WESTERN REGIONAL PANEL
ANNUAL MEETING MINUTES
October 12, 2011
The Washington Inn
Oakland, California

Transcribed by Dominique Norton, CA Department of Fish and Game

OPENING GREETING – Mervin Wright Jr., Vice-Chairman, Pyramid Lake Paiute Tribe
Mervin Wright discussed Pyramid Lake, which is about 40 miles northeast of Reno, NV, and the Tribes concern of invasive species introductions into Pyramid Lake. At this point in time, and as a result of the close vicinity to other infested waterbodies, Pyramid Lake is currently considering possible prevention strategies to protect the lake from invasive species including watercraft inspection.

WELCOME
Keynote Welcome Remarks – Judy Kelley, Director, San Francisco Estuary Partnership
Judy Kelley welcomed all to the meeting. Explained the San Francisco Estuary Partnership (SFEP) and their involvement with invasive species. The San Francisco Estuary is the largest estuary on the West Coast with 1600 square miles of water. It drains 40% of the state, provides drinking water for 23 million people, irrigates 4.5 million acres of farmland, and supports significant economic activity. The estuary is rich in fish and wildlife habitat in a highly urbanized nine county Bay Area.

SFEP was created late 1980s as a result of the Clean Water Act Section 320. SFEP works on issues including invasive species, habitat protection/restoration, water quality, and wildlife/habitat improvements. San Francisco Estuary is the most invaded system in the world.

SFEP has been involved with WRP since 1987 and has also been a member of the ANSTF. Currently involved in ballast water outreach and education and will be working with the America's Cup.

FEDERAL AND STATE MEETING SUMMARIES
The Federal and State WRP members met separately on October 11, 2011 to discuss challenges and issues unique to their respective agencies.

State Meeting Summary – Susan Ellis, CA Department of Fish and Game
Western State agencies are meeting via conference call monthly to continue to coordinate on primarily the quagga/zebra mussel issue. At the October 11, 2011 State Meeting, a number of issues were discussed including: 1) how do states determine if a waterbody is positive/negative for quagga/zebra mussels and developed a subcommittee to develop standard language that can be adopted throughout the West; 2) how to elevate issues within each individual agencies and developed a subcommittee to coordinate with the Western Association of Fish and Wildlife Agencies; 3) how to address the inspection and decontamination issues watercraft with ballast pose and will draft a letter to watercraft manufacturers to possibly redesign these types of watercraft; 4) if it is possible to adopt a standard use of watercraft seals/bands in the West but determined that since so many state and local agencies are already using a number of seals/bands differently, a universal use is not currently likely; however, a table on how the seals/bands are being used will be compiled; 5) if there is a possibility to share existing materials and decided to

upload materials to the Catalog of Aquatic Invasive Species Education/Outreach Materials (http://www.clr.pdx.edu/projects/edoutreach/); and 6) minutes from the 10/11/11 meeting that will be included with the minutes of this meeting.

Federal Meeting Summary – Ron Smith, USFWS

At the October 11, 2011 Federal Meeting, US Bureau of Reclamation, US Forest Service, National Park Service, Bureau of Land Management, US Geological Survey, and US Fish and Wildlife Service discussed a number of issues including: 1) the WRP coordinator position, how the federal agencies can help facilitate the position and funding, where the position would be housed, and will continue this discussion at the 11/13/11 Executive Committee; 2) QZAP funding and implementation; 3) aquatic invasive species research and tried to identify who is funding and doing what and where to try to eliminate duplication of effort. Will develop a system to track research that is occurring, who is funding it, and a point of contact (i.e. database/clearing house), but in the mean time, USGS will develop a database that can be used until a more permanent system is developed; 4) watercraft movement across the Western US specifically watercraft originating from Lake Mead and what the Federal government can do to assist (i.e. possibly establish regulations); 5) how to continue to offer watercraft inspection training level I and II in the future; 6) prevention compliance and strategies and what Federal agencies can do to ensure they are not a vector (USFS developed guidelines available on their website and the USACE is starting to review aquaculture permits); and 7) update on the 2010 Strategic Plan Session and agreed there was improvement in communication between federal and state agencies.

MARINA ISSUES – INTRODUCTION

CA Ballast Water Program – Lynn Takata, CA State Lands Commission

In 2003, research indicated that 79% of nonindigenous species were introduced in North America (estuary and marine environments) via shipping vectors. There are two main shipping vectors: ballast water and vessel biofouling. Prior to regulations, it was estimated that ballast water was responsible for moving >7,000 organisms per day. Vessel biofouling is an important way that species are moved around. Prior to federal regulations managing the shipping vector, the CA state legislature passed legislation to address the issue. In 1999, the Ballast Water Management Control for Nonindigenous Species Act was passed to control organisms that were introduced via foreign ballast water, which included reporting, record keeping, inspections and had a sunset of January 1, 2004. In 2003, the Marine Invasive Species Act was passed, which reauthorized and expanded the program and required the program to address domestic ballast water movement, vessel biofouling, ballast water performance standards and extended the sunset date to January 1, 2010. In 2006, the Coastal Ecosystem Protection Act was passed that deleted the sunset date and required an assessment of the available treatment technologies, and environmental impacts of technologies.

The Marine Invasive Species Program is an interagency state program. The Bureau of Equalization collects fees that fund the program (polluter pays). The CA Department of Fish and Game's Oil Spill Prevention and Response Program conducts biological monitoring in coasts and estuaries with the goal of evaluating the effectiveness of prevention measures, and the State Water Resources Control has an consultation/advisory role. The CA State Lands Commission (SLC) is responsible for program administrations and coordination, policy development, data management, and inspections and enforcement.

The SLC Data Management Team of 6 staff in Southern CA inspects every vessel that arrives to CA. CA state law requires all vessels that arrive to CA to complete a form that outlines their ballast management practices and a form that provides information on their haul husbandry management practices (biofouling issue). In 2009, 11,000 forms were completed and QA/QC were completed on these forms. Letters are sent on a monthly basis to vessels that fail to submit the required forms. Data collected from these forms is used to analyze management patters in the CA fleet for legislative reports to advise the legislature on new management practices, and data sharing.

SLC has field offices in Hercules and Long Beach where the inspection program operates. SLC is required to inspection 25% of vessel arrivals for compliance with the laws. Inspectors (8) are the first line of communication with ships and ship crews and conduct outreach and education on how to comply with CA laws and provide access to ships to academic researchers.

SLC's Program Administration staff (3) is in Sacramento where the program components are implemented, facilitate internal and external coordination, develop policy and regulations, develop reports to the legislature, complete data analysis used in reports, and identify research that would answer priority questions to help develop better regulations.

Current ballast water management options including: retention – vessels retain ballast water (>80% of vessels currently do this); ballast water exchange – vessels are required to do so prior to entering CA waters; discharge to a reception facility – vessels discharge at a land based facility; however, none currently exist; or ballast water treatment.

Ballast water exchange is the flushing of near-coast organisms and ballast water in the open ocean. It is believed that the environmental conditions of open ocean are not conducive for coastal organisms survival. CA requires vessel or ballast water from outside of Pacific Coast Region to exchange at 200 nautical miles from land in waters 2,000 meters deep or deeper. Vessel and ballast water from within the Pacific Coast Region is required to exchange 50 nautical miles in 200 meters deep or deeper. The majority (~88% by volume) of ballast water discharged in CA is compliant with regulations. Of the 12% by volume of ballast water out of compliance, exchange was attempted or not exchanged.

Ballast water treatment technologies have limitations including safety issues, deviation of route and delays, and efficacy issues (studies have estimated 50-98%). Therefore, look into treatment technologies that could be installed in a ship to treat the ballast water which would potentially provide better protection, eliminate deviations and delays, and reduce some safety issues. The Marine Invasive Species Act passed in 2003 mandated the SLC Program recommend performance standards for ballast water discharge by 2006.

The 2003 Marine Invasive Species Act directed the SLC program to evaluate the risk and provide recommendations to the legislature on how to vessel biofouling and how to reduce introductions.

In 2005, a technical advisory group was developed and had the following findings: 1) hull maintenance is important to merchant fleet to reduce drag; 2) certain vessel characteristics lead to more biofouling accumulations (traveling at slow speeds, long immobile periods, sheltered "nooks and crannies", and old antifouling paint). At the time there was little information on the nature of biofouling on vessels arriving to CA; however, did know if a vessel had exaggerated

characteristics (listed above), then the vessel would pose a high invasion risk. The 2006 report to the legislature recommended addressing high risk vessels and, in the mean time, collect data on the generally well maintained CA fleet to learn how to better address this issue in the future. The report also identified the need to conduct a biological study to learn how to better regulate the shipping community.

In 2007, AB 740 was passed that adopted the recommendations from the 2006 report and directed SLC to adopt regulations (CCR Section 2291) by January 1, 2012.

Questions:

1) Have you looked at the effectiveness of ballast water exchange at stopping invasive species spread? Studies have been performed that looked at this. Particularly, one study conducted in Washington that looked if there are still coastal organisms in ships after they perform exchange and there are but less of them. Other studies that have looked at the efficacy of ballast water exchange have found the efficacy ranges from 50%-98% removal rates which postulates due to ballast tank size and design. Therefore, the SLC program focuses on performance standards and treatment technologies.
2) Stated that ships are finding ways to retain ballast water, is that indefinitely? At some point they do need to take on ballast water and discharge the water but this is done generally off shore. Ships have found ways to plan ahead to modify cargo weight distribution.
3) How do you really know the ship is doing what they report? Self reported forms do require a signature. The SLC inspectors will take the forms and look at the vessels chart and the plotted course, if the vessel actually took that course. In addition, vessels are required to keep a log of all ballast water movements in their ballast tanks and the SLC inspector can review this log. The inspector can also take a water sample to look at the salinity sample.

Ballast Water Treatment – Nicole Dobroski, CA State Lands Commission

The current management strategy for vessels is to conduct ballast water exchange; however, this is considered an interim management strategy because of variable efficacy, deviation and delay issues, and safety concerns. In theory, the solution to these issues is to develop ballast water treatment technologies, and establish performance standards for ballast water discharge to limit the concentration of organisms in discharged ballast water and to sets benchmarks for ballast water treatment system performance. This is a challenge because the shipment industry is international so, in practice, establishing and navigating the complex network of management regulations and ballast water standards, evaluating technology performance is much more difficult than initially thought.

At the international level, the International Maritime Organization established a ballast water management convention in 2005, but is not yet enforced since it needs to be ratified by 30 countries that represent 25% of the world's shipping tonnage. This convention (IMO D-2) will establish international performance standards for ballast water, setting limit of the concentrations of organisms in discharged ballast water as a function of different organism size classes and an implementation schedule to phase in these standards (table included in PPT).

At the US Federal level, there is dual federal regulation of ballast water. There is the US Coast Guard (USCG) that has regulated ballast water for some time and the US Environmental Protection Agency (EPA) that has recently become involved. Currently there are no federal

ballast water discharge standards. The USCG operates under the authority of the National Invasive Species Act (NISA) Title 33 CFR Part 151. The USCG proposed regulations to establish federal ballast water performance standards in August 2009, receiving thousands of comments, and are awaiting final rule. The EPA operates under the authority of the Clean Water Act and regulates ballast water through the National Pollutant Discharge Elimination System (NPDES) permit program and specifically there is a vessel general permit that regulates 26 discharges incidental to the normal operation of vessels, one of which is ballast water. The existing permit expires in 2013; there are not ballast water standards but are currently working on the next version of the permit which will be available in November 2011 and will be implemented December 19, 2013. It is unknown how the USGS ruling and EPA permit work together.

At the State level, there are two general approaches to state management of ballast water and development of performance standards. Some states work under the authority of the Clean Water Act Section 401 Vessel General Permit provided the opportunity to include performance standards. Other states established state law with authority under state statute to manage ballast water and establish performance standards through state statute or permit authority. Under the existing law, neither the Clean Water Act nor the NISA have authority to preempt states, so states can establish stricter standards.

California's performance standards are considerably stricter in comparison to the IMO D-2 (table included in PPT). In addition, the CA standards also include bacteria and viruses, which isn't included in the IMO D-2. CA's implementation schedule is fairly similar to the IMO D-2's implementation schedule.

As part of the Coastal Ecosystem Protection Act, SLC was required to assess the available treatment technologies and completed the first report in 2007, which found at the time that there were not treatment systems available resulting in the delay of the implementation of standards by one year for new vessels and vessels with the smallest ballast water capacity (≤5,000 MT). In 2009, another report was completed looking at the same size class of vessels and determined two systems might meet CA's standards and recommended proceeding with implementation. On January 1, 2010, standards were implemented for new built vessels with ≤5,000 MT which represents about 13% of vessels operating in CA waters. In 2010, a report was completed that looked at new vessels ≥5,000 MT and included eight systems that showed the potential to meet CA standards and recommended proceeding with implementation. The CA State Lands Commission requested staff complete an update on availability of systems by September 1, 2011. The 2011 update was not legislatively mandated but was provided to the Commission, which included ten systems that showed the potential to meet CA standards and recommended proceeding with implementation. The next report is due on July 1, 2012 covering existing vessels with ballast capacity of 1,500-5,000 MT. All reports are available on the SLC website.

The regulations were adopted to help with implementation of CA standards which included the requirement that SLC sample at least 25% of arriving vessels and for vessels to install sampling ports. Treatment technology reporting forms were developed to gather info regarding treatment system installation, usage, and maintenance. Protocols were developed to verify vessel compliance with CA standards specifically developed for the inspectors, as well as treatment vendors and/or vessel operators, to evaluate if vessel discharges are in compliance with CA standards. The protocols are based on the EPA Environmental Technology Verification Protocols for ballast water treatment systems and IMO Shipboard System Testing Guidelines.

The SLC met in June, August, and October with a technical advisory group with the goal of proposing regulations in late 2011.

SLC also works closely with a number of researchers and have funded treatment technologies research and testing on a number of ships, and the development of monitoring tools.

CA standards are meant to be technology forcing, requiring adaptive management during initial implementation. Also conduct outreach and communication with the international community, federal and state agencies.

Questions:

1) What treatments are currently available to treat ballast water? There are currently 60 different ballast water treatment system options. The most common types of technology to use are a type of chlorine along with filtration, or UV.

Vessel Biofouling – Chris Scianni, CA State Lands Commission

Vessel biofouling impacts the ship by increasing hydrodynamic drag, fuel consumption, and operating costs, impacts the environment by transporting nonindigenous species and increases air emission, as a vessel with a heavy biofouling load results in the burning of more fuel. Biofouling management options include dry dock, which occurs every 3-5 years, at which point the vessel is cleaned and organisms are removed or recoated with antifouling paints which are included in a vessel's Biofouling Management Plan.

The risk of biofouling in CA has been examined in research in the last 5-10 years which has determined the majority of the hulls are cleaned and well-maintained; however, most "niche areas" are not clean and present a significant risk. High risk vessels, including those that sit in water for a long period of time, are obsolete ships or reserve fleets, and vessels that move slowly in a small geographical range (i.e. ships used in bridge construction), also pose a significant risk

In 2007, the SLC was mandated (AB 740) to develop regulations for biofouling management by January 2012. Since 2008, SLC developed a reporting form to collect data from the shipping industry on their current hull husbandry practices. SLC also funds and collaborates on targeted research projects to answer questions that were unanswered at that time. SLC is also using a technical advisory group to advise on the development of the regulations. The proposed regulations' main priority is to maintain consistency with International Maritime Organization (IMO) and international partners when possible, address "niche areas" while maintaining acceptable levels of biofouling for entire vessel, and address high risk vessels. The regulations' public comment period closed November 21, 2011 for adoption in early 2012 with the effective date of January 2013.

SLC is also working with the America's Cup which will be in the San Francisco Bay in 2012-2013 with an estimated 2,200 spectator boats and want to ensure boats are properly managed prior to arrival. In addition, it is likely that 50-60 super yachts will also come, which may fall under SLC jurisdiction because of their size and ballast water capacity, and will have to comply with biofouling requirements in 2013 and ballast water requirements. As a result, the SLC has been involved in the America's Cup Invasive Species Task Force to develop a set of guidelines and best management practices that will be distributed to the boating community prior to their arrival to the event.

Questions:

1) Which vessels are regulated under this proposed law? These are the vessels that are covered under the ballast water which are vessels over 300 gross registered tons and capable of having ballast water which SLC has jurisdiction over.
2) Besides recreational watercraft, what is the largest gap that these regulations won't cover? Smaller barges and work vessels (i.e. small bridge construction vessels).
3) Is there a possibility to see the research that the SLC is funding? Some research is available online at www.slc.ca.gov, or contact Chris Scianni, chris.scianni@slc.ca.gov.

EPA Clean Boating Act – Brian Rappoli, US EPA

In 2005, a federal court determined that the EPA lacked authority to exempt discharges incidental to the normal operation of a vessel from regulations under the Clean Water Act (CWA). In 2006, the court struck down the exemption and as a result, the EPA was required to regulate discharges incidental to the normal operation of certain vessels using CWA permits. In 2008, Congress passed the Clean Boating Act (CBA). Congress changed the CWA by adding §402(r) which states there is no permitting of discharges incidental to the normal operation of recreational vessels. Per CWA §502, "recreational vessel" means any vessel that is manufactured or used primarily for pleasure, or leased, rented or chartered to a person for the pleasure of that person; however, the definition does not include a vessel that is subject to Coast Guard inspection and is engaged in commercial use or carries paying passengers. Congress also added CWA §312(o) with three phases of regulations: 1) EPA to determine (by regulation) discharges for which it is reasonable and practicable to require management practices (MPs) and develop MPs; 2) EPA to issue regulation establishing performance standards for MPs; and 3) USCG to issue regulations governing design, construction, installation, and use of MPs. Discharges that are covered include any discharge, other than a discharge of sewage, from a recreational vessel that is incidental to the normal operation of the vessel (e.g. bilge water, graywater, and ballast water). After the effective date of the USCG rule, discharge into waters of the US or contiguous zone must meet performance standards. These regulations will be enforced by the USCG and states may enforce via existing CWA §§312(j) and (k). These regulations will not preempt state laws and states can have more protection requirements for ANS management and pollution prevention.

The goal is to communicate to the boating public factors that affect ecosystem health, mechanisms of ANS transfer, effects of ANS on boater and other water enthusiasts and economic impacts of water impairments. Peer-to-peer education will be encouraged for clean boating practices. There is extensive guidance in existence. The discharge types that are under consideration include oily bilge water and other sources of oily waste, engine maintenance and fueling practices, antifouling and corrosion control system, graywater and similar discharges, and ballast water discharge.

ANS vectors include aquatic transport, land transport, packing materials, and recreation gear. ANS decontamination practices include "Clean, Drain and, Dry", biocidal wash, and high-pressure high-temp wash.

Please contact the CBA team at CleanBoatingAct-HQ@EPA.Gov with innovative management practices that EPA should consider incorporating into the regulations, potential infrastructure issues, lessons learned from non-regulatory programs, recommendations on developing and distributing boater education materials, and potential role the 100th Meridian can play in

disseminating information about CBA to boaters. To learn more about the CBA, please visit www.Epa.gov/cleanboatingact or contact Brian Rappoli 202-566-1548.

Questions:

1. On the freshwater side, how is a boat defined? There is a legal definition, but basically anything from a personal watercraft, to a kayak, to a cannon, to a mega yacht.
2. Are you developing different recommendation for freshwater and marine boats? All recommendations that have been developed are still in draft form and nothing has been finalized to date. An economic analysis is still needed.
3. Is there any talk to provide grants to help implement ANS programs at the state level (i.e. watercraft inspections) or can 319 funds can be used? There is a potential for states to apply for Section 6 grant money.
4. Is the end result of this program best management practices or laws/regulations? The end result is regulations with fines and guidance.
5. New Zealand and Australia both have fouling management requirements for recreational boats and coastal movement and have the strongest voices in the IMO pushing the recreational boat regulations.
6. Is EPA conducting any research into decontamination options? There is a chance in R&D but not certain. EPA acts as a liaison between different offices (i.e. OPP does pesticide registration and might conduct research).
7. The PPT discussed that state can develop more stringent regulations; however, in the state of Utah, the legislature has passed statue that states state law that is umbrellaed by a federal act cannot be more stringent than the federal act. EPA hopes to establish a baseline with the idea the state can establish more stringent regulations.
   NOTE: Post WRP Meeting Brian Rappoli and Larry Dalton had several follow-up conversations. They discovered that #7 is not truly applicable to the Clean Boating Act, and is only applicable to the Surface Mining and Reclamation Act.

Response to the Invasion of the Asian Kelp (Undaria pinnatifida) in a Major Port: 2 Years of Management Efforts in San Francisco Bay – Chela Zabin, Smithsonian Environmental Research Center

Recent research indicates that most non-native marine species in Western North America come to CA first. Of the 290 non-native marine species found established on the west coast, 79% were found in CA first and 59% were found in the SF Bay first. SF Bay appears to play crucial role regionally in the spread of non-native marine species (Ruiz et al. 2011).

In the summer of 2009, Undaria pinnatifida was found in two marinas in SF Bay and a harbor in Half Moon Bay including large reproductive individuals. This represented a major northern range expansion. Undaria pinnatifida was first reported from LA and Long Beach Harbors in 2000 and a year later as far north as Monterey Harbor; however, was not seen north of there for another 8 years.

Undaria pinnatifida is on many "worst invaders" lists since it is a major fouling pest of boats and aquaculture species and structures. There are recorded impacts to native ecosystems around the world. The concern was once it became established in SF Bay, there was a possibility for further spread.

Undaria ecology suggests that it can tolerate a variety of conditions. It has been found in cooler and warmer climates, and in intertidal zone to 25 meters of depth. It has a high tolerance for

turbid nutrient rich water and has a broad temperature tolerance. Undaria life cycle has a microscopy stage that is attached as hard substrate for up to two years until conditions change to morph in to kelp.

The response to the discovery of Undaria in the SF Bay, included a meeting with relevant agencies and marinas where it was decided that it was really important to define the actual extent of Undaria in the SF Bay with more detailed surveys, to attempt hand removals of known populations, and conduct outreach to the boating community. There was no dedicated funding available for about the first year of this effort.

Survey methods were mostly limited to areas accessible by walking. There were some boat assistance and snorkeling surveys conducted. Each marina or location was surveyed by walking the entire area and examining all visible surfaces. Other algae collected and identified. These surveys found Undaria was limited to SF waterfront and does not appear to be spreading rapidly on its own. The surveys also resulted in new site records for invaders that were known to be already in the SF Bay and a new invader record for SF Bay.

Removal methods involved scientists and managers from many state, federal, and research organizations, many community volunteers, and assistance from harbor staff, boating and commercial divers. Hand removal was conducted approximately monthly at marinas mostly from dockside and recorded location, length, stipe width, and reproductive status. The goal was to survey and remove from an entire marina each time. Three marinas in SF Bay that have long term removal efforts include Hyde Street, SF Marina, and South Beach. In addition, long term removals have also occurred at Pillar Point and Half Moon Bay.

The removal results indicated that over the 2 years period, > 5,000 individuals or 450 kilos have been removed. Undaria is still present at all marinas; however, efforts are producing some populations-level (i.e. mean length, density, and number of reproductive individuals) results. At SF Marina, which is relatively small marina with 350 slip, the density, mean length, and number of reproductive individuals have been reduced. At South Bay Marina, with 700 slips, it has been harder to reduce the mean size and number of reproductive individuals since each slip could not be reached during each visit; however, since December 2010 there has been a decline possibly as a result of efforts of the harbor staff.

Two control sites were looked at in July 2011, to compare removal and non-removal locations to see if efforts are having any affects. Results found that removal locations that have been worked at consistently only had 1 or 0 individuals and non-removal locations had high densities of large reproductive individuals.

Community outreach methods included stories in local and national media, sailing magazines and marina newsletters; talking to boater groups and harbor staff; individual contact with boaters, commercial divers, and oyster growers; and fliers, posters, watch cards distributed to local marina, divers, environmental groups, boaters, and agencies. It is difficult to measure outreach effectiveness. Many community members were involved, two marinas were adopted, and many harbor staff, boater, commercial divers became informed; however, two incidents occurred that indicates the message is still not getting to people who need to know about it: 1) a boat was moved from a Pillar Point “hotshot” by harbor staff to “clean” area; and 2) SF Marina repairs necessitated moving boaters and despite discussions about outreach before this happened, >100 long-term SF Marina boaters dispersed to other marinas even though 150 letter were sent boaters

and most left prior to date. Have had success with concern of Undaria with the America's Cup which has formed an advisory committee on invasive species, and has plans for dealing with construction and message/requirements for sponsors and visiting boaters.

There is no additional funding to continue work in SF Bay on Undaria. There are some dedicated volunteers that will continue their efforts. There is a need to organize an early-detection and response network. A website will be set-up using Sea Grant money that can be used to share information about Undaria, report suspect specimens/locations, and establish a list of existing responders.

In summary, Undaria is currently limited to the SF waterfront, and one side of Pillar Point Harbor and does not appear to be spreading rapidly. There are some indications of effects of hand removal but effectiveness of hand removal is limited to where some proportion of populations cannot be detected/removed. Undaria requires a long-term commitment and chemical treatment may be feasible. Obstacles include a lack of central agency that has responsibility, authority, or funding to deal with new marine invaders, no legal authority or accountability to prevent spread, a lack of communications/coordination between managers, scientists, harbor staff, and boaters, and insufficient funding for monitoring and response.

Questions:

1. What are the seeds attached to? Seeds are attached to hard substrate. The gametophytes are male and female. The female retains an egg which is fertilized and then grows into the kelp.
2. Can you describe products that have been evaluated to treat the adults? Dilute acetic acid (low solution of table vinegar), and fresh water. Both are effective at killing adults. Some research has looked at the use of freshwater to kill gametophytes.
3. What is the exposure time for fresh water treatment? In the lab, 24 hours is sufficient. In a field situation, the structure would need to be contained and would need to leave it longer assuming there is dilution with sea water, 3-4 days.
4. With the huge number of invasions that occur in SF Bay, what prompts an organization or an agency to pick a particular invader (i.e. ease of eradication, impacts to natural resources, economic impacts, etc)? Look at existing knowledge of species impact and had the knowledge that Undaria was a bad invader. In addition, it appeared that it was detected early on. Some decisions are based on science and some are based on values. There are some existing models (Australia/New Zealand) that have formal guidelines on how to decide based on different factors.
5. In Washington State the major limiting factor for people cleaning their boats is that copper based biotoxins are illegal to use in water, how does CA deal with this? There are alternative hull coatings. There is new research on new hull coating which has found some work better than others. Can use a silk liner around the boat and introduce freshwater, there are boat lifts; however, it is not legal to do in-water cleanings in CA.
6. Did you see hotspots within a harbor or in other words, areas within a harbor to target for early detection? There doesn't seem to be any characteristics of places within a harbor.
7. Did you have to ask for boat owner permission to survey boats and remove Undaria from their hull? Didn't have to ask permission to inspected exterior surfaces of boats. Did request permission to go onboard a boat. Found that most boaters supported once the issue was explained.
8. How did you deal with divers safety? Different if using snorkels vs scuba so primarily did skin dives. When using divers always had two divers in the water and one person

onshore. If Undaria was found while diving, the diver put the specimen immediately on dock to be collected to avoid spreading it through the marina.

9. It was indicated that education is an important factor for early-detection. How do we get to the next phase that it is easy to get people to do something, and will the America's Cup provide an opportunity to create an easy access to cleaning facilities? That is a good question with no easy answer. Another project that is currently being worked on is looking at active recreational and fishing watercraft to see how much they are actually carrying. Without a whole lot of data to back this up, the impression is the fishing fleet tends to clean less than the recreational boating community. The boating community needs to be offered a way to clean boat (i.e. creation of a cleaning facility).
10. Is there a seasonality to the production of gametophytes and sporophytes? In CA there is not but in its native range there is.

Marine Issues Wrap-Up: WRP Role – Group Discussion Facilitated by Jeff Adams, WA Sea Grant

1. Further discussion, how should we prioritize which species are responded to and address?
    a. In Washington State there is an Invasive Species Council that identified the top 50 worst invasive species. WA tries to base the decision-making on if a species is on the list and then look at what can and cannot be done. If a species is not on the list then use available information for the state or region. Also consider if an issue can translate well across the biology and the politics of a situation and work to address key pathways (Allen Pleus).
    b. Alaska believes that it is critical to have Canadian coordination since they are the primarily pathway to introductions and inquire if there is a way for this group to dialogue with Canada (Tammy Davis). Contact Mathysis, Canada, regarding coordinating on AIS.
    c. Since coordination is critical to have partnerships with neighboring states and countries. Research that looked at marine industries found that there is a lot of traffic in and out of SF Bay and a lot of traffic between southern CA to Baja CA. Do we have any contacts for Mexico that we can coordinate with (Leigh Johnson)? Mexico has been included in the past but not sure who the currently representative person is. It takes a lot of time to get the right representative involved and with the transition of the panel the Executive Committee members have had to focus on the minimal functions this has not been maintained.
    d. It is suggested to have a coordinated priority list or criteria that can be used on the Western Coast when considering which species to respond to instead of a list of worst invasive species. It is also important to continue to involve industry as a way to share information and a way to obtain input on operations (Diane Cooper).
    e. In California, invasive species issues is caught between agencies (Department of Boating and Waterways, DFG, State Lands Commission) which creates gaps. Does the WRP have a role in addressing this (Susan Ellis)?
    f. If anyone who is involved in the WRP is interested in participating in the Coastal Committee please contact Kevin Anderson, kevin.anderson@psp.wa.gov.
    g. Freshwater AIS issue is responded to with prevention and containment; however, recreational boats do not fall under any regulations so how do you deal with recreational boats beyond outreach (Bob McMahon)? The Smithsonian is trying to track boater movement but there is no point to inspecting all watercraft and therefore outreach is needed to encourage boaters to clean their boats prior arrival (Chela Zabin).

h. The American's Cup is message is "clean before you come and before you go" (Karen McDowell).
i. Dealing with the vectors is the most important way to get the most bang for the buck and then develop a formal system to evaluate species that are not currently introduced and how to address these (Chela Zabin).
j. How does CA draw that demarcation to limit boat usage by certain regions in certain regions or requiring cleaning between certain regions? Where is the reduction in risk (Brian Rappoli)? Commercial vessels moving from one port to another port are a potential vector but are easier to track vs recreational boats. Prevention of recreational boats moving from one body of water to another needs to be addressed (Lynn Takata).

DREISSENIDS IN THE WEST – INTRODUCTION
QZAP – Introduction, Funding – Susan Mangin, USFWS

For FY 12 funding, at the time of this meeting, there was a bill that was in committee and hadn't gone to the floor of the House yet so it is unknown if the money will stay in the bill. If we get the 1 million dollars, we would like to support a QZAP coordinator for two years to be the person of contact for QZAP efforts in the west and also would engage in invasive mussel issues nationally as appropriate and would also like the WRP coordinating position included in their responsibilities. Additionally, fisheries staff would provide hands-on training for mussel identification for enforcement to help provide support when they deal with Lacey Act issues. Would also like to see additional support for Hazard Analysis and Critical Control Point (HACCP) Training.

FY 10 funding was one time funding of 2 million dollars to be focused on quagga/zebra mussel efforts. Of that, $800,000 was given to Lake Tahoe for watercraft inspection and decontamination at four highway locations into the Tahoe regions, boat ramps and launch facilities. In FY 10, there were 16,000 watercraft inspections and 3,800 decontaminations. $600,000 funded 22 state plans that were approved by the Task Force that had components that supported quagga/zebra mussel efforts (i.e., prevention efforts including the establishment of inspection and decontamination stations, training for inspectors, watercraft inspections, outreach and education efforts including billboards were posted, radio/tv/newspaper advertisements, and Clean, Drain, Dry message was adhered to fisheries vehicle tailgates and fish hauling boxes, material was disseminated to bait shops/registered boaters/marinas, decontamination efforts including detection and decontamination training, HACCP development, rapid response planning). The remaining $600,000 was used to focus on three of the QZAP priorities to expand early-detection and monitoring programs, continue the development of effective watercraft inspection and decontamination protocols and standards, and develop standard and effective equipment inspection and decontamination. Research was conducted on the impact of pressurized hot water on killing and removing mussels from watercraft conducted in summer and winter months in Lake Mead, NV and Lake Wilson, KS. Conducted research to look into the impact of quaternary ammonium on killing mussels and use of fire equipment and are working on finalizing the results. A containment manual is being drafted by Elizabeth Brown with background information, and protocols. There was a pilot laboratory test program for early-detection and a follow up workshop in February 7-10 in Texas. Bob McMahon's project was to set up a monitoring effort in northeast Texas for zebra mussels in Lake Texoma, conduct a risk assessment for waterbodies in the area, deploy data loggers which has found the waterbodies are too warm to support mussels, and set up a monitoring system using plankton samples and nylon scrub pads. The National Invasive Species Awareness week is going to be the last in February in

2012 which will have plenty of opportunity to focus on QZAP. Try to focus on budget write-ups which can be used when questioned about QZAP. It would be helpful to be able to highlight outcomes and quantify as much as everything (outreach numbers/watercraft inspections numbers/decontamination numbers). Please email Susan Mangin with ideas on how to quantify outcomes.

Discussion:

1. Do states currently summary "outcomes"? In Colorado, they quantify all inspections/decontaminations but it is harder to state efforts were effective at preventing new introductions. Can say "have prevented introductions on these waters by intercepting mussel infested boats and doing a half million inspections each year". Prevention is harder to quantify. Suggested that the state of ID report has a useful format that could be used.
2. Does the potential 1 million dollars include assistance for the National Park Service? At this time it is not clear.

Water Chemistry Experiments in Mobile Lab – Renata Claudi, RNT Consulting

Conducting research that adjusts water parameters as a method of control/eliminate mussels, specifically, lower pH on the Great Lakes sponsored by Central Arizona Project (CAP) and lower pH at San Justo Reservoir sponsored by the CA Department of Water Resources (CA DWR).

Quagga mussels have been present in the source waters of the CAP 400+ mile aqueduct for several years. In 2008, live veligers were discovered in plankton samples taken within the aqueduct; however, very few adults were discovered to date. There are fourteen pumping station, agricultural turn outs, and drinking water users. The most likely reason of the lack of settlement is one or more environmental parameter (i.e. dissolved oxygen, temperature, and pH) values were outside of the tolerance limits of the mussels and these environmental factors which help keep the CAP free of adults may not persist if operational practices change. Decided to adjust the pH since unlike chlorine addition, it is a lasting alteration of the ambient water which could protect the entire facility/aqueduct from intake to discharge, lower pH would have a positive impact on drinking water plant operation, lower pH is not likely to impact agriculture use or fish, and it may be used as a proactive or reactive treatment.

The proof of principle experiment looked at the impact of pH on survival of adult dreissenid mussels and the effect of pH on dreissenid settlement (2009 study). The study was conducted in a bay on Lake Ontario which has a lot of dreissenid mussels (primarily quagga mussels) with calcium around 41mg/L and pH between 7.8 and 8.5. The research lab was set up next to the lake and pumped water through a 1 inch pipe from 15 feet deep and about 200 feet offshore. The water was split into four separate mixing tanks and then split into three settling chambers. Then the pH was adjusted using good grade phosphoric acid into three of the four mixing tanks through controlled metering pumps (by doing so were able to maintain pH at the selected level). At the outflow of each tank was a temperature, pH , and flow sensor. Each biobarrel had a string of 2 bags containing adults and a string with clay settlement tiles. The experiment ran from June to November 2009 with initial pH of 7.5, 7.3, and 7.1. Midway through the experiment, as a result of high settlement, it was decided to drop the pH to 7.3, 7.1, and 6.9. The experiment showed that lowering the pH can cause adult dreissenid mortality. It was interesting to see the shells after exposure to low pH, which were bleached, pitted, and holes. To test how much calcium the mussels were losing, decided to do a dry weight vs length regression on the shells. Under stress the mussels will weigh less for a given shell length. Most of weight of mussel is in

shell so decided to weigh them whole. Compared to the controls, in all the treatments (7.3, 7.1, and 6.9), all the mussels were lighter consistently. Also evaluated new settlement from August to November, saw settlement in the control, some settlement in pH 7.3 and no settlement in 7.1 and 6.9. In summary, prevention of veliger settlement if ambient water has a pH of 7.1 or less which might be very conservative as adults exposed to pH of 7.3 were still losing calcium from their shells; therefore, initial settlement may occur at pH of 7.3 but the loss of calcium form the shell will prevent development. Adults lost calcium from shells if water has pH of 7.3 or less. Adults experienced 40% mortality in 10 weeks in water with pH of 6.9. Low pH is not detected as a noxious environment by the mussels.
CA DWR asked that the experiment be repeated at San Justo reservoir that would test pH down adjustment on a zebra mussel population in an environment which has lower calcium than the Great Lakes. The experiment began in August and ended October of 2011 which used a new mobile laboratory that was developed for this purpose. Prevention of settlement and survival of adults were tested at pH 7, 7.2, and 7.4. Corrosion coupons of stainless steel, mild steel, and copper were exposed in each test tank and in the controls. Results varied greatly by tanks. At pH 7.0, settlement was reduced by 80%. No adult mortality was detected but did see some shell perforations at the lowest pH. At the time of this meeting the analysis of weight vs length was pending. It is questionable if zebra mussels can hold on to calcium better.

Research conducted in the summer 2011, ultra low pH (2, 3, and 4) was looked at for the effect on adult zebra mussels. Mortality was evaluated after 24, 48, and 72 hours. Observed the adults in a separate experiment. After 48 hours, more mussels were killed in a pH of 3 than a pH of 2, and a pH of 4 almost did not get any mortality.

Questions:

1. Was there a pH shift throughout the experiment? No, the pH stays about the same except for about a .1 shift immediately after adjustment.
2. What temperature is the water? The water is 24ºC.

San Justo Reservoir – Tanya Veldhuizen, CA DWR
San Justo is a relatively small waterbody with about ~ 700 acre feet which stratifies in the summer. It is owned by USBR and San Benito County. It receives water from the Central Valley Project (CVP) and is used agricultural and municipal uses. Zebra mussels were first discovered in 2008 and the reservoir was immediately closed to public access. USBR and San Benito County Water District are currently developing an eradication EIR. San Justo acts as a surrogate for the State Water Project (SWP) and offers a chance to study zebra mussel biology in the SWP and CVP water. Research allows to forecast mussel biofouling rates in the SWP. These findings will be incorporated into DWR's monitoring and management plans. The SWP fish screens, trash racks, turn-outs, pumping plants, and internal pipes are all vulnerable to mussel infestations. The SWP Early-Detection Program is monitoring 17 locations statewide using veliger samples, settlement plates, and bioboxes. To date, no mussels have been detected in the SWP.

Research has looked at seasonal spawning pattern since June 2008 to present, which has found spawning peak in the summer months (May-Sept) with little to no veligers present in the cooler winter months. This information was used when developing DWR's early-detection monitoring program. DWR also deployed artificial substrates and found incredible rates of biofouling which is a concern for DWR within the SWP. Questioned if mussel growth on trash racks could exceed the design capacity so deployed a trash rack in San Justo and looked at the rate of biofouling

from May to February and saw a 500% weigh gain on the trash rack. Research is also focusing on coating trials and had great success with Fuji Films. Also looked at various coatings that are used in the SWP to predict how they would respond to mussel settlement. Also conducted a growth and mortality study to determine the effects of depth (5-50ft) on growth and survival. Measured mussels monthly using graph paper and Adobe measurement tool software and recorded shell conditions. Found that in upper depths, mussels grew faster than those in the 40-50 ft depth (lower oxygen/temp) and observed high mortality at 50 ft. Also observed shell loss at 40-50 ft range with low pH <7.3 and calcium 26 mg/L. When the lake turned over in the fall, the pH and dissolved oxygen returned to normal levels which allowed the mussels to repair their shells.

RNT Consulting compiled the "Examination of Calcium and pH as Predictors of Dreissenid Mussel Survival in the California State Water Project" report which analyzed 10 years water quality data from 23 stations in the SWP to determine if mussels can survive on the low end with calcium at 12 mg/L and pH of 7.3. Calcium varies between different waterbodies within SWP. Found Lake Oroville can't support mussels 100% of time, O'Neill Forebay has 75% moderate chance to support mussels so possible has a suitable habitat, and Lake Silverwood has a very suitable habitat to support mussels; therefore, as you travel from north to south through the SWP calcium increases as result of geology, increasing the chance to support mussels. The SWP was then organized into three zones: zone 1is not able to support mussels, zone 2 is potentially able to support mussels, and zone 3 is able to support mussels. These zones are used as management zones so in zone 1 early-detection monitoring is conducted, in zone 2 and 3 early-detection monitoring is conducted, along with expanding boat inspection programs, and will complete a vulnerability assessment at facilities in southern CA and will develop management plans. A source water study will be conducted on waters from zone 2 (Sacramento River, Banks Pumping Plant, O'Neill Forebay, and San Justo – control) to see if mussels could really survive in these waters. This study is being conducted at San Justo Reservoir by trucking in 3,000 gallons of water per 2 weeks and placed in large storage tanks. This water is then piped into coolers which have 30 mussels of varying class sizes and one colonized plate. At the time of this meeting, the results of this study were not yet available.

In 2012, DWR plans to continue with low pH research, test other control methods, possibly re-run the source water study, will work on development of calcite index, and look at the frequency and duration of low calcium period in SWP and Sacramento-San Joaquin Delta.

Questions:

1. Did you consider if there are niche areas that could support mussels? Management zones are based on long-term population survival of a natural population. There are some areas that can dump high levels of calcium but this is for a short period of time and not enough to support veligers.
2. To date, the interplay of calcium and pH hasn't been done consistently in research.
3. There was low spawning this year in San Justo because of the low calcium levels.
4. DWR's future research is based on latest research results and available products.

Lake Mead Quagga Research – Todd Tietjen, Southern NV Water Authority

The Southern NV Water Authority (SNWA) provides drinking water for Las Vegas. In Boulder Basin, veliger population trends since 2007 have seen peaks twice per year (spring, late summer)

with about 20 veligers/liter, but to date, the SNWA has not collected data on adults. Since 2007, a decline in zooplankton has not been seen as a result of mussels so far.

SNWA present and future intake currently withdraw 2 towers at 1,000ft deep and are building a deeper intake to try to prevent colonization. Trying to look at ways to prevent settlement in the new 3 mile tunnel. After 1 year of mussel growth on trash racks did not see a reduction of flow. Recently, an intake tunnel was closed to clean the quagga mussels out and installed four titanium pipes to provide something to treat mussels. Started with chlorine which was successful at reducing bromate concentrations; unfortunately, chlorine was added for mussel control the THM concentrations increased which is not good. So SNWA started to look at oxidants as a mussel control which lacked research which clearly stated why it worked and under what conditions it worked as a mussel control although many observations of success. SNWA set out to test the effectiveness of oxidants on veligers. Tested 4 options for 10 minute exposure: 1) free chlorine which was being used at the time; 2) chlorine dioxide which was available and used in the industry; 3) potassium permanganate which was considered for SNWA; and 4) chloramines which lower THM formation. Chloramines appeared to be the best option.

NPS is conducting containment by requesting weekend use watercraft to clean, drain, and dry. NPS has 3,850 slips and on a busy weekend there can be 5,000 boats on Lake Mead. NPS has purchased 4 permanent wash stations and 2 mobile trailered units. Slipped/moored vessels that vacate slips are required to notify the marina 72 hours prior to vacating the slip to schedule inspection/decontamination, and complete a NV/AZ State Inspection Form. The Concessioner is responsible for the inspection/decon/paperwork. The form is then given to the NV/AZ AIS specialist and the destination state is contacted.

University of Nevada Las Vegas is facilitating the I-MAP Coordination Team which coordinates monitoring to avoid duplication. Adult sampling is being conducted by NPS/UNLV at limited number of sites, veliger sampling is being conducted weekly by SNWA and monthly by USBR, and UNLV/NPS/NDOW is looking at the affects of contaminants on the mussels, NPS is doing artificial substrate study. Studies find rocky areas are more suitable than sandy areas. Quagga mussel publications include the Lake and Reservoir Management, and Aquatic Invasions. Desert Research Institute is conducting ongoing quagga mussel research looking at filtration and growth rate of Lake Mead quagga mussels in laboratory conditions, duplicated the chloramine study on veligers and looked at the clearance rates of large and small mussels on algae. UNLV's previous research suggests that Lake Mead's fishery relies heavily on benthic derived resources. Since 2008, have done monitoring of soft sediment invertebrate populations within 3 basins. Comparing benthic invertebrate populations pre and post invasion suggests a shift in benthic biomass available to fishes for food, not sure if this is due to lake level or the quagga invasion.
Question

1. What is effectiveness of chloramines for maintenance of system or for treatment of waterbed? SNWA will only use chloramines for drinking water, not to treat lake.
2. Research indicated that quagga mussels is more likely to settle on hard over soft surfaces, could antifouling coating be used to protect drinking water pipes? No, the antifouling coating would not be acceptable because of the drinking water application or sufficiently persistent for extended periods of time.

Water Manipulation Experiment – Richard De Leon, Metropolitan Water District

The Colorado River Aqueduct is over 240 miles long and has three internal lakes (Lake Mathews, Lake Skinner, and Diamond Valley Lake). Rely on maintenance, mobile chlorinators, desiccation, and lake management to control the quagga mussels.

Lake management of Lake Mathews, Lake Skinner, and Diamond Valley Lake to control quagga mussels using an integrated pest management approach. Effectively applying population control with the objective to mitigate for impacts and spread control to avoid having impacts on preventing new infestations. Ultimately, population control reduces the risk over all. There are limited options for control of invasive mussels in natural systems, for example the lower Colorado River, and Lakes and Reservoirs in the West. A range of control options were looked at that could be applicable to lakes (i.e. oxygen deprivation, desiccation, predation, physical removal, etc) and hopefully can develop additional options (i.e. pH). MWD limited the oxygen at the bottom of the lake through manipulation of operational conditions in Lake Mathews and Lake Skinner and were able to eliminate mussels by anoxia and desiccation by draining the lake. The lake is then left with a bathtub ring affect with live mussels that are left in that area which provides an opportunity for re-colonization later in the year. In Lake Skinner in 2008, saw mussels die off in the hypoxic zone with diver observation confirming the mussels were open and dead. In May 2009, divers re-inspected the outlet tower to assess re-colonization by quagga mussels but found small mussels 70 ft deep where the mussels had been killed the previous year. In August 2009, divers re-inspected the lake and found small less dense populations at 71 ft deep, mixed sizes and less dense populations at 60 ft deep, mixed sizes and very dense populations at 50 ft deep, and mixed sizes and very dense populations at 39 ft deep. Within two years, the lake had been completely re-colonized.

In 2010, repeated the study using bags filled with various sized quagga mussels at various depths in Lake Skinner to examine the mussels at various environmental conditions and the percent of mussels killed. Almost two months into the study had hypoxia below13 meters and saw a line within the lake where the lake stratified. Used aerators to recover the lake and as the lake is recovered, the aerators are lowered deeper within the lake. Effectively, the manganese and the nutrients go into the water column with the biggest concern with the manganese going into the water column which then requires additional management. As the lake is aerated and circulated, the manganese precipitates and falls out of solution as it is exposed to oxygen. Quagga mussel shell growth post-anoxic treatment in Lake Mathews obviously show stress but the shells do recover.

Copper Basin is 5 miles within the aqueduct where it has been observed that water clarity has increased. Secchi depths were taken from 2007- 2010 with a gradual increase of about 10 meters of clarity.

Questions:

1. MWD is able to grow quagga mussels in the laboratory and test to observe reproduction.

Zequanox – Marrone Bio Innovations – Denise Mayer

Marrone Bio Innovations discover, develop, and market effective and environmentally responsible natural products (biopesticides) that fill unmet needs for weed, pest, and plant disease management. Marrone Bio Innovation (MBI) uses natural product chemistry which is a safe alternative to standard chemicals to protect public health and the environment. Zequanox is bringing well established technology from pharmaceutical and agriculture industry to surface

water by the isolation of microorganisms. Dan Malloy discovered *Pseudomonas fluorescens* in soil of a river in the Northeast, isolated, discovered, identified, and did initial field trials. MBI is the commercial license holder for all applications of Zequanox for invasive mussel control and has four additional patents to the original patent. *Pseudomonas fluorescens* is ubiquitous in the environment (one of the most common bacterial species in water and soil). The final product is comprised of 100% dead *PF* CL 145A cells and will be registered with the USEPA for both dry and liquid formations. This is a highly selective product demonstrated by non-target ecotoxicology studies and was tested on seven natural bivalves that were not affected (more information is on MBI website). The Zequanox kills quagga/zebra mussels after ingestion. The mussels did not close their shells in reaction to the presence of Zequanox.

MBI received USEPA approval the Technical Grade Active Ingredient on July 28, 2011. USBR granted Section 18 Emergency Use Permit for use along the Lower Colorado River Region (AZ, CA, and NV) on August 26, 2010. The Environmental Assessment for the David Dam treatment was reviewed by the USFWS which did not find any significant concerns.

Product testing (laboratory studies, in pilot scale, and in demonstration scale) validates Zequanox proven efficacy. Davis Dam was the first location of treatment in June 2011 and followed by another treatment in September 2011. MBI then treated the Ontario Power Generation DeCew II Stations in August 2011. MBI found that Zequanox is effective on all life stages and can be used as a maintenance treatment by treating during settlement season to prevent accumulation of shell debris and impact of structures due to adult mussels and shells. Adult mussel treatment should have adult mussels and shells removed first

Currently plan to go to market in 2012 for use in closed pipes and once through cooling water applications. In future years, BMI will continue with on-going development work on drinking water applications, water transfer applications, and open water applications.
MBI is conducting research at San Justo Reservoir with a satellite lab and pilot facility. The Project Goal is to better understand the efficacy of Zequanox on planktonic (and adult) life stages of zebra mussels.

MBI collaborative efforts include working with New York State Museum and USGS on the Great Lake Restoration Project to see if Zequanox can be used to aid in native freshwater mussel restoration efforts and to prevent the spread of dreissenid mussels in fish transport water. MBI is also working with Ireland Institute of Technology (Sligo and CASIE Program).

Questions:

1. At Davis Dam, how was Zequanox applied (Cynthia Tate)? There were 5 intake lines at Davis Dam and used a biobox with mussels on intake like number 3. Then used injection point at intake line and measured outflow. The study measured adult mortality. The ultimate goal was to have 80% mortality which was not obtained.
2. Does MBI plan to conduct a long-term pilot exposure studies (Bob McMahon)? All studies are 6 hour treatments. The intent is to do an adult treatment and then use ongoing maintenance treatment to keep system clean.
3. Is MBI required to conduct long-term tests on affects on non-target species (Marion Wittman)? Not sure if this is a requirement and thus this is a question for Sarahann Rackl.
4. How has MBI addressed public perception? There is a plan to address the public prior to treatment and MBI recognizes that outreach is a need.

Decontamination Protocols and Standards – Stephen Phillips, PSMFC
Recommended Uniform Minimum Protocols and Standards for Watercraft Interception Programs for Dreissenid Mussels in the Western US (UMPS) were created in 2009 and adopted as a guidance manual by the WRP. The current best technology for watercraft decontamination remains high pressure wash. Recently updated the UMPS (funded by QZAP), addressed sea plants, updated Don't Move a Mussel video, and provided level II watercraft inspection training.

UMPS were developed to encourage and support the implementation of the most effective region-wide intervention strategies, make it easier for the boating public to understand and comply with standards, and build trust between programs. In February 2009 and November 2010, 20 Western States were surveyed regarding their watercraft interception program. About 75 jurisdictions in 19 Western States are currently employing some form of watercraft interception program on over 400 waterbodies and range from spot-checks to full inspections. UMPS II is similar to UMPS but includes new information on certification/universal banding, alternative decontamination technologies (Prefix, hot air tent, dry ice, ect), sea plans, commercial watercraft and equipment haulers, decontamination efficacy research (Dr. Wong's research in Lake Wilson, KS has preliminarily found that 10 seconds at 140ºF is needed to kill mussels using 1,500-3,000 PSI for zebra mussels, for quagga mussels it is 5 seconds that is needed), and updated contact lists. The final document should be available soon. Remember that this is a living document and is subject to periodic updating. Additional research is need on effectiveness of currently recommended protocols and standards for decontamination. The ballast tank issue still needs to be addressed.

Reciprocity, or sharing of sharing boat information, is part of PSMFC QZAP grant was to "implement a process to seek regional adoption of protocols and standards for watercraft interception programs including interjurisdictional reciprocity of watercraft decontamination". Need to continue to share boater movement information using a hotline (email/phone list). States need to work with the agency that issues commercial hauler permits as a way to identify large watercraft that are transported into their state. PSMFC is working on how to involve the USFWS to work with enforcement for Lacey Act violations. Currently have a western alert system (West 911) that should be used to share boater movement information for watercraft that are infested or possibly infested with quagga/zebra mussels. It might not be possible to use an electronic tracking or coordinated banding at this point in time throughout the west.

The seaplane decontamination guidelines and a video were developed to address this vector and are available on the 100th Meridian Initiative website and http://www.aquaticnuisance.org. A web-based training will also be available soon.

The Don't Move a Mussel was developed in 2008 updated in 2010 (Don't Move a Mussel II) and will be available soon.

Additional Level II Watercraft Inspection Training will be offered November 1-2, February 7-8, 28-29, and April3-4, 2012. Information is available at www.aquaticnuisance.org/wit.

Boat Movement Study – Marion Witmann, University of Notre Dame
Conducted research to look at the 100th Meridian trailered vessel survey database and how does it relate to the prediction of Dreissenid mussel distribution in the West. The research was funded by the WRP. The National Aquatic Nuisance Prevention and Control Act (P.L. 101-646) was

passed in 1990 which established the Aquatic Nuisance Species Task Force (co-chaired by NOAA and USWFW) which formed the Western Regional Panel on Aquatic Nuisance Species. The 100th Meridian Initiative was implemented in 1997.

Witmann's research looked at the 100th Meridian Survey database using the gravity model which can be used to predict human behavior to identify and predict at risk waters based on boat traffic. There are four parts of the equation (O – originations, A – destinations, d – distance, and w – attractiveness). Data shows that in the Midwest, boaters are less likely to travel long distances to a waterbody, whereas, in CA and NV, there are group of people that do not travel far but there is also a group that is willing to travel long distances. The research also had to determine if the data was representative of the population being sampled for a valid risk assessment of the Western Region at the state level so compared the number of registered boaters per state to the number of boaters surveyed. As a result there may be skewed results for a region-wide risk analysis. At the state-level, there is no correlation between number of interviews and vessel registrations.

The research then looked at how the vessel origination of trailer boat trips to the Western Region are spatially distributed; however, there is missing data for part of the region so the whole region since there is missing data. The research was able to look at the top visited inland waterways in the Western Region. The research also considered the number of sites vs the number of interviews which found the data is improving base on the number of interview site locations and provided results of risk assessment summarized by state. The data also allows one to look at a particular waterbody and determine the origin of visiting watercraft. The research also looked at how the database related to Dreissenid occurrences in the Western Region.

To date, this is the most comprehensive database for public use that is available, it can be used to guide resource manager to develop watch list, is usable since infested waterbodies are indicated in database, and georeferencing the database would be useful along with merging it with Google Map interface as a visualize data.

Questions:

1. Who did the surveys in 2010? The quarry of the database was done in 2010; however, more data could be added to the database. The surveys are conducted throughout the country using standard forms.
2. Not all waterbodies are currently using the 100th meridian survey so there might be more available data (Gleen Dolphin)
3. A standardized form was developed so information was uniform for easily analysis (Bob McMahon).
4. Suggested that there are other ways to statistically correct for sample size. Yes, you can make prediction on the number of boaters in one place, using the gravity model, to predict how far they are willing to travel; however, all it takes is one person from an infested waterbody that can introduce the species.

QZAP Wrap-Up: WRP Role – Group Discussion Facilitated by Tom McMahon
Discussion:
What should the WRP role in QZAP in the future? Tom McMahon – The QZAP was developed and identifies high priority actions. The 2012 National Invasive Species Awareness Week will highlight QZAP. Which high priority actions (increasing capacity to address invasive mussels, prevention, early-detection monitoring, rapid response, containment and control of existing

populations, and outreach and education) should be addressed next (Tom McMahon)? Which messages from the high priority action list should be pursued and what should the WRP role be? In addition there is the QZAP Implementation Team which has regular conference calls to discuss the highest priorities actions; however, the QZAP Implementation Team would like to know if other actions should be considered as high priority or if there is anyone interested in participating in the QZAP Implementation Team (Susan Mangin).

1. Allen Pleus – would like to have more tools/resources to use to respond to and address infestations of quagga/zebra mussels in WA, i.e., would also like a list of identified federally acceptable treatment options. Support the continued research and obtain the needed permits for the use of these options.
2. Bob McMahon – suggests that there is an issue with treating a natural habitat since once adult mussels are discovered they are already throughout a waterbody; therefore, it is more important to focus on prevention.
3. Amy Ferriter – suggested focusing on mandatory inspection and decontamination at all infested waterbodies (first bullet under Prevention).
4. Susan Ellis – suggested developing a standardized model and strategy for risk assessment model for waterbodies (fifth bullet under Prevention) to focus resources on vulnerable waters since some currently infested waterbodies do not have a regulatory framework.
5. Elizabeth Brown – questioned how realistic is the QZAP tsar and what can the WRP members do to help establish the tsar?
    a. The WRP can make a recommendation to ANSTF for support for QZAP (Susan Mangin).
6. Bob Wiltshire – stressed that there is not a strong enough presence of the quagga/zebra mussel message in the media and a lack of political support. To date, the west has not engaged traditional NGOs as a way to get the message out. Outreach in the Great Lake was driven the Sea Grant Program that focuses only on fresh water lakes and was able to bring millions of dollars to the table for outreach efforts.
7. Sam Chan – suggested that the quagga/zebra mussel message still does not have a sense of urgency. Suggested pursuing the outreach and education high priority action item. If congress is going to support QZAP efforts, we will need to provide benchmarks to prove success/effectiveness.
8. Leigh Johnson – suggested the importance for outreach and education to the public.
9. Tom McMahon – to date, the impacts of quagga/zebra mussels are affecting the public less than they have in the Midwest (i.e. shells on shoreline, crash of fisheries, etc).
10. Jodi Cassell – money that came into Sea Grant is no longer available.
11. Elizabeth Brown – suggested that education and information are two different things and suggested that the WRP could possibly try to coordinate information that is being released to the public so that the information is the same that is given to the public/industry/media, i.e., support the development of a regional campaign for press releases/materials. Possibly QZAP could help coordinate effort/ramp up before the National Invasive Species Awareness Week. There is also a need to educate the general public on issue and not just focus on recreators.
12. Jackson Gross – suggested using the Asian Carp Program (www.asiancarp.org) as a model for the quagga/zebra mussel effort by using a central website that information can be shared which would help spread a unified message.

WESTERN REGIONAL PANEL
ANNUAL MEETING MINUTES
October 13, 2011
The Washington Inn
Oakland, California

Transcribed by Dominique Norton, CA Department of Fish and Game

MEMBER REPORTS

Linda Shaw, NOAA – Alaska
NOAA Sea Grant – expanding monitoring in Alaska, partner with cruise ship to conduct green crab sampling via a pilot program in southern southeast Alaska.

Joe DiVitorrio, Invasive Species Program Coordinator, USBR
USBR recently updated the Equipment Inspection and Cleaning Manual which added additional language regarding USBR's acquisition contract guide specification which will require any maintenance or construction contract to follow this standard, added language to clarify photos that were included, added information regarding terrestrial issue, added additional information on aquatic weeds and quagga/zebra mussels on equipment and added information on Zequanox environmental assessment and reference to EPA's permit.

Stephanie Carman, Bureau of Land Management
Funding was provided to BLM's State Offices (in OR, UT, ID, CO) to work with state AIS management lead to determine how to use it for outreach education, watercraft inspection programs, etc. MT received project specific funding. At the national and state level, stipulations are being added to recreational/guided trip permits (i.e. rafting waters managed by BLM) to prevent the spread of AIS.

Cynthia Tait, US Forest Service
Seven regions in the West, with various states within them, are managed from the Washington office. This year USFS is working on a national invasive species strategy with a more top down effort to help with consistency and a take charge strategy to assist the states move forward. At this point, there is a variety of different USFS activity levels which vary by region. Cynthia's region works closely with the fire equipment vector. Two national awards were giving to Larry Dalton and Elizabeth Brown for their outstanding partnership on invasive species issues.

Susan Ellis, CA Department of Fish and Game
There is a grass roots effort in CA with a three county Board of Supervisors that developed county resolutions to declare a state of emergency for quagga/zebra mussels, establish a boater fee, and close infested waterbodies. DFG has responded several times. Clear Lake is located in Lake County, which is the "driver" of this effort, and is a popular warm water fishery which gets a lot of tournament boats. These resolutions are bringing the 2007 scare into the new governor's office.

Elizabeth Brown, CO Division of Wildlife
Invasive species was identified as one of the top ten core missions of the new agencies and as a result, recommendations were developed for the Department of Natural Resources on how to address the merge with the Department Parks and Wildlife. CO Parks conducts about 200,000 watercraft inspections per year. No additional quagga/zebra mussel populations have been

discovered. There were three new New Zealand Mudsnail populations discovered in 2010 and three discovered in 2011 and rapid response plans have been developed for these locations. Through a partnership with USBR in Denver, CO developed a web based sampling database to track sample analysis and results. It was built for use by the 19 Western States. States will receive permission next year to access database which will enable states to track all sampling conducted in state.

Amy Ferriter, Idaho Department of Agriculture
ID's program is in its third year and generates revenue from boat sticker program. The program is administered from the Department of Agriculture. The annual budget is $850,000/yr and is used for operational stations at state line which operate 7AM to 7PM 7 days a week where high risk boats (i.e. commercially hauled, moored boats) are targeted for inspection. The first year (2009) of the program the stations were opened in July conducting 11,000 inspections and found 3 fouled boats, the second year (2010) in May conducting 43,000 inspections and found 8 fouled boats at 20 stations, and the third year (2011) opened in March conducting 47,000 inspections and found 24 fouled boats at 15 stations. Of the 24 fouled boats intercepted in 2011, 15 originated from the eastern US and nine from the Colorado River (most from Lake Mead, some from Lake Havasu, and two from Lake Pleasant). The bell curve of this data centers on May and June with over one interception per week. The I-90 West Bound Station has the highest traffic with 13 of 24 boats intercepted here and thus might of increasing the operations of this station to 10 months/yr. Of the 24 intercepted boats in 2011, 14 were commercially hauled and 10 privately hauled, only 5 were destined for ID, and only 2 were owned by Idahoans. Interception rates are used to strategize the operation of the inspection stations and data will help drive efforts for future years.

Earl Chilton, Texas Parks and Wildlife Department
In 2010, TX worked on an improved list of aquatic plants as result of mandate from the legislature. Two to three days before the Commission was to vote on the list, the legislature, who requested the list, said it was no longer needed. Developed TX's AIS Management Plan, which has been provided to the governor's office for approval. Currently working with Bob McMahon relative to the quagga/zebra mussel monitoring program. In 2010, attempted control measures in Sister Grove Creek; however, about half to two-thirds survived. Downstream the reservoir of concern because it is the gate way to the Trinity River Drainage; only DNA evidence has been found but no adult mussels have been detected. The first detection of Asian Carp in TX was reported besides grass carp. In July 2011, received a report of big head carp and potentially silver carp in Wright Patman Reservoir, TX and will follow up on these reports. Earlier in 2011, received a report from Louisiana that Purple Loosestrife was on sale that reported originating from TX. A number of game wardens investigated the situation and determined there were about 3,000. Ongoing monitoring will continue at the site.

Larry Dalton, UT Division of Wildlife Resources
Please refer to UT's report for more details. UT's program is founded in outreach to the boating community. The legislature provides about $1.35 million per year of general fund to operate. Work closely with partners, water users in particular, they provide another $367,000 per year. No local agencies are running their own prevention program. UT requires every watercraft to fill out a decontamination form and display the form in the launched vehicle prior to launching. The form requires the watercraft owner to think of their origin within the last 30 days and if they have properly decontaminated their boat. If a watercraft originates from an infested waterbody then they need to get their watercraft decontaminated. There are 41 decontamination units throughout

state. In 2010, 408,000 watercraft are inspected per year, 11,000 decontaminations, and 18 infested watercraft were intercepted. Have been delisting waters recently as a result of no additional positive results after 3 years. Sand Hollow Reservoir continues to be listed as infested as a result of a positive result taken via a water sample. Also working to perfect the technology to detect NZMS via a water sample and can be used to determine presence/absence and relative abundance.

Tammy Davis, Alaska Department of Fish and Game
In 2010, reported the confirmed detection of DVAX for the first time. As a result, have been collaborating with federal, state, and local agencies. Dive and intertidal surveys were completed to assess the distribution and are working to develop a response plan with help from a contractor. Have conducted outreach to stakeholder groups and legislature. Requested boaters avoid area and restricted commercial fishing. Conducting research to continue to look at eradication options. Elodia was detected in the Fairbanks area and in the Anchorage area (one waterbody in the Anchorage area has a high use of float planes). Conducted diver hand removal to assess what kind of removal processes are available and looking into the use of a super sucker. In the past, Northern Pike activities have focused on small closed lakes with several eradications occurring. Looking into rotenone application for use in larger lake and open system. Working with USFWS, the Alaska Sustainable Salmon Farm to conduct outreach on pike and working with BLM on a broad AIS educational campaign (signage, advertisements, videos, etc). Also working on how to keep boats that are infested with rats from launching in state waters.

Rick Boatner, OR Department of Fish and Wildlife
This is the second year (2011) of the program in partnership with the OR Marine Board. The first year (2010), inspected 2,852 watercraft with a staff of 10 inspectors. In 2011, inspected 36,000 watercraft with 9 inspectors and intercepted 5 infested watercraft. Conducted 71 decontaminations as a result of plant material. There is new authority (HB 3399) which provided mandatory stopping authority at roadside inspections which went into effect in August 2011. On September 2nd, conducted the first roadside inspection and 27 vessels passed station with the most common reasons "didn't see the sign", and "didn't think it applied to me". Also tried to eradicate populations of didymium dexium.

Tom McMahon, AZ Game and Fish Department
Recently hired a technician through grant funding with BLM. Three quarters of the money is for AIS outreach efforts and the other quarter is for fishing efforts.

Kari Hamilton, Alberta Sustainable Resource Development
In 2011, there is no budget for invasive species efforts; however, were able to develop an invasive species framework and risk assessment for Alberta which is available on the internet and available for review. Going to update the prohibited species list; however, there is no legislation that allows for watercraft inspections. Going to establish an Alberta Invasive Species Act but this will take 5-10 years. Looking at developing an early-detection monitoring and rapid response program but is currently limited by lack of funding. As a result of the strength of the Canadian dollar, a number of people going to going to Lake Mead and AZ to buy boats so have been working on an outreach campaign to public about this issue. Are conducting a recreational boat survey to look at vectors. Trying to get approval for use of chemicals for eradication in Canada. Attempting to deal with flowering rush, purple loosestrife, and Himalayan balsam sites so are conducting research, working with the Minister, encouraging media coverage, and working with the Invasive Species Awareness Day.

Bob McMahon, University Texas, Arlington
Have been working with Bryan Moore, NPS Lake Mead, regarding the quagga mussel population at Lake Mead regarding population dynamics. Published a paper that looked at samples collected in 2007 from three sites containing individuals that were at least two years old and determined that the quagga mussels were probably in Boulder Basin at least 3-4 years before they were detected. Also looked at the reproduction of quagga mussels in Lake Mead and found that adult mussels live about 3 to 3.5 years and have two reproductive periods (Spring and Fall), and once surface water goes over 25ºC the mussels can not feed fast enough and their body mass reduced. Saw similar results in KS and OK for zebra mussels. Also found that as the population increases they can't access enough food to get fat enough to last through the winter. Working to develop a monitoring program for TX and have worked at Lake Taxoma where even at 30ºC veligers have been found in the water but adults are not settling. Holding an invasive species session with David Wong at the National Shellsfisheries Association in Seattle in March.

Stephen Phillips, Pacific States Marine Fisheries Commission
Conducted a rapid response exercise for the Columbia River Basin in cooperation with Montana Fish Wildlife and Parks, Canadians, CRB states, USFWS and other agencies to determine what would be done on containment and media and learned that stopping boats in Canada is difficult. The Columbia River Basin Team will meet November 9, 2011 in Vancouver, WA. The Pacific Ballast Water meeting will take place in late January 2012.

BUSINESS MEETING
"Threats to the West" brochure revision – Cynthia Tait, USFS
Paul Heimowitz is the lead of the workgroup to update the "Threats to the West" brochure. The workgroup met to evaluate the species profile (plant/animal) to determine which species to keep and remove and also added two side bars regarding pathogens. The original illustrator will provide new art work as needed. Additional work that is still needed including a decision on the front page image (workgroup), final review of the text (workgroup review with a few Ex Com), procure illustration services (SF Estuary Partnership), procure layout services (from original contractor or WRP), and a decision on printing (by either a panel member, contract, or government printing office). The workgroup needs guidance on these items.

Karen McDowell reported that there is $50,000/yr for the WRP which is transferred to SFEP so the money wasn't lost. There is $13,750 available via SFEP that can go towards printing and graphic design. The original file was done by SFEP and Bobbi Sloan might have the original files. The website needs to be updated since it indicates it will be available fall 2011. The final files will be made available for additional printing. The brochure can be used west wide and there will be room for agencies to print it with their logo. An email will be sent requesting additional funding for printing.

Voted that the final text be reviewed by the workgroup and two Ex Com members (to be identified at a later date). Asked for a motion: Elizabeth Brown; Amy Ferriter 2nd motion: motion unanimously passed.

Voted on procurement of money for illustration and graph design. Workgroup will get quotes and make recommendations to the Ex Com. Asked for a motion: Robyn Draheim; Karen McDowell 2nd motion: motion unanimously passed.

Coastal Workgroup Report – Kevin Anderson, Puget Sound Partnership
Please review the program report for more details on the goal of the workgroup and topics discussed.

Kevin Anderson and Jeff Adams are the co-leads for the Coastal Workgroup that meet via phone once every two months for an hour or more and include representatives from WA, OR, and CA. There is a subgroup of the WPR and can make recommendation to the WRP and ANSTF. Have held two organization meetings and will discuss new state issues and how to make decisions on how to respond to future invasive species discoveries. This workgroup does not currently discuss ballast water issues.

PCR Workgroup Report – Stephen Phillips, PSMFC
PCR Workgroup was developed to look at PCR technology and validating/certifying labs. About a year ago, did a survey of PCR/microscopy labs in the West. Separately, the Early-Detection and Rapid Response Subcommittee of the Invasive Species Advisory Committee started to look at PCR as well and developed a draft outline for a white paper on PCR validation/certification/etc. In addition, the white paper was developed to alert agencies of the need/problem of invasive species and work to address the current problem that there is no validating agency, and lack of standardized language. From a management perspective, there is a need for certainty when using a PCR lab on national scale. The white paper draft outline is available on the ISAC website from the June 2011 meeting. The next step is to develop briefing papers for the ISAC for their approval and then sent to the National Invasive Species Council. USBR (with QZAP funding) will hold a workshop February 7-10 in Texas to discuss Dreissenids and the PCR issue. In the meantime, if a state is going to use PCR as management tool, the state will need to test the lab themselves.

Allen Pleus asked if there is an incentive for laboratories to do self accreditations or an economic incentive for a contractor to develop a certification? Stephen Phillips explained that laboratories are interested in a system to get tested and certified. Allen Pleus clarified that there is a need for a third party to provide a certification. Stephen Phillips confirmed that that is the ideal option. Allen Pleus asked if the third party needs to be a government agency or a private company. Bob McMahon explained that this is currently a problem that is trying to be addressed especially as new laboratories are becoming established and believes the third party could be done by either a government agency or a private company. Karen Vargas believes that the procedures need to be written and that laboratory practices should be permitted by the government (ex EPA). Elizabeth Brown explained that within the USDA there is an agricultural market services which certify commodities and laboratory practices. There are private industry competitors that do the same thing. Has USDA been approached to assist in this issue? Stephen Phillips confirmed that USDA staff that work on certification process/evaluation/write standards has been involved in the discussion. Elizabeth Brown suggested that the WRP needs to make a recommend to the ANSTF to work with agricultural markets/USDA. Bob Wiltshire stressed that it is going to take a lot of time to develop what is needed to certify laboratories. David Britton agreed with Bob McMahon and explained that there was a double blind study that was completed using established laboratories to compare PCR and microscopy. The study did not include which labs did well and which did not do quite so well which would be useful information. Stephen Phillips explained that the labs were asked if they would be willing to share their results and found that most labs said would be willing to allow results be released.

Elizabeth Brown explained that the current process being used by state differs by state – some states are doing microscopy or PCR only, some states are using microscopy first followed up by PCR, and some states are using PCR first and followed up by microscopy. Allen Pleus suggested a process still needs to be developed that can be used in the interim that can designate what the best way to get most reliable information. Karen Vargas' experience that private and governmental labs are willing to work together so suggests bringing the labs together to develop a process.

If have more information, please speak directly with the workgroup.

Field Gear Decontamination Workgroup – Tammy Davis, Alaska Department of Fish and Game

At last year's meeting, Bob Wiltshire gave a presentation and led a discussion on states banning felt soled waders; however, this is not the silver bullet. As a result, a workgroup was established to look at cleaning field gear and protocols. Tammy Davis and Bob Wiltshire as the co-chairs but no progress was made. A survey was sent out to the 19 western states and there were 23 respondents to query:

1. What is your agency is doing, requiring, or recommending for cleaning gear: 8 out of 23 respondents have mandatory protocol for decontamination.
2. If cleaning stations are provided, what type is provided (water/solution): 2 out of 23 respondents have a solution beyond water available.
3. If you have a protocol, what is it based on?
    a. Response is high variability in agency recommendations but did focus on recreational users.
4. Do you agree that standardized protocols be approved by WRP states? Across the board support that standardized protocols for field gear has value.

The survey had limited distribution to panel members and had limited response so the data was not well represented; but among those that did respond, there was an agreement that there should be standardized field gear protocols for agency use.

States were requested to send Tammy Davis a copy of their existing protocols which found many protocols are in draft. If standard protocols are developed, the question is will states be willing to adopt new standards if they have existing protocols. Is there a benefit to continue this workgroup and if so should the same people be involved (Tammy Davis, Bob Wiltshire, Stephanie Carman, Cynthia Tait, Rick Boatner, Toni Pennington, John Wullschleger)?

Karen McDowell suggested that this could also be deferred to the ANSTF. Tammy Davis explained that the workgroups of the ANSTF are specific to recreational users (the public) while the original goal of these protocols was for use by agency staff. Stephanie Carman explained that the ANSTF is waiting to see what is developed by this subcommittee. The USBR guidance document includes dive gear, clothing, and foot wear (but not in great detail). Allen Pleus has validated his protocol with existing literature to support his recommendations.

Allen Pleus would like to join the workgroup.

In addition, in the summer of 2011, Bob Wiltshire and Tammy Davis were tasked with helping the ANSTF to work on recreational user guidelines. Recreational User Guidelines were a piece of the 1990 ACT. In 2011, ANSTF decided it was time to update the guidelines because of new technologies, include new user groups (motored and non motored boats, aquarium and water

gardeners, teachers and researchers), and to unify the messages (remains Clean, Drain, and Dry plus additional language was added for specific user groups). Everything should be finalized for the November ANSTF meeting.

The following people were originally involved in the workgroup and have agreed to continue to be involved in the workgroup: Tammy Davis, Bob Wiltshire, Stephanie Carman, Cynthia Tait, Rick Boatner, and Toni Pennington. The following people volunteered to be involved in the workgroup: Allen Pleus, Amy Ferriter, Sam Chan, and Karen Vargas.

By the end of the year the group will define their purpose and timeline. The intention is to develop a template structure for a recommended standardized field gear decontamination protocol by next year.

Everyone was in favor except Bob Wiltshire who felt the process should not require a vote.

Executive Committee Nominees, Joanne Grady

The Executive Committee is a nine member panel. This is an odd number election year with five available seats. There were seven candidates on the ballot for the 5 seats. Only voting members are permitted to vote in the election. Written biographies were provided. Each of the nominees provided oral statements:

1. Kevin Anderson, Puget Sound Partnership
    a. Current role and responsibility is to develop and provide guidance for restoration of the Puget Sound. In addition, work to protect and restore the Sound from invasive species.
    b. Has been a member of the WRP for a number of years and has served on the Executive Committee for the last 2 cycles.
    c. Personal interest to continue involvement through the transition of the USFWS supported panel to a non-USFWS supported panel and believes there is an opportunity for non profit involvement. Also interested in maintaining a balance of topics discussed by the panel.
2. Elizabeth Brown, CO Division of Wildlife
    a. Joined the WRP as a non voting panel in 2006 and became a voting member in 2008. Responsible for all invasive species issues in CO and work closely with partnerships.
    b. Wants to continue to be involved in the evolution of the WRP and sees this as a great opportunity to evolve to set the course for future.
3. Stephanie Carmen, BLM
    a. Is a fairly new to WRP and is on the ANSTF.
    b. Believes that BLM does a good job with weed management, but is trying to get BLM to expand involvement in other invasive species issues.
    c. Would like to help the WRP move forward into the next phase.
4. Larry Dalton, UT Div of Wildlife
    a. Celebrating his 40th year as wildlife biologist and have worked on many issues over the years – terrestrial, game, non game, enforcement
    b. Believes the WRP is at a juncture of exciting times for this group with the change of coordination and the dependence upon the Executive Committee.
5. Karen McDowell, SFEP
    a. Has been involved with the WRP for some time.
    b. If reelected, will focus on getting the coordinator on board.

6. Stephen Phillips
    a. Has been involved with the WRP for about 10 years. PSMFC administers the 100th Meridian Initiative Colombia River Basin Team, administers green crab technical working group, works on marine issues (ballast water), and works on fresh water issues (quagga/zebra mussel).
    b. Believes can be of help when developing RFP to find an applicant.
7. Cynthia Tait, USFS
    a. Work in the intermountain region (4 states, 12 Nation Forests)
    b. Started to work with the panel in 2007 and developed a position in the USFS as a regional aquatic invasive species coordinator.
    c. Believes the USFS needs to have a presence as a land manager.
    d. Appreciates the WRP as a networking/coordination/communication outlet.
    e. Would like to help out more and be able to contribute more to allow agency to evolve in the coordination/communication arena.

Joanne Grady thanked current Executive Committee members for their service.

Announcement of new Executive Committee Members – Joanne Grady, USFWS
Kevin Anderson, Elizabeth Brown, Larry Dalton, Karen McDowell, and Stephen Phillips

Additional Workgroups, Karen McDowell, SFEP
Additional workgroups can be formed at any time. An email will be sent to request additional workgroups and volunteers to represent the WRP on one of the ANSTF committees.

Control and Eradication Efforts and Strategies Work Group, Jackson Gross
Proposed a new workgroup to focus on control and eradication efforts and strategies. Suggested this workgroup is important because there are currently many people doing different things and we can all learn from the shared information, and many people are retiring and we need to have the information documented.

Discussion: Cynthia Tait asked if research would focus only on control and eradication. Jackson Gross clarified that the workgroup would focus on management actions, science, who is doing what and where, successes, and failures. Bob McMahon suggested it is going to be hard if the workgroup is going to include all plants/animals since this would be a huge undertaking and suggested focusing on working on a few key species. John Wullschleger suggested developing clearing house for knowledge. Allen Pleus indicated that the NZMS National Management Plan is out of date and needs to be updated so suggested starting with updating existing information. Joanne Grady clarified that an additional duty of the USFWS Region 6 position is to chair the NZMS workgroup. Karen McDowell thanked Joanne Grady for all of her work. Cynthia Tait suggested it would be helpful to have access to news articles on crayfish eradication in WI and it would be helpful to know how the treatment worked, the successes, and failures. John Wullschleger questioned what is the problem the workgroup will be trying to solve. Jackson Grady explained that there will be an effort on how to use money most wisely, not use inefficient methods (not make same mistake), and a loss of institutional knowledge.

Jackson Gross will be the chair and the workgroup will include Allen Pleus, Ron Smith, John Wullschleger, Steve Chilton, Katherine Cullison and Cynthia Tait.

Action/timeline
Come back to the Ex comm. By end of year with document similar to West Coast Marine

The first task is to define purpose and goal of the workgroup in a fact sheet by the December meeting.

Asked for a motion: Adelheid Herrmann. Elizabeth Brown 2nd motion. All in favor except Bob Wilshire who abstained.

QZAP Team – ANSTF Led Group
Current representatives include Karen McDowell, Tom McMahon, Stephen Phillips, John Wullschleger, David Britton, Gordon Brown, and Joe DiVittorio. The QZAP Team will focus on the NISAW and the tsar. Additional volunteers include: Amy Ferriter, Larry Dalton, and Stephanie Carman.

Strategic Plan for the Panel – ANSTF Led Group
Stephanie Carman volunteered to represent her own organization, BLM, and the WRP. A Strategic Plan (for next 5 years) will be presented at the ANSTF meeting in November and is available online for review by the ANSTF and the Panels. Particularly interested in receiving input on the goals and objectives. The final Strategic Plan will be approved for task force. Then an operational plan will be developed. This document will not be put in the Federal register.

Joanne Grady clarified that according to the guidelines for the WRP, the panel appoints and dissolves the committees as needed and can be interpreted to require a vote.

ANSTF Committee – Paul Heimowitz, USFWS
The ANSTF would like to develop an aquatic species award. Paul Heimowitz is the point of contact. Elizabeth Brown also volunteered to work on this committee. Susan Mangin reported that this will be a joint ANSTF/NISC Award. There will be six awards in three different categories (leadership, volunteerism, and outreach). There will be a recipient from the aquatic side and terrestrial side, and will be presented at the NISAW. Susan Mangin will send email to receive nominations (people or programs).

Representative for Triploid Carp – Tom McMahon, AZ Game and Fish Department
Tom McMahon has agreed to represent the WRP on the Triploid Carp issue.

October 2010 Meeting Minutes Approval – Karen McDowell, SFEP
The October 2010 meeting minutes are approval pending the following changes:

1. Susan Mangin – Page 15, change "No funding for QZAP…" to "currently don't have available funding"
2. Bob Wiltshire – Page 9, change "…we are sending out a bad message" to "sending out a misunderstood message"

Asked for a motion: Kevin Anderson; Stephanie Carman 2nd motion: motion unanimously passed.

Financial Report – Joanne Grady, USFWS
Please see the WRP Financial Report which was provided.

The report indicates that $50,000 was awarded for FY 10 and FY 11. In FY 10, the money was spent on travel via SFEP and to complete a risk assessment by Marion Wittman. In FY 11, there was no coordinator for the majority of the FY or RFP. The easiest way to deal with this was to

modify last year's agreement with SFEP to keep access the FY 11 money. Entering Federal FY 12, will receive $50,000 from the ANSTF and as part of the transition of the USFWS out of the coordination role of the WPR, the USFWS has committed money from the Region 6 AIS budget in decreasing allotments. The USFWS will provide in FY 12 $20,000, FY 13 $15,000, and FY 14 $10,000. Therefore, the budget for the next federal FY is a total of $70,000. Will need to figure out a new way to process funds.

2012 Annual Meeting Location and Tentative Dates – Joanne Grady, USFWS
Historically, the WRP has tried to schedule future meeting locations alternating between coastal and inland cities. Therefore, the next meeting will be inland. A discussion occurred that discussed possible locations (KS, CO, MT, WY, UT). It was recommended that when selecting a location that the federal rates is considered, and the location needs to be close to a major airport. It was agreed to vote on Denver, CO vs Salt Lake City, UT for the two possible 2012 locations. A majority vote resulted in Salt Lake City, UT being selected as the 2012 Annual Meeting Location.

A date will be selected in either September or October. Joanne Grady will check the federal rates for September vs October but will tentatively be the 2nd or 3rd week of September. Need to consider that the Federal FY starts October 1st, and recommendations are due to the ANSTF a month prior to their meeting. A vote occurred and all were in favor.

The 2012 Annual Meeting Planning Committee will choose the location in the city selected, meeting date, and develop an agenda. The Planning Committee include: Karen McDowell, Joanne Grady, Tammy Davis, John Wullschleger, Stephanie Carman, Elizabeth Brown, Earl Chilton, Cynthia Tait, Katherine Cullison, and Larry Dalton.

Attorneys General Workshop Discussion – Joanne Grady, USFWS
Please see the National Sea Grant Law Center partners with top legal experts to fight invasive species news release.

National Sea Grant Program offered a workshop for Attorneys General and was designed to have invasive species experts inform the Attorneys General on invasive species issues. It was picked by the Washington DC staff as an option for the WRP to consider using their services to provide additional workshops for Attorneys General in other areas of the country. Was asked to present this as an option to the WRP for discussion. The cost of hold a workshop is $25,000-$30,000 (depending on goal, audience, size of workgroup, travel, etc). The question is if the WRP should host a workshop in the west.

Sam Chan suggests it would be great if could get all 12 state Attorneys General together to discuss whether or not stopping boats for inspection is a possibility. There is a need to educate the Attorneys General on invasive species issues. There might be a possibility to obtain funding from Sea Grant.

Bob Wiltshire believes it is a good idea and suggested that the Ex Com or a workgroup be formed to look into the possibility since there are more questions than have answers at this point. Elizabeth Brown believes if there is available funding then this is something that should be pursued since the support of the Attorneys General would be helpful. The Attorneys General in CO believes this would be a good opportunity. Sam Chan suggested if the workgroup could write a proposal, the OR Sea Grant has $10,000 that can be obtained. Jeff Adams indicated that

WA Sea Grant can offer a small amount of money quickly but amounts that are larger than $20,000 takes longer to obtain especially if all three west coast Sea Grant Directors are onboard. Diane Cooper indicated that she was not clear on what would be accomplished. If the expectation is to get legal advice then it might not be valuable but if the expectation is to educate them on the issue then it might be valuable. Rick Boatner indicated that OR Fish and Wildlife Laws are so low on priority and believes that if the Attorneys General are educated on the issues then they might be willing to take on future cases. Stephanie Carman suggested considering if Attorneys General would even be interested in attending this type of event. Glenn Dolphin believes that bringing Attorneys General together in for a one day workshop might be beneficial. Allen Pleus indicated that the WA and ID Attorneys General disagree on whether or not commercially transported boat can be stopped for inspection and suggested that Sea Grant might be able to spend money better elsewhere. Tammy Davis suggested that the needs of AL and HI need to be considered. Adelheid Hermann will check with AL Sea Grant to see if they have any interest.

Ex Com will look into this more and will have a conference call with the Stephanie Showalter, National Sea Grant Law Center. Asked of a motion: Elizabeth Brown; Second: Unknown. Motion unanimously passed.

Post Breakout Session
Transcribed by Karen McDowell
Comments: common themes, structure and expectations need to be delineated, role for the new coordinator may focus his/her efforts on strategic plan development and obtaining additional resources. People felt that they had addressed many of the problems facing the WRP but were unable to come up with solutions.

Discussion focused on the function of ExCom vs. subcommittee in terms of digesting the breakout sessions and how to turn that into a job description for a coordinator position.

Issue: potential conflict of interest with job development and WRP membership.

Motion: Have the distilled comments from breakout sessions as summarized by Christine provided to ExCom and ExCom prioritize and distribute that to the rest of the panel. Allen Pleus 1st, Toni Pennington 2nd. Vote: Yes, approved.

USFWS/ANSTF Update – Susan Mangin
Branch Chief of Refuges – wants to ramp up inspections and outreach at refuges. Discussed: Stop Aquatic Hitchhikers, HACCP, Elizabeth's decontamination handbook, WIT, etc. Approached to explore Fed support for Asian Carp fish processing facilities: USDA may help out. ANSTF Charter just renewed in August reminder to new coordinator: Susan will need to approve WRP meeting agendas. Next ANSTF meeting: Panels will meet before ANSTF meeting, discuss coordinators, projects; Updating ANSTF strategic plan; Award program; Lion fish; and two new state ANS plans to approve (AZ and TX).

Recommendations to ANSTF – Stephen Phillips
WRP recommendation [to ANSTF] on infested boats leaving positive waters. Brian Rappoli indicated that Lake Mead is not the only positive waters, and not the only region where boaters are going to and from in the West. Lake Mead moving to close the loopholes but there are so many uninformed folks and so much unknown boat movement.

Motion: Approve as is. 1st Stephanie Carmen, 2nd Stephen Phillip Vote: Yes, Comment: Larry Dalton, tied to QZAP objectives/priorities.

Stephanie: Motion: amend to align with specific QZAP action plan number(s) associated with this. Second: unknown. Vote: Opposed has it (2 yes, 1 abstain).

Member Reports Continued

Toni Pennington – WAPMS
Issues: NPDES permit process restarted Oct 31st. Interest in learning about additional AIS: hitchhiking issue (plants as vectors). Emerging plant problems: milfoil, flowering rush. ACOE: losing weed research funds. PNWER AIS working group had a lot of interest in plants. WCGAOH (West Coast Governors Agreement on Ocean Health) – Spartina

Jeff Adams – WA Sea Grant
HO: a regional approach to predicting and managing AIS pathways.

Bob Wiltshire – Center for Aquatic Nuisance Species
Outreach efforts – behavior changes, targeted to specific user groups [characterization of individuals as vectors], new targeted outreach to teens, peer to peer efforts in the fly fishing community. The 2nd International Didymo Symposium (Fall 2012) to explore science and recreational movement of (NE or MidAtl Panel partnerships).

Karen McDowell – San Francico Estuary Partnership
America's Cup (August 2012, July- September 2013) concern is spectator boats and super yachts. Committee developing BMPs for preventing new introductions. Clean before you come, clean before you go. Social Marketing: green pennant for "Green boating" including AIS cleaning.

Leigh Johnson – UC Cooperative Extension
Workshop on management and control strategies for central and southern Cal for 2012. Coastal AIS program (risks posed by boats traveling along CA and Baja). Ecological field studies on coastal hull fouling (Santa Barbara and San Diego).

Mike Perlmutter – Bay Area Early Detection/Rapid Response (EDRR) Network
Started in 2006, EDRR with plants in 9 counties around the Bay, starting to get involved in wetland plants. Met with Chela Zabin to think about coordinating and collaborating on information gathering/sharing.

Allan Pleus – WA Department of Fish and Wildlife
Exciting budget challenges in the future. Working closely with regional partners in PNW with ZQM movement.

Katherine Cullison – Hawaii Department of Land and Natural Resources
Lost all state employees on AIS, all eleven on soft money. Mostly focused on one bay/project with algal infestation (supersucker no longer working). Using a native, tiny urchin, moved into a bay with a patch reef, they are eating the alga, are culturing urchins in an aquaculture facility. "Chemical Toolbox" report done but NPDES permit process negates opportunity, now working on "Biological Toolbox". Laboratory tests on invisibility potential.