges were identified as having mussels. The Department of Transportation notified inspection staff of these barges.
  - In October, a boat purchase off Craigslist came from Michigan, and the Department of Transportation notified inspection staff of the oversized load – the boat had mussels.

Notification from NV, AZ, and ITD has been critical, but Idaho is still seeing boats that have not been inspected.

Source of high-risk vessels in 2015 is Lake Powell, Lake Havasu, Colorado River, Lake Mead, and then others. Most had not been inspected prior to arriving in Idaho. We need to standardize how we identify high-risk boats. **We need to look at boats that have been in mussel-infested waters.**

In 2015, no evidence of ZQ mussels in Idaho, but have new detections of Hydrilla, flowering rush, Eurasian watermilfoil, Curlyleaf pond weed, and snails.

3 known new hydrilla populations verified in 2015 associated with warm water aquaculture – these plants are not found outside of warm water areas (geothermal warm water hatchery areas).

Working with Montana State University to differentiate milfoil hybrids and operational herbicide treatments.

Dry ground flowering rush treatments appear to be successful; exploring in-water rush treatment in 2016.

**Items to consider for 2016:**

- Where are high-risk boats coming from into the region? Can we compile information from the region?
- Does anyone require an inspection before registering recently purchased boats?
- Target inspections March through May to continue to encourage watercraft inspections at southwestern water sources.
- Regional log that better represents threats in the PNW for “Don’t Let it Loose.”
- Do we need a strategy to outreach to waterfowl hunters?
- Can we develop regional outreach to non-motorized users?
What is our strategy to prevent upstream movement of AIS in the Columbia?

We should consider including several types of watercraft on Don’t Let It Loose campaign materials.

- **Rick Boatner** (Oregon – ODFW) – 5 Stations, 12,000 boat inspections, 9 QZ boats; 260 simple decontaminations for other AIS. Found ringed crayfish in the Willamette System.

- **Glenn Dolphin** (Oregon – Oregon Marine Board) – OMB allocates funding for WID; OMB keeps a pulse on law enforcement activity in the state
  - Summer 2015 – permit sales increased and number of law enforcement citations decreased
  - The first 10 months of the year - 980 enforcement actions; last year, 1,700 enforcement actions at this same time
  - Funding has been flat for 4 years; In 2017, statutes will be opened and housekeeping will occur on statutes, incorporating missing components in Oregon
  - Compliance level on the highway remains at about 70%

- **Linnaea Schroer** (Montana Fish, Wildlife and Parks) – FWP, MDA, DNRC, and MDT comprise the Montana AIS program
  - Montana Invasive Species Advisory Council was formed in 2014 and is currently doing a statewide management assessment of invasive species, and will host a summit and develop a strategic plan
  - Increased involvement by the Montana Dept. of Transportation
  - Seeking funding for a second plankton lab to process samples for downstream states (MO and MS river basin) and other states
  - This past summer, they had the first non-state check station; this past year, a station was run cooperatively between the Flathead Basin Commission and the Blackfeet Tribe – the Tribe required all boats be inspected prior to launch on reservation waters
  - The state would like actual quarantine language to be added, but the legislative climate is not very conducive to this happening soon
  - Ballast tank boats remain a concern (similar to the rest of the PNW)
  - Constant looking at reviewing, refreshing and improving messaging – awareness is high, but behavior is not changing
  - Fish, Wildlife and Parks has authority over all taxa
  - Priority species haven’t changed much of the past several years
  - Montana watercraft inspection program has grown – in 2014, they have inspected almost 35,000 boats. Support for that program remains strong.
  - New for 2015 – continued focus on illegal movement of live fish; crack down on drive-bys; outreach to non-motorized boat owners
  - Highlights of 2015 season
    - Over 34,000 boats inspected
    - 214 cases of fouled boats, including 5 QZ boats
    - 5 cases of illegal live fish
    - 19 cases of illegal bait
    - Raffle tickets were given to anyone that had their boat inspected - 37 donors, 70 prizes, $5,996 value
      - 8,406 separate entries by 4,843 people
      - 7,829 entrants completed the feedback survey
      - 1 person was inspected 41 times; each entered person averaged 1.85 entries
      - 2nd most popular survey ever conducted by Montana FWP
  - Use of reader boards, when the stations were both open and closed
  - Monitoring and early detection is ongoing
  - New finds
• NZ mudsnails in Ruby River
• Curlyleaf pondweed in Newland Creek Reservoir
• No juvenile or adult populations of ZQ mussels
  • Continue to be challenged by equipment goes in and out of water that is not watercraft

• **Jesse Schultz** (Washington Department of Fish and Wildlife) – The legislature gave them an extra $300,000:
  o $100,000 went toward a funding committee project to find additional funding for AIS
  o $65K is for AIS funding
  o $65 for ballast water
  o $65 for enforcement AIS

Enforcement – the first Sergeant to lead the WDFW AIS enforcement will again be leading it as Sergeant Kline is no longer with the program.

Black Lake is a high-risk lake for QZ mussels – Calcium levels are low, there are a few bass tournaments, and there are several types of docks.

AIS NPDES Permit Northern Pike – Since acquiring this permit through Washington Dept. of Ecology, WDFW is using rotenone for northern pike under its own permit (first time ever). Lake in Pend Oreille County – two small lakes – Upper King Lake and Lower King Lake in the Pend Oreille Basin.

Japanese Tsunami Marine Debris – technician working on this through a grant ending this year. July 5 is beach cleanup day.

Mussel monitoring is status quo from last year – 514 tows, 252 substrates – with the warmer weather, monitoring will extend into October.

Outreach and Education – A private citizen is rigging up his own decontamination washer for his boat (hot wash).

520 Bridge Flexifloats came through Washington from Lake Mead – put them in Lake Washington. They pulled the ones out that they did not get a chance to inspect – there was no growth.

In July, African Clawed Frogs were discovered in the City of Lacey stormwater ponds – management response included establishing a stakeholder group, determine extent infestation, contain and prevent in the ponds, then monitor. Their use of a mega trap and other amphibian traps yielded over 6,000 African clawed frogs. WDFW made a barrier for each of the ponds – 1 mile of fencing. Chemical treatment option – they are looking for chemicals, but they are not labeled for it. Someone else provided a picture of a frog that he said he found in the Bothell stormwater pond.

• **Teegan Ward** (City of Bellingham) - Third season for mandatory inspections, conducted 8,900 inspections at two lakes – Lake Whatcom, Lake Sammish – had about 500 inspections in which the boats were not clean, drained and dry. No boats with mussels, but boats came in from mussel-infested waters. Still offering an online course – if they get 100% on the quiz, they get a $10 discount on their permit. Currently, bringing in about 40% of the cost recovery – City Council wants them to move to full cost recovery.

• **Martina Beck** (British Columbia) – This year was the first year for crews on the ground. In BC, the Controlled Alien Species Regulations (2009) in BC’s Wildlife Act was amended in 2012 – there is now provincial and federal legislation (2015). Six trained inspection crews (2 auxiliary) with mobile decontamination units based out of Nelson, Penticton, Cranbrook, Invermere and Valemount operational from late May to October 2015 (primarily along southern border and Alberta border). The goal was to identify the higher volume locations. Inspection crew priorities: roadside inspections, education/outreach/collaboration. As of September 29th, over 4,000 watercraft inspected, crews interacted with 9,400 people, 33 watercraft required decontamination, of which 15 contained invasive mussels or standing water and 6 were issued a 30-day quarantine order due to risk of live mussels. Boats were coming from Ontario and Manitoba (most) and then California, Colorado, Nevada, Quebec, Texas and others, in descending order.
the 11 mussel-infested boats, 6 were commercial and 5 were recreational. 2015 mussel veliger monitoring expanded this year with plankton tow samples collected by regional committees and ministry staff. In 2016, funding for 4 or 5 crews, five eastern and 3 southern crews; federal government remains absent. We would like to have 5 eastern crews and three crews along the U.S. border.

- **Kate Wilson** (Alberta) – 5 program elements – 2 full-time staff and 1 project position, with seasonal inspection staff.
  - Invested $50,000 in a Clean-Drain-Dry boater outreach campaign - 25% increase in compliance when mainstream media advertising implemented
  - **Outreach** - Don’t Let It Loose campaign was tailored to species Alberta is concerned about; billboards, boat launch signs, and videos were popular
  - **Response** – Building EDRR plan for mussels; Black bullhead incident, goldfish; Prussian carp; live fish tank water emptying into storm drains near a river; snakeheads; flowering rush
  - **Monitoring** – 2013 – 55 water bodies; 2014 – 73 water bodies; 2015 – 66 water bodies; the dream is for multi-taxa monitoring moving forward
  - **Watercraft inspections** – Use of digital signs for inspection stations ($7,000 per sign for season) assist greatly with visibility. Twelve watercraft inspection stations in 2015 (3 roving and 9 stationary/highways). Busiest on the Saskatchewan border. One boat was fouled from the Colorado River; the remainder is coming from the East. 11 dreissenid-fouled boat (3 were live), 17 fouled boats including marine mussels. Three mussel sniffing inspection dogs are being used at busy stations.
    - 2015 - 20,888 inspections; 17-mussel-fouled boats (11 with dreissenids); three citations under new legislation (failing to stop; failing to assist; aquarium dump/release)
    - Compliance is rising at inspections and through the hotline, reporting and public awareness
  - **Policy and legislation** – the prohibited species list bans possession and transportation of 52 aquatic invasive plants, invertebrates and fish (mussels and plants, dead or alive). Mandatory stopping at designated inspection stations (highways defined by Traffic Safety Act – very broad); enhanced authority; quarantine provisions, etc.
    - Authority of Watercraft Inspectors – authority is specific to inspection; soliciting information about watercraft, taking samples of suspect species/water, cleaning or hot water wash
  - **Next steps and challenges** –
    - Coming soon – traffic sheriffs/RCMP to be appointed as Fishery Officers (to assist with AIS enforcement; inspection station focus)
    - Don’t Let It Loose mailing to stores and stakeholders
    - Cultural/ceremonial release and practices
    - Consistent and sustainable program resourcing
  - **Registration for potash**
    - Agency working with Alberta Innovates (independent research council) to pursue open water registration of potash for mussel control– the states can likely register it easier if this happens. Looking for partners in research requirements/process. Have initiated process with the pre-submission consultation to PMRA
  - **Partnership opportunities**
    - Collaboration with commercial haulers and neighboring jurisdictions (staggered inspection increase delays, inability to inspect en-route, high risk boats)

- **Matthias Herborg** (British Columbia)
  - Moving Forward
    - Implementation of federal AIS regulations
      - Example: Black bullhead in Alberta – June through September 2015 eradicated black bullhead using provincial regulations
    - Engagement of fishery officers
    - Canadian Border Services Agency
Control and Eradication – pesticide use – deleterious substances – we don’t have chemicals registered for use
  - Spartan emergency registration initiated in July 2010 and commenced spraying in 2013
  - Registration for potash (KCl) is being considered in Canada, but the funds do not exist to pay for the registration.
  - Working on collaborative effort with commercial haulers to develop a process for inspection and decontamination times.

**Invasion modeling** – Mark Lewis lab at University of Alberta based on boater movement data to optimize inspection locations; develop an EDRR model, looking at maximizing detection ability and response costs.

**Overview of Washington State’s AIS Funding Advisory Committee Process (Raquel Crosier, WISC)**

Washington ISC created a funding advisory committee to seek alternative sources of funding for aquatic invasive species in Washington. They have created a list of 36 funding alternatives, from permits for shellfish growers and other activities. Representatives include people from Farm Bureau, ports, tribes, recreational users, nonprofits and others. WDFW is currently funded at about $275,000 per fiscal year, and they are seeking up to $5 million.

**Enhanced Monitoring and Investigation of the Spread and Potential Impact of Aquatic Invasive Mussels in the Columbia River Basin (Stephen Bollens, Tim Counihan, USGS)**

- Funding is cost shared by the BPA Technology Innovation Program, WSU and USGS
- Objectives are to further coordinate existing regional early detection efforts, compile information describing boat ramps, evaluating efficacy of the new FlowCam, conducting a pilot study of eDNA, and providing opportunities to train professionals.
- Benefits to BPA include early warning system tools, improving the framework for assessing the risk of introduction and establishment, and enhancing monitoring to improve the likelihood of control and mitigation.
- Regional Coordination: Zebra and Quagga Mussel Monitoring
  - Established a process to collect, compile and publish planned and completed zebra/quagga mussel monitoring locations
  - Placed monitoring in the context of what we do and do not know about the risk of introduction and establishment
  - Estimating probability of detection of invasive taxa in 3 Columbia River and 1 Snake River reservoirs using methods from Hoffman et al 2011 and Emerson et al. – by the time we get to detection, rapid response will not be very meaningful. To improve our capability for early detection:
    - Increase the number of samples being taken
    - Reallocate existing monitoring efforts to high risk areas
    - Improve the technologies associated with detection
- Early Detection Monitoring
  - Sample processing – net samples from field is split (half is archived for plankton community analysis and the other half is enumerated via traditional microscopy and FlowCam)
    - FlowCam
      - Experiments showed the FlowCam detected dreissenid veligers in deionized water
      - Experiments showed the FlowCam detected dreissenid veligers in Columbia River Water
      - Experiments were mixed when Corbicula veligers were present; the FlowCam could not detect between dreissenid and Corbicula veligers about 1/3 of the time. Hoping to further develop the software
      - No dreissenid veligers have been detected in any samples in the CRB.
  - Initiated an environmental DNA study in 2015 – ZQ mussels release copies of their DNA into the environment as a part of their natural functioning

**Next Steps**
USE OF UV RADIATION TECHNOLOGY TO PREVENT SETTLEMENT OF QUAGGA MUSSEL LARVAE

(JACKSON GROSS, SMITH-ROOT)

There wasn’t a dose response for quagga mussels. Study conducted at Lake Mead fish hatchery. UV causes necrosis – it’s a delayed mortality.

There are three major spectrums in the UV Light Spectrum – UV-C is the germicidal faction of the three (the other two are UV-A and UV-B).

Objectives were to evaluate UV-C and UV-B radiation effects on larval mussels, determine the dose in a continuous-flow system, evaluate the effects of water transmissibility on the effectiveness of optimal dose, and determine the operation cost for implementing the technology in hydroelectric facilities.

Study will occur at Lake Mead from October 2015 through October 2017 as well as continuing lab studies – the goal is to determine the minimum UV-C and UV-B dose to prevent larval settlement.

POTENTIAL CHEMICAL CONTROL TOOLS FOR DREISSENIDS AND OTHER INVASIVE MUSSELS

(CHRISTINE MOFFITT, USGS AND KELLY STOCKTON, KASF)

The control tools must be matched to the application – it’s important to have a suite of tools in the toolbox.

Potash/KCl – has been moderately successful to successful. Most have been using 100 mg/L, although lower concentrations may be as effective. But there is uncertainty in the data and efficacy relative to quagga mussels and water quality criteria as well as temperature and time of year effects.

Objectives of the study were to test the efficacy of KCl as a toxicant on adult and veliger quagga mussels, compare responses at different water resources, and speculate on what should be included in risk assessments in the region.

Studies were conducted as the USFWS Willow Beach National Fish Hatchery from May through June and August through September using adults and veligers using water from CJ Strike reservoir in southern Idaho and Willow Beach water.

- Veliger trials – 960 mg/L – static studies – added toxicant to vials
- Analyzed water quality analysis, including metals profile
- Adult trials – 100mg/L, 200 mg/L (analytical grade)
  - After 30-day exposure in static triplicate tubs, 200 mg/L killed everything, but the 100 mg/L did not kill everything with Willow Beach water.
  - There is no significant difference in K levels of test waters, but Na, Ca, Mg significantly higher in Willow Beach water.

Compared CJ Strike from Willow Beach results

- All veligers in CJ Strike water were dead after 12 hours – potential seasonality of water quality influence
- Adult trials – 100% mortality of adults after 4-6 day exposure at both 100 mg/L and 200 mg/L

Conclusions:

- Water quality is a factor in a KCl treatment
- Cations may be important, especially Na+ - is Sodium concentration affecting response relative to elevated potassium?
- Temperature effects to consider
Ignoring Calcium, we spiked CJ water with NaCl to increase salinity and conductivity. Sodium content is a key factor determining the mortality in any kind of KCl application. Also, there may be seasonality within the response. Membrane ion exchange is key to osmoregulation.

**Zebra and Quagga Comparison will occur in November 2015 with results in December**

Will be conducting a study on Lake Ontario, CA with RNT Consulting – will spike the Lake Ontario water with NaCl

Na+ and Ca++ levels lower than UI water

Adult assessment for up to a month – morphologically separated

Veliger assessment for up to 5 hours

**RAPID RESPONSE WORKING GROUP, VULNERABILITY ASSESSMENT TEAM, AND REGIONAL DREISSENID FRAMEWORK (LISA DEBRUYCKERE)**

There has been significant progress made in completing vulnerability assessments in the Columbia River Basin since 2013. The Rapid Response Working Group has developed a 54-page action document that describes the decision-making framework, best management practices and effects analyses of chemicals to be used in the event of an introduction of dreissenids in the Pacific Northwest. In addition, OR, WA and ID have developed rapid response plans. BC is currently drafting a plan. PSMFC, the federal agencies, and Lisa are meeting with Oregon Governor’s Natural Resource Policy Cabinet in 2015 to walk through key steps and agency responsibilities in the event of an introduction. USFWS will be the lead federal agency in the event of an introduction of dreissenids in the PNW. A rapid response webinar is scheduled for December 4, 2015. A dreissenid mussel research priorities workshop is scheduled at PSU for November 4-5, 2015.

**FLOWERING RUSH UPDATE (SHELLEY HANSON AND DAMIAN WALTER, USACE)**

A 3-inch diver-assisted suction dredge was used to remove flowering ruch at MCN's Lake Wallula. The source of the infestation was the Yakima Basin. The USACE is eradicating flowering rush upriver of the MCN Dam in Lake Wallula, while WDOE is eradicating in the Yakima Basin. The USACE does not have any chemical controls available to use on flowering rush, but they are using black mitigation mats to cover flowering rush sites after dredge removal. Flowering rush has also been found below MCN Dam at Arlington and Crow Butte Island areas (sites untreated to date – eradication will be conducted by the USACE Portland District).

**NORTHWEST POWER AND CONSERVATION COUNCIL UPDATE (JIM RUFF, NWPCC)**

The NWPC described seven emerging high priorities from 2014 Fish and Wildlife Program – the 3rd highest priority is aggressively addressing non-native and invasive species. NWPC has been working with PSMFC and PNWER to lobby at the federal level to augment state efforts relative to aquatic invasive species via watercraft inspections stations under the 2014 Water Resources Development Act bill. At the last NWPC meeting, the Council wrote letters to regional directors of the three federal action agencies to provide funding to assist states with prevention efforts. The Council is very concerned about the spread of invasive species and will receive a briefing on the regional dreissenid framework on Tuesday, October 13, 2015.

**OPERATION DARK CROSSING – 2015 NIGHT TIME CHECK STATIONS REPORT (ERIC ANDERSON, WDFW)**

Operate check stations for $25,000 to conduct 5 mandatory check stations to be completed by September 2015. Locations included I-90 Spokane, Route 395 outside of Kennewick, and I-5 outside of Ridgefield. Used balloon lights on tripods and portable generators to illuminate the check station signs.

WDFW used IPADs to collect information electronically.

A total of 123 boats came through Ridgefield; 88 came through the station between 4 am and 6am, a result of the Buoy 10 salmon fishery. Although WDFW has the authority to conduct waterfowl stations, this authority could be revoked if wielded
wrong (i.e., unnecessarily delays to public). Inspection protocols were adjusted at Ridgefield, including time at station, whether the boat was local versus out of state, whether the boat was an obvious salmon fishing boat/trip, overall appearance of vessel.

Check station results (on slide)

**Results:**

- Successful implementation of project
- Recon is a necessary
- Identification of anomaly due to Buoy 10 fishery
- Development of E-form for inspections
- Lighting for signage and inspections
- No safety incidents
- No complaints from the public
- Ability to adjust because of hotwashes
- Proving that nighttime watercraft movement occurs
- Inspections of watercraft from AIS states

New questions needing answers:

- Could there be a seasonal timing period with associated increase of nighttime watercraft?
- Add two others from SLIDES

2016

- WDFW would like to re-initiate grant
- Apply lessons learned and begin project earlier in year, plan stations to answer the new question, more stations throughout spring and summer, weeknights, etc. SLIDES

**Uniform Minimum Protocols and Standards/Wyoming 2016 Rapid Response Exercise (Leah Elwell, ISAN)**

**UMPS Update**

A new version of the document is forthcoming. The purpose is to provide the best possible recommendations for watercraft inspection and decontamination and ensure all WID programs consistently use the best standards, practical science and current technology available.

UMPS is the collection of the most recent science of dreissenid survival/mortality and decontamination and includes recommended minimum standards to incorporate into a WID program. The training manual is focused on step-by-step procedures to conduct inspection and decontamination and includes knowledge of boat design. The UMPS are the sideboards that guide the training.

The Invasive Species Action Network received a contract through PSMFC, and working with WIT and WRP and others with programs, the project is in the last phases.

The changes include:

- Incorporating peer-reviewed research
- Definitions generated from Building Consensus
- Decontamination Unit Specification
- Specification Guidelines
• Seal use maps

The document will undergo one final review, then be formatted, and then shared with boating industry leaders (a first time for this document).

**Wyoming 2016 Rapid Response Exercise**

Jackson Lake exercise in May of 2016 in Grant Teton National Park. The Greater Yellowstone Area Greater Yellowstone Coordinating Committee – their AIS subcommittee has been focusing on an introduction of an invasive to discuss level of preparedness. They walked through the basic components of a rapid response plan and walk through the components, and a list of action items was developed.

The proposed RR exercise is Jackson Lake, which empties into the Snake River, the largest tributary to the Columbia. The lake is 25,540 acres with a maximum depth of 438 feet, has 4 access points, motorized boats are permitted, they have a fledgling inspection program and there is a BOR dam at the outlet of the lake. There are a lot of management agencies. The planning team includes PSMFC, NPS, WY Game and Fish, ISAN, USFWS, and GYCC. The planning team is in the early stages of discussion, and is discussing veliger and adult discoveries, etc., to enhance the learning environment.

The objectives and outcomes are to increase communication among managers, increase knowledge of contact points, and develop a FYCC framework-style rapid response plan, considering what Idaho used for their plan.

Idaho will be invited to participate in the May 2016 meeting as well as tribes and others.

**MARINE BIO-FOULING MANAGEMENT PLANNING (NICOLE DOBROSKI, CASLC, WRPCC)**

Biofouling is any organism attached to wetted surfaces.

Vectors of marine biofouling include trading/commercial vessels, passenger vessels, recreational vessels, commercial fishing vessels, non-trading vessels, movable structures, large marine debris, and immersible equipment.

42.6% of global established NIS originates from biofouling; up to 67% of established NIS in North America originates from biofouling; and up to 60% of established NIS in California originates from biofouling.

First Regional Management Plan Workshop in April 2015 in Seattle, WA (held in conjunction with Pacific Ballast Water Group meeting). Challenges to developing a plan include the fact that many plans exist, but not a lot of implementation. In addition, there is a need to identify gaps in existing laws/regulations for management of marine NIS. The group decided to focus on marine biofouling.

In September of 2015, there was a meeting at South Lake Tahoe, in which there was a review of international, federal, state and provincial regulatory roles and responsibilities relating to aquatic marine invasive species on the West Coast.

• Lack of establishing biofouling management criteria for commercial vessels in all jurisdictions
• In-water cleaning regulations are not consistent across jurisdictions
• Fish and recreational vehicles engaged in coast wide voyages pose a significant threat for NIS transfer

The group decided to focus on vessel vectors of biofouling, including commercial ships, recreational boats, oil rigs/equipment. A very high level outline was developed.

Next steps are to expand the pool of experts/contributors and collect relevant literature and management plans.

Planning is underway for a third workshop on December 9, 2015 in the Portland, OR metro area to work on developing a Regional Biofouling Management Plan.

**WILLAMETTE AQUATIC INVASIVE NETWORK (M. KRASS, WILLAMETTE RIVER KEEPER)**
A new collaborative partnership to address a watershed wide issue of aquatic invasives. *Ludwigia* was the catalyst plant that contributed to the creation of the WAIN.

The Willamette AIN fosters collaboration to share information, expertise, technologies, scientific data, and BMPs and to develop strategies to protect aquatic resources and restore riparian habitat in the Willamette Basin.

Identify target invaders and conduct a widespread survey, integrate EDRR
- Control target invasives
- Reduce weeds and aquatic invaders (*Ludwigia* is a pilot project)
- Provide outreach and education to... landowners, recreational users, contractors, natural resource managers
- Restore!
- Develop shared strategy/priorities for the entire Willamette
- Share information, WAIN can act as a clearinghouse for information
- Identify opportunities for partnerships- leverage funding /other resources
- Maintain focus on aquatic invasives with this group
- Support broader programs
- Enhance and improve coordination between agencies and organizations
- Research and gain greater understanding for BMP’s for target invasive species

Currently 65 listed members represent a diversity of stakeholders.

The group developed a set of goals and actions. They have a list of priority aquatics, a watch list and other invasive species. In addition, the group has developed an aquatic invasive species management information and resource list, created a webpage on Cascade Pacific RCD webpage (www.cascadepacific.org).

**CHRISTINE PRATT – SEATTLE CITY LIGHT (SCL)**
AIS detections in Boundary Reservoir, WA – FERC license (2013) required that SCL implement an early detection monitoring program for AIS, per the FERC-approved AIS Plan. Portland State University initiated an early detection monitoring program (2014). Shells of *Corbicula* were found in 2014 doing shoreline surveys. This past summer (2015), Steve Wells and his crew found two areas with live *Corbicula fluminea* (*Asian Clam*) in the Pend Oreille River. *Corbicula* is getting a foothold in the system<=Steve – would you say this is an accurate statement/not?]. More *Butomus umbellatus* (flowering rush) was found as well as *Myriophyllum spicatum x M sibiricum* (it’s the hybrid between the native and invasive) and *Radix auricularia* (Big-Eared Radix Snail). At this point, monitoring and notification are occurring – no plans yet for control.

**STOP ANS HOTLINE**
STOP ANS hotline is discontinued – it now goes to an answering machine that provides leads to a webpage with contact information for state AIS coordinators. It also redirects people to USGS for people to report new species finds.

**OREGON BALLAST WATER INSPECTOR**
The position has been vacant. They are now trying to combine this half time position with another half time position with another entity to reduce turnover long-term.

**NEXT MEETING OF THE CRB**
The next meeting of the CRB is proposed to be in Spokane in April/May of 2016. If you are aware of competing meetings/conferences during this time period, please let Stephen know. Stephen will send out a survey on best possible dates.