

**Mississippi River Basin Panel (MRBP) on Aquatic Nuisance Species (ANS)
Meeting No. 2 Minutes**

**New Orleans, LA
January 8-9, 2004**

Introduction

The meeting was called to order at 8:00 a.m. by Chairman Jay Rendall (MN). A copy of the attendance list is attached. Rendall pointed out that we like to operate informally, but try to keep everyone on task and that we operate by consensus. After introductions Rendall asked if anyone recommended any changes to the agenda. None were requested, so Rendall proceeded with the agenda (copy attached). Rendall then went over the questionnaire mailed out after the organizational meeting requesting comments and input for future meetings. He apologized for the meeting change in November, and said that the change had been made because of a conflict with the national ANS Task Force meeting. He said that we have requested a national calendar of ANS Task Force and Panel meetings to avoid such future conflicts.

Review of the MRBP Organizational Meeting and Approval of Minutes

Rendall said that everyone should have received a copy of draft minutes from the Organizational Meeting, but that we are still working on the CD of presentations made at the first meeting. He also noted that in response to requests we have left time on the agenda for the committees to meet and work on their activities. He said that at the Organizational meeting we established the following four committees: (1) Executive Board or Operating Group, (2) Education and Communication, (3) Research and Risk Assessment and (4) Prevention and Control. He said that we elected chairs, but we now need to replace the chairman for the Education and Communications Committee because Steve Schainhost (NE) underwent major surgery so his current health doesn't allow for him to fill that role. He said that the MRBP funding proposal was sent forward to the U.S. Fish and Wildlife Service (FWS) and that \$50,000 has been obligated by the FWS for the MRBP. He said that we have developed our own logo to provide our identity separate from that of MICRA and other basin groups. He said that we also provided a liaison with the other committees through the chairmanship - Rendall attended the national ANS Task Force meeting to represent the MRBP. Rendall said that the Panels are required to provide time for public comment, so we have some time allotted for that on the agenda. He then asked if anyone recommended any changes to the Organizational Meeting minutes. None were suggested, so Duane Chapman (USGS/BRD) moved and Michael Hoff (FWS) seconded that the minutes be adopted. They were then adopted by consensus.

Formal Presentations on ANS in the Basin

What follows are major points made in the presentations of Gary Isbell (OH), Duane Chapman, Tom Mosher (KS) and Pam Fuller (USGS). Some of the follow-up discussion is also documented:

Impacts of Round Goby on Smallmouth Bass in Lake Erie (Isbell, Ohio):

- Issues of concern for smallmouth bass in Lake Erie include population numbers, reproduction, and local populations (stocks)
- Ohio has recommended closure of the smallmouth bass season to possession (i.e. catch and release only allowed) from May 1 until the last Saturday in June.
- Why? - Angler success is declining at the same time as fishing pressure is declining.
- There is evidence of reduced reproduction - young fish making up less of the catch (the fishery is

- placing greater reliance on old fish)
- Research Findings:
 - Male bass protect nests well, but round gobies enter nests & feed quickly,
 - Storms are a major factor for nest success,
 - Angling can significantly affect nest success, and
 - May-June are important nesting periods.
- Storms, angling, and cormorant predation has not changed, but round goby populations (egg predators) have reached high abundance.
- Within 5 minutes after a bass is forced to abandon its nest, there are 20 gobies in the nest feeding on its eggs.
- Nesting failures can be devastating to local smallmouth bass populations; and good reproduction elsewhere in the lake may not help.
- A change in regulations to reduce possession in May and June will:
 - Eliminate harvest during peak spawning periods,
 - Eliminate translocation during spawning periods,
 - Reduce fishing pressure during nestings, and
 - Increase nest success and recruitment.
- But will the regulations be enough to offset the impact of gobies? Or the next ANS?

Bobby Reed (LA/MICRA) asked if smallmouth bass feed on round gobies. Isbell said, yes, they make up 20-30% of the bass food, but this doesn't seem to keep the goby numbers down. Ron Lukens (Gulf of Mexico Panel) asked if there is a strong likelihood of bass returning to the nest. Isbell said yes, the bass will go from several hundred yards away back to nest almost immediately. Jay Troxell (FWS) wondered if all the eggs could be eaten by the gobies during the 5-15 minute angling experience. Isbell said if you look at the graph there would still be some eggs left in the nest. Chapman asked if the anglers had been educated to quickly release the fish back into the water? Isbell said yes, in the fall this was done, and we got no comments against the regulation. Ron Martin (WI) wondered about the goby impact on walleye, perch, etc. Isbell said they have not conducted any research on that subject. He said further that tributary spawning may limit some of the goby predation on these species.

Brief Update on Asian Carp Research (Chapman, USGS/BRD Columbia, MO):

Chapman said that a large amount of data collection is going on, but little analysis is available yet. He showed several slides on the use of radio telemetry and side scan sonar, and pointed out that his lab is also working on a pheromone study and on the toxicity of Asian carp to rotenone and antimycin. He pointed out that movements have been traced a considerable distance up into the Missouri River tributaries. Jerry Rasmussen (MRBP Coordinator) wondered about the width and depth of the Grand River where bighead carp were found. Chapman said the water was 10 ft. deep, but that they have not found large bigheads in shallow water, but have found smaller ones as far as 40 miles upstream. He said they swim about 1.5 miles per hour in the 5 mph current of the Missouri River. Dan Sallee (UMRCC) said that during a fish kill last year in Illinois bighead carp were found 90 miles upstream in a tributary of the Illinois River. He said that silver carp were also noted swimming upstream right through an ammonia plume. He also asked Chapman if he had seen any orientation of Asian carp around thermal loads. Chapman said that there are 4 hot water effluents in his study reach, but that he had never seen any of his tagged carp in there. He said that there are fish in there, but no pelagic fish in are there in the winter time.

White Perch (Mosher, Kansas):

- White perch belong to the family Moronidae and are most similar to the:
 - white bass *Morone chrysops*,
 - yellow bass *M. mississippiensis*, and
 - striped bass *M. saxatilis*.

- Compared to white bass, white perch have a more prominent lateral line stripe, jaws of equal length, connected dorsal fins, and 8-10 soft rays on the anal fin where white bass have 11-13 such rays.
- The original range of the white perch is along the east coast from South Carolina to the Gulf of St. Lawrence where it occurs in coastal rivers and estuaries, inland rivers and ponds and lakes.
- White perch were dispersed to:
 - The Great Lakes via the Erie Canal,
 - Lake Ontario via the Oswego River, 1950,
 - The Upper Mississippi River via the Chicago Sanitary & Ship Canal,
 - The Platte River NE via stocking, 1964,
 - The Missouri River via expansion from Missouri and Kansas, and
 - The Kansas & Arkansas rivers via accidental stocking, 1994.
- White perch displaced yellow perch in the Bay of Quinte by 1957 (Sheri & Power 1968)
- White perch are omnivorous, feeding on macroinvertebrates, aquatic insects, zooplankton, fish, and fish eggs - including their own
- Spawning occurs in March-July at 13-17 oC
- Maturity is reached by females at age 2-4 and by males at age 1-3
- Fecundity $F=842.6W-29,864$ ($r=0.97$) (Mosher 1976)
- Egg production ranges from 40,000 Age 3 (76 g) to 230,000 Age 6 (350 g)
- White perch are known to hybridize with white bass in Lake Erie (Todd 1986)

Chapman wondered about angler reaction to white perch. Mosher said at first they were wonderful because they were easy to catch, but then they didn't grow to a large enough size (8-9 in. long). He said that they are fairly good eating. In fact they are wonderful in their native range. Lukens wondered about their tolerance to salinity. Mosher said that they tolerate 5-18 parts per thousand on the average, but can tolerate up to 30 parts per thousand. He also said that they will feed on any abandoned eggs (pelagic or in the nest).

Distribution of ANS in the Basin and the Nonindigenous Aquatic Species Database (Pam Fuller, USGS/BRD Gainesville, FL):

- 291 total species have been introduced into the Mississippi River Basin (MRB) including 60 foreign species (i.e. 37 fishes, 5 frogs, 1 tubificid worm, 2 jellyfish, 4 crustaceans, 1 mammal, 9 mollusks, and 1 reptile)
- Twelve foreign fish species have become established.
- At least 71 fish have been transferred between sub basins in the MRB.
- 90 total species have been introduced into the Upper Mississippi River Basin including 74 fish (25 foreign), 5 crustaceans, 7 mollusks, 2 reptiles, 1 hydroid, and 1 jellyfish.
- 133 total species have been introduced into the Ohio River Basin including 114 fish (12 foreign), 1 tubificid worm (foreign), 1 freshwater jellyfish (foreign), 8 crustaceans, 5 mollusks (all foreign), and 4 reptiles
- 155 total species (36 foreign) have been introduced into the Missouri River Basin including 127 fish (24 foreign), 7 reptiles, 8 mollusks (7 foreign), 9 amphibians, 3 crustaceans, and 1 freshwater jellyfish (foreign).
- 126 total species (23 foreign) have been introduced into the Arkansas River Basin including 114 Fish (17 foreign species), 3 Amphibians, 1 freshwater jellyfish (foreign), 4 Crustaceans, 3 Mollusks (all foreign), and 1 Reptile.
- 85 total species have been introduced into the Tennessee River Basin including 78 fish (14 foreign), 1 amphibian, 1 freshwater jellyfish (foreign), 3 crustaceans, and 2 mollusks
- 51 total species have been introduced into the Lower Mississippi River Basin including 40 fish (11 foreign), 4 amphibians, 1 freshwater jellyfish, 3 crustaceans, and 1 mammal

- Sources of introduction include intentional/sport fishing, aquarium releases/escapes, stocked for forage, pet escapes/releases, canal connections, stock contamination, ballast water, aquaculture escapes, stocked for biocontrol, stocked for conservation, and unknown.
- Sport fishing and bait releases are the most common method of release in the MRB.
- The Nonindigenous Aquatic Database includes information from the late 1800s to the present that is geographically referenced.
- 1100 aquatic animals are included and 30 new species were added in 2000-2003
- Taxa include 42 amphibians, 38 annelids, 27 coelenterates, 131 crustaceans, 610 fishes, 3 mammals, 148 mollusks, 50 reptiles, 7 sponges, 19 tunicates, and 15 miscellaneous species.
- Data comes from the scientific literature, museum specimens, personal communications, and unpublished data.
- GIS data includes automated mapping, HUCs or Hydrologic Unit Codes (Level 8), and point data (i.e. river mile or GPS coordinate).
- Data needs include the following: who (collector, identifier); what (photo vouchers for foreign species), when, where (i.e. river mile, lake name, GPS); pathway, status (i.e. observed, collected, established and evidence of reproduction).
- NISbase Overview (a distributed database system) including fact sheets and collections records, using XML technology that is simple to implement and add new databases.
- Participants include: SERC, USGS, GSMFC, CSIRO (Australia), Bishop Museum, New Zealand (early 04), NatureServe (early 04). Potentially, any searchable online database of invasive species.
- NISbase is currently found on NEMESIS website: <http://invasions.si.edu/nemesis/index.html>, but www.NISbase.org is coming soon.
- The next steps will include: advanced queries (i.e. by vector, date, etc.), map distributions from collection records, integrated multi-source fact sheets, and more servers
- The alert system is currently internal, but it could be designed to check all participating databases and register alerts by species or location.

Rendall asked Fuller to explain her maps. Fuller said we georeference all locations to state, county or watersheds, including HUC (Hydrologic Unit Codes), starting with HUC 2 and we go to HUC 8. Rich Campanella (Center of Bioenvironmental Research) asked if point source data are stored. Fuller said yes they are at UTM or latitude/longitudes. Campanella asked if data is provided on relative severity of impact. Fuller said yes we're working on that. Dennis Riecke (MS) asked if MRB is actually a barrier to fish distribution because it is so big. Fuller said that there are not a lot of isolated populations in the MRB. Rendall asked what is the best way for us to interact. Fuller said that the web site provides forms to fill out. Chapman said he picked up a copepod in the Missouri River that was never recorded before, and wondered if Fuller was interested in this, even though we don't know if it is introduced. Fuller said yes we would and would provide assistance in getting you in touch with other experts. Mike Stone (WY) wondered what is being done with introduced vs established species. Fuller said we're making that designation and noting status (i.e. established vs one of a kind). Rendall wondered if it would be helpful to provide info to the panel to see what you have for each state. Fuller said that it would be helpful to work together. She said we did this in 1992, but have come a long way since then, and we would love to repeat that effort. Rendall said we could decide then which are ANS vs which are not a problem. Mosher wondered how they go about verification. Fuller said that if odd balls show up we try to get the specimen for verification by an expert and then keep it in a museum. She said sometimes we ask state experts to go and verify the identification.

Formal Presentations on Pathways and Prevention

What follows are major points made in the presentations of Cindy Kolar (USGS), Jay Rendall (MN), and

John Meyer (USCG). Some of the follow-up discussion is also documented:

Bighead and Silver Carp Risk Assessment (Kolar, USGS/BRD La Crosse, WI):

- Native Distribution
 - Bighead carp: Eastern China, southern Siberia
 - Silver carp: Eastern China, eastern Russia, North Vietnam. Larger native distribution than bighead carp
- Habitat
 - Both species occur in rivers, lakes and reservoirs but are reported to require rivers for spawning
 - Typically spawn at river confluences
 - Both species can withstand fairly low DO (< 2 mg/L)
- Biology and Natural History

	<u>Bighead</u>	<u>Silver</u>
○ Temperature tolerance	2.5-38.8C	2.5-40C
○ Salinity tolerance	slightly brackish	slightly brackish
○ Sexual maturity	3-4 yrs	3-4 yrs
○ Spawning season	usually April-June	usually May-July
○ Fecundity	280,000-1,000,000	145,000-4,300,000
○ Feeding habits	more zooplankton	more phytoplankton
○ Growth	18-23 kg in 4-5 yr	18-23 kg in 4-5 yr
- Diseases and Parasites

	<u>Bighead</u>	<u>Silver</u>
○ Bacteria	2	8
○ Viruses	1	0
○ Fungi	1	1
○ Protozoa	21	17
○ Trematodes	6	5
○ Cestodes	3	2
○ Copepods	6	3
- History of Introductions and Pathways
 - Bighead carp
 - Reported to have introduced into 67 countries (established in 22%)
 - Reported from 23 US states
 - Silver carp
 - Reported to have been introduced into 84 countries (established in 29%)
 - Reported from 15 US states
 - Pathways of introduction:
 - Purposeful stocking
 - Escape from aquaculture facilities
 - Contaminants of purposeful stocking
 - Contaminants of live bait or by live bait
 - Live seafood markets
- Uses
 - Human food (silver carp #1 in worldwide production, bighead #4)
 - Control of algae or zooplankton
 - Remove excess nutrients
 - Fisheries
 - Improve production and growth of other fishes
 - Livestock feed
 - Often raised in polyculture. Carp species polyculture or with other vertebrates (e.g., silver carp raised in ponds below duck pens. Enriched water used to irrigate vegetable gardens).

- Potential Range
 - Given accelerated rate of spread in other countries and the U.S., can probably live in other areas
 - Probably limited by access to flowing water
 - Based on latitude and other characteristics of native range, would expect silver carp to have a more extensive range in the U.S. and Canada than the bighead
- Risk Assessment
 - Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process (RAM Committee 1996)
 - Seven rating elements (each with estimated risk level and level of uncertainty)
 - Probability of Establishment
 - Organism within pathway
 - Entry potential
 - Colonization potential
 - Spread potential
 - Consequence of Establishment
 - Economic
 - Environmental
 - Perceived
 - Organism Risk Potential
 - Probability of Establishment
 - Consequence of Establishment

Kolar said that her office was commissioned by the FWS to do a risk assessment for bighead and silver carp. She said the hard part is coming up with all of the biological data because it is in many different languages. Chapman pointed out that bighead carp do not develop a mottled color in turbid water, and that there are now a lot of hybrids out there. Lukens wondered what we could learn from countries where the carp have not become established. Kolar agreed that we may be able to learn from those experiences, but we haven't done that yet. Chapman said that what surprises him is that the Asian carp don't seem to recruit as well in reservoirs. He said they are in the Lake of the Ozarks, and have been there for some time, but we don't see young ones. Kolar said we are going to look at this later this year. She said the eggs float for about a day before hatching, and that there is some combination of temperature and time required for them to survive. Reed expressed concern about the impact of the Asian carp on paddlefish, and wondered how that will be determined. Kolar agreed that you would think that they would have to be having some impact on paddlefish. Chapman said that at one place in China the Asian carp competes with the barbless carp, another planktivore. Sallee said that on the Illinois River we're seeing what may be a collapse of the gizzard shad populations and some of the other planktivores. He said that some commercial fishermen have even abandoned their gear.

Asian Carp Feasibility Study (Jay Rendall, Minnesota):

- Asian carp and other invasive species are an imminent threat to Minnesota and other states' waters, fisheries, wildlife resources, as well as water recreation.
- Pathways of Introduction
 - The Mississippi River is a certain pathway of introduction if not addressed soon.
 - Asian carp resemble several species of native baitfish and could be unintentionally moved by anglers and the bait industry.
 - A concern among scientists and fishery managers in North America is the Asian custom of enhancing one's fortune or karma for the next life by releasing one live fish for every one eaten.
- Interrupting the Mississippi River Pathway

- Minnesota Nonindigenous Fish Plan 1998 – suggests that barriers should be one of the options considered to limit the spread of nonindigenous fish in the state.
- Upper Mississippi River Summit 1999 – suggested that dispersal barriers be used to control the spread of some species.
- Asian Carp Workshop 2000 – recommended avoiding interbasin transport of Asian carp and creating/maintaining barriers.
- Upper Mississippi River Conservation Committee Report 2000 – Evaluate and implement measures to prevent exotics from entering and spreading within the Upper Mississippi River System (i.e. navigable waters of the Upper Mississippi River)
- The goal of Minnesota's current effort is to prevent the introduction and spread of Asian carp into the state's waters, or as many of the waters as possible, particularly via the Mississippi River.
 - The Smith-Root Company was invited to visit the Mississippi River to meet with Wisconsin DNR, Minnesota DNR, and FWS staff; and to prepare a report (September 15&16, 2003; report due by October 10, 2003).
 - An Interagency meeting was held in St. Paul to discuss the issue and the need for conducting a feasibility study (October 22, 2003).
 - An interagency advisory team was assembled to identify the components of the feasibility study and funding sources.
 - An RFP was issued and mailed to potential vendors (December 1, 2003). The Corps of Engineers was also asked to initiate a study.
 - Surveys were conducted in the Mississippi River to determine the extent of the Asian carp spread (beginning in the fall of 2003 and continuing through 2004).
 - A contractor was selected to conduct the feasibility study (to be completed by March 1, 2004)
 - Funds will be sought from state (e.g., bonding), federal (e.g., National Aquatic Invasive Species Act, FWS) and other sources.
 - Education and enforcement will be used to inform and check Asian markets regarding Asian carp (ongoing in Minnesota).
 - The boating and angling community will be advised about Asian carp and state laws prohibiting their possession and transport (i.e. distribute Asian Carp Watch cards and new Field Guide to Aquatic Invasive Species, and issue press releases in 2004).
 - Bait dealers and anglers will be notified that bait harvest is prohibited in the Mississippi River below the Twin Cities (Spring 2004). Asian Carp Watch cards will be distributed with licenses in 2004.
- Options to prevent the spread of Asian carp to be considered include the following:
 - No action
 - Electrical barriers across one or more river channels
 - Electrical barriers below locks
 - Bubble/acoustical barriers across one or more river channels
 - Bubble/acoustical barriers below locks
 - Lethal lock chambers (Thermal treatment, Toxins, Other)
 - Intensive fishing
 - Other deterrent technologies
 - Habitat enhancement for healthier native fish populations
 - Public education
 - Regulations to limit introduction, transport
- Potential impacts of alternative measures to be considered include the following:
 - Effectiveness
 - Efficiency
 - Acceptability
 - Biological/Ecological
 - Impacts on fisheries, wildlife, mussels, aquatic plants, and aquatic insects

- Recreational
- Impacts on angling and hunting, boating and related water sports, other river recreation
- Commercial
- Impacts on commercial fishing, businesses related to water recreation
- Alternative plan comparisons
- Potential placement and practicality of alternative plans
- Technology availability
- Projection of risk if the Asian carp were to become established include the following:
 - Present distribution of Asian carp in the Upper Mississippi River (UMR)
 - Present distribution of other non-indigenous fish species poised to invade the UMR
 - Estimated future rates and areas of invasion by species
 - Effects on river ecosystem (biological/ecological)
 - Including native fish species and communities, mussels, aquatic plants, aquatic insects, trophic structure, wildlife populations
 - Effects on river recreation
 - Including sport fisheries, hunting, boating and water related sports, other river related recreation
 - Economic effects
 - Effects on commercial fisheries, businesses related to water recreation
- Effects of alternative plans to be considered include the following:
 - Potential construction impacts
 - Projected effects of operation and maintenance
 - Projected effects on future rates and areas of invasion by non-indigenous species
 - Projected avoided adverse ecological effects, avoided adverse effects on recreation, avoided adverse economic effects
 - Projected costs: Installation and Operation
- Final report will include conclusions, recommendations, ranking of the options and effects of options

Rendall said that initially Minnesota thought that the locks and dams would make a good site for installation of barriers, but navigation traffic and the steel in the locks and dams might impair the ability for the barrier to work. Rendall predicted that we may end up using acoustic barriers instead of electrical barriers in the locks. He also said that the Corps or Engineers is suggesting that the locks be closed quickly to avoid fish entrance. Lukens said that for every proponent, there is more than a handful of skeptics regarding electrical barriers. Rendall said that he has heard all of the objections. Hoff pointed out that juvenile (i.e. smaller) fish are less effected by electric barriers.

Development of a National Management and Control Plan for Asian Carp (Michael Hoff, FWS)

- The ANS Task Force (ANSTF) is composed of a number of Committees and Working Groups
- Working Groups were formed to focus on ANS species in need of management and control
- One Working Group that is being formed is the Asian Carp Work Group (ACWG)
- Region 3 of the FWS was asked by the ANSTF to take the lead in bringing together partners and stakeholders and form the ACWG
- The goal of the ACWG is to develop a management and control plan for Asian Carp in the U.S.
- The planning and implementation process will result in development and coordination of a program to manage and control the spread and impacts of bighead and silver carp
- In April 2000, FWS hosted an Asian Carp Workshop in St. Louis to initiate the process of gathering input to develop a management and control plan
- The workshop was attended by about 75 participants from state and federal natural resources agencies, universities, aquaculturists, and their trade association representatives

- The workshop resulted in development of a synthesis document on the status, distribution, biology, ecological and economic benefits, and impacts of Asian carp species.
- The workshop identified some management and control alternatives to reduce or mitigate impacts.
- In FY03, Region 3 assigned the Carterville, IL Fishery Resource Office the lead in developing a National Management and Control Plan for Asian carp.
- Carterville developed a draft outline for the plan, conducted a literature search on Asian carp, and is leading development of a Planning Committee to plan workshops, process details, and a timeline to complete the draft plan and submit it to the ANSTF for review and approval
- The next step is to form the ACWG
- ACWG will include members from State, Federal, and important local Natural Resource agency representatives, NGO Partners, and stakeholders
- Likely tasks for ACWG during FY04 will include writing and distributing a draft plan and for comment, hosting a workshop to collect input on the draft plan, and incorporating comments into a final draft
- Region 3 of the FWS hopes that the Planning Committee and ACWG will develop their goal to complete the draft Plan for approval by the ANSTF no later than at the Autumn 2004 ANSTF meeting.
- At the Dec. 7, 2003 MICRA Exec. Board meeting, a motion was adopted by consensus that: MICRA will support the ACWG effort to develop an Asian Carp Management Plan with the assistance of appropriate personnel from both MICRA and the MRBP, and after the plan is developed, the ACWG should seek endorsement from MICRA on those actions or recommendations that address fish and other aquatic resources under the jurisdiction of MICRA members

On behalf of Region 3, Hoff submitted a motion to request the support of the MRBP for the ACWG-led effort to develop a National Management and Control Plan for Asian Carp. Mike Armstrong (AR) said that this is called an Asian carp control plan, but does it only deal with bighead and silver carp. Hoff said the focus will be on bighead and silver carp and that the FWS has not focused on grass carp. He said the focus will ultimately be up to the Working Group. Marilyn O’Leary (Louisiana Sea Grant) asked Hoff how “support” is to be interpreted. Hoff said that he is asking for endorsement of the action now, with endorsement the plan to come later. To clarify Lukens said, “You mean endorsement of moving ahead, and then the final product will be submitted to the ANS Task force later for adoption. Hoff agreed. The motion was adopted by consensus. Hoff said that letters of invitation will be sent out to all 50 states, federal agencies, and non governmental organizations. Greg Conover (Carterville, IL) will be leading the effort for the FWS.

Ballast Water Management Requirements (CWO John Meyers, U.S. Coast Guard, New Orleans, LA):

- Nature and magnitude of ANS problems
 - Billions of dollars in direct & indirect costs.
 - Adverse effects on human lifestyles and quality of life.
 - Changes to the fundamental properties of entire ecosystems.
- Ballast water (BW) from ships appears to be the leading source of coastal ANS invasions
- Approximate volume of BW discharge to U.S. is 2 billion m³ per year = 0.2 million gal/hr
- Organisms found in BW include: viruses, bacteria, protists & protozoans, fungi, molds, plants, and animals
- The Coast Guards (CG) BW management message is: “To address the threat of the introduction of non-indigenous species into the waters of the U.S. via ballast water, the Coast Guard is implementing national mandatory ballast water management regulations and is working through

- the IMO to adopt an international treaty.”
- Applicable U.S. legislation and regulations:
 - Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA)
 - National Invasive Species Act of 1996 (NISA)
 - 33 Code of Federal Regulations Part 151
 - Subpart C: Great Lakes & Hudson River Rule published 1993
 - Subpart D: Waters of the U.S. Rule published 1999
 - DOT Report to Congress on the Voluntary Guidelines:
 - Required by NISA & submitted in June 2002.
 - Results:
 - Only 30.4% of regulated ships submitted the required reports BWM reports.
 - Only 51.2% of those who reported discharging performed voluntary BW exchange.
 - Conclusion & recommendations: **Make voluntary program mandatory**
 - CG’s current ANS efforts:
 - Implement penalties for failing to report.
 - Proposed Rule published January 6, 2003
 - Final Rule anticipated early 2004
 - Mandate ballast water management (BWM) practices for all vessels equipped with BW tanks operating in U.S. waters.
 - Proposed Rule published July 30, 2003
 - Final Rule due mid 2004
 - Shipboard Technology Evaluation Program (STEP) to encourage installation of experimental BW treatment (BWT) technologies.
 - Program published as CG Policy in Jan 2004 (NVIC 01-04)
 - Establish BW discharge standards.
 - Advanced Notice of Proposed Rulemaking published March 4, 2002
 - Notice of Intent for EIS published Sept 2003
 - Penalties for non-submission of BWM reports (Jan 6, 2003 NPRM):
 - Failing to submit full & accurate BWM reports to the National Ballast Water Information Clearinghouse (NBIC). Applies to master, owner, operator, AGENT or Person In Charge (PIC)
 - Failing to retain signed records on board the ship for 2 years. Applies to master, owner, operator, or PIC
 - Maximum penalty: \$37,500 per day civil penalty
 - Willful violations = Class C felony
 - Penalties regulations will expand reporting and record keeping requirements
 - Currently only ships arriving from outside the EEZ must report.
 - Proposed regulations include the following:
 - All ships with BW tanks bound for ports or places in the U.S.
 - Before departing a port or place of departure if the voyage is < 24 hrs; or 24 hours before arrival to a port or place of destination if the voyage is > 24 hours.
 - Includes transits from one COTP zone to another
 - Vessels exempt from proposed reporting and record keeping requirements include the following:
 - Vessels that operate exclusively within one COTP zone;
 - Crude oil tankers in coastwise trade;
 - DOD, USCG or any vessel of the Armed Services (IAW 33USC (a) & (n))
 - Where and what will be reported:
 - Completed “BW Reporting Forms” (33 CFR Subpart D, Appendix) must be sent to NBIC via the Internet: <http://invasions.si.edu/NBIC/bwform.html>; or E-mail: ballast@si.edu
 - Other methods are available to vessels without electronic submission capability, electronic

- submission is strongly encouraged.
 - Customized forms & forms with incomplete data are not acceptable.
- Transition from voluntary to mandatory BWM program (July 20, 2003 NPRM Proposed):
 - All vessels in U.S. waters equipped with BW tanks must follow mandatory BWM practices
 - Ship-specific BWM plan must be developed
 - Additional practices must be employed by vessels entering the U.S. after operating beyond the EEZ if carrying BW taken on within 200 NM of any shore.
- Proposed mandatory BWM practices:
 - Avoid discharging BW where sanctuaries, preserves, parks or coral reefs may be harmed
 - Minimize BW uptake:
 - Where infestations, harmful organisms or pathogens are located,
 - Near sewage outfalls,
 - Near dredging operations,
 - Where poor turbid tidal areas,
 - During darkness,
 - Where propellers stir up sediment,
 - Clean BW tanks to remove sediment
 - Discharge only minimal amounts
 - Rinse anchors & chains
 - Remove fouling organisms
 - Maintain ship-specific BWM plans
 - Train crew on BWM procedures
- Additional proposed mandatory practices for vessels entering U.S. waters from outside the EEZ
 - Complete exchange of ballast water no less than 200 nautical miles (NM) from any shore;
 - Retain the ballast water on board;
 - Prior to entering U.S. waters, use a method of ballast water management that has been approved by the Coast Guard or
 - Discharge ballast water to an approved reception facility.
- Proposed safety and voyage exemptions:
 - If a ship retains its ballast water because:
 - The voyage does not take it more than 200 NM from any shore for “SUFFICIENT TIME”; or
 - because of safety concerns They may discharge only that amount “operationally necessary.”
 - Records must be available to the COTP upon request!!
- Shipboard Technology Evaluation Program (STEP) → NVIC 01-04
 - Incentive-based program that facilitates installation & shipboard testing of experimental treatment systems.
 - Owners apply to G-MSO-4 (applications available at: <http://www.uscg.mil/hq/g-m/mso4/bwm/step.htm>)
 - Follow-up reports & inspections required.
 - Participating vessels granted an equivalency to BWM regs.
- International Convention for the Control and Management of Ships' BW and Sediments
 - In 17 sessions IMO/MEPC, made considerable progress on draft text.
<http://globallast.imo.org/index.asp?page=mepc.htm>
 - Diplomatic conference set for Feb 2004 to resolve outstanding issues and adopt the Convention.
- U.S. concepts proposed to IMO / MEPC:
 - Biologically effective performance standard
 - Phased in implementation

- Mid-ocean exchange is the practice until discharge standards can be achieved through alternative technologies.

No questions were asked.

Updates from ANSTF, Meeting of Regional Panels and Other Panels

Hoff said that the ANS Task Force meeting held in Washington, D.C. in November, included about a dozen or so major agenda topics. These included ANS Task Force reports from the Prevention Committee and the Communication, Education and Outreach committee. Also included were reports on the Asian carp, mudsnail, and Chinese mitten crab. A proposal was made and approved to form a Mid Atlantic Regional Panel proposed for formation. Reports were made on the National Invasive Species Council and on ballast water. Regional panel reports were included as was a report on NAISA. Two state management plans were approved from the MRB (IN and WI). Injurious listings were reported on and a brown tree snake update was provided. He noted that a workshop is planned for next week on the HASSUP approach. He noted that Sharon Gross has left to go to work for the USGS in Reston, VA. He said that a joint meeting is tentatively being planned for May 04 of the ANS Task Force and the MRBP. He noted that almost everyone on the ANS Task Force is very new to the Task Force, including two new co-chairs. He said that some educating of these people will be needed. He said that a meeting of the panels was held the day after the ANS Task Force meeting.

Rendall provided a summary of the meeting of the panels. He said that all of the staff from the ANS Task Force met with all of the panel reps. He said there was a good discussion, and that the purpose of the meeting was to create continuity between the panels and to enhance cooperation. He said we need to talk about membership issues on the MRBP. He said the panels are sub units of the national task force, so political restrictions apply and we need to be careful of what we do. Funding was discussed and Rendall recommended that funding be allocated by the number of states per panel. One discussion item is that we may need to be more creative on how we meet. We may need to look at teleconferencing, etc. to reduce costs. We still plan to have all panels meet at least once each year. Lukens noted that regional panels are actually classified as committees under the Task Force, so each regional panel should have a member on the regional committees. He pointed out that we come under the Federal Advisory Committee Act (FACA) rules. Meyers (PIJAC) encouraged people to lobby, but since federal people cannot send out emails for lobbying, our state partners need to be encouraged to do that for the panel.

Mike Stone reported on activities of the Western Regional Panel (WRP). He said that the WRP adopted a work plan at their September 2003 meeting. It included the following:

- Focus on involving Mexico, Canada, and the tribes in panel activities because of adjoining coastal waters.
- Funding to assist with travel
- Workshop to be convened to develop research priorities. This was done in the past at Panel meetings, but only lists were developed instead of priorities.
- Pilot project for preinvasion rapid response effort to look at 1-2 top priority aquatic plants.
- NOAA funds received to develop rapid response for zebra mussel.
- Panel is helping states (10k) to develop management plans.
- 2003 project status: Of interest here is the Lewis and Clark outreach, 11 stations put out across the states.

Ron Martin reported on the Great Lakes Panel (GLP) and made the following points:

- Summer Meeting of the GLP was held July 22-23 in Ann Arbor, Michigan
- A workshop entitled, “Rapid Response Plan for Great Lakes Aquatic Invasions” was held on July

- 23-24 in Ann Arbor, Michigan
- A GLP meeting will be held in conjunction with a workshop of the Baltic Sea Fellowship Program in March 2004
 - Future Directions
 - Identifying Panel priorities
 - Redefining consensus and its role in the development and implementation of Panel projects
 - Revision of Panel's Operational Strategy
 - Formalizing criteria driving eligibility of members for leadership positions on the GLP
 - Newly Elected Panel Officers
 - Chair: Roger Eberhardt, Michigan Department of Environmental Quality
 - Vice Chair: Marc Tuchman, U.S. EPA, Great Lakes National Program Office
 - Committees are defining priorities on ANS issues as guidance for development of Panel projects
 - I/E Committee (initial draft)
 - Research Coordination Committee (final draft)
 - Policy & Legislation Committee (initial draft)
 - National Invasive Species Act actions
 - I/E Committee finalized flyer, provided access online at: <http://www.glc.org/ans/pdf/naisaflyer.pdf>, and distributed it to Congress with Great Lakes Commission support
 - Policy and Legislation Committee: gubernatorial letter of support
 - Ballast Water Discharge Standards
 - Research Coordination Committee: Providing input to U.S. Coast Guard's Programmatic Environmental Impact Statement based on Panel's Ballast Water Policy Statement as supported by Great Lakes Commission resolution
 - ANS Update: I/E Committee
 - Winter/Spring, 2003 Watercraft Inspections: An Opportunity to Prevent the Spread of Aquatic Nuisance Species
 - Summer, 2003: Mail-order Sales of Aquatic Plants: A Pathway for ANS Introduction
 - Fall, 2003: The Great Lakes-St. Lawrence Research Inventory: Your Window to Great Lakes Ecosystem Research
 - Current ANS Projects:
 - Rapid Response Plan for Great Lakes Aquatic Invasions
 - Project Goals
 - Model plan to facilitate timely implementation of appropriate eradication/control measures upon discovery of ANS invasion
 - Anticipate, prevent, detect and respond to new invasions on a state/regional basis
 - Project Funding (U.S. EPA, Great Lakes National Program Office)
 - ANS Early Detection & Monitoring: A Pilot Project for the Lake Michigan Basin
 - Project Goal: To develop a set of guidelines and recommendations for a coordinated system to detect new invasions of nonindigenous aquatic species in the Lake Michigan basin and track the spread of existing ANS populations
 - Project Funding (U.S. EPA, Great Lakes National Program Office)
 - A Model GIS Assessment of Nonindigenous Invasive Species
 - Project Goal: Develop and implement an Internet-based spatial database of ANS invasions within the state of Michigan in an effort to improve coordination among resource managers.
 - Project Funding (Michigan Great Lakes Protection Fund)

He noted further that a March meeting will be held in conjunction with the Baltic Sea project, and that the Panel is in the process of redefining consensus and its role in project implementation (i.e. how are projects advanced?). He said the panel is also finalizing criteria on eligibility for panel leadership

roles (committees, etc.). He said that the Policy and Legislative Committee has been active in NAISA and that gubernatorial letters had been sent out. A ballast water discharge standards comment letter was also sent to the USCG draft plan.

Ron Lukens reported on the Gulf Panel activities and made the following points:

- Panel meetings were held on February 5-6, 2003 in Pensacola, FL; on October 20-21, 2003 in New Orleans, LA, and a meeting is proposed for the week of March 29, 2004, in Gulf Shores/Orange Beach, AL.
- Status of Work Groups:
 - Pathways/Prevention – *Currently Inactive*
 - Eradication/Control/Restoration – *Currently Inactive*
 - Vessel-Mediated Transport – *Currently Inactive*
 - Research and Development – *Active*
 - Education and Outreach – *Active*
 - Early Detection/Rapid Response – *Active*
 - Information Management - *Active*
- Research and Development Work Group is currently:
 - Reviewing lists of research needs from other groups, including the original list from the Gulf of Mexico Program
 - Developing a list of recommended research and development needs
 - Maintaining and updating the list of research and development needs
- Education and Outreach Work Group is currently:
 - Reviewing existing education and outreach materials and activities
 - Developing guidelines for the use of non-native/invasive species in school science fair projects
 - Developing a brochure of high priority invasive species and issues in the Gulf region
 - Developing a Kids/Teachers Corner to add to the web site
 - Developing a newsletter
- Early Detection/Rapid Response Work Group is currently developing a Gulf-wide rapid response plan
- Information Management Work Group is currently:
 - Reviewing and revising the Gulf of Mexico Invasive Species web site hosted by the GSMFC
 - Providing guidance for maintaining and updating the web site on an ongoing basis
 - Assisting in the development and maintenance of a web-based non-native/invasive species data base for the Gulf of Mexico
- Taxonomic Registry Work Group is a new *Ad Hoc* group and it is:
 - Developing a list of taxonomic experts to assist in identification of non-native/invasive species
 - Gaining cooperation of taxonomic experts to serve in an official capacity
 - Establishing as a Taxonomic Work Group
- Status of state plans:
 - *Texas* – Expects to have a complete first draft near the end of the year
 - *Louisiana* – Expects to have a complete draft by December or January
 - *Mississippi* – Governor has identified MDEQ as lead agency and directed plan development. Two meetings were held to date
 - *Alabama* – Held initial planning meeting during 2002. Interest is high to begin plan development
 - *Florida* – Ready for federal agency and public review. May submit for preliminary review by January 2004
- New Regional members:

- Mexico – Roberto Mendoza, Universidad Autónoma de Nuevo Leon
- State Agency – Phil Bass, Mississippi Department of Environmental Quality
- A recommendations was made to consider representation from the Mexican Government and Cuba
- Recommendations made to the ANS Task Force is for them to:
 - Sponsor a conference in early 2005 on the current status of invasive species in the Gulf of Mexico region
 - Identify and develop a strategy to address constraints to effective invasive species management
 - Work with the ANSTF to consider inviting the States of Georgia, South Carolina, and North Carolina to join the Gulf of Mexico Regional Panel, renaming the panel to be the Gulf and South Atlantic Regional Panel
- A new Web Site has been launched at: <http://nis.gsmfc.org> or you can also get there by going through the Gulf States Marine Fisheries Commission Web Site at: <http://www.gsmfc.org> and clicking on Invasive Species

Committee Meetings

Marilyn O'Leary volunteered to chair the Education and Information Committee for the day in the absence of Steve Shainhost (NE). The committees were instructed by Chairman Rendall and Vice Chairman Hoff to develop list of short and long term actions that could be taken by the committee or the panel, including a list of priority needs (\$\$) and recommendations for the federal ANS Task Force. The panels met for about three hours and returned with the following wrap-up discussions:

Committee Meetings Report to Full Panel

Research and Risk Assessment (Cindy Kolar, USGS, Chairperson)

Short Term Goals (2004):

- Create a repository on the MRBP Web Site for on-going ANS research in the basin as well as for news and late-breaking information that researchers may be interested in (such as changes in populations, populations trends observed in the field). No Funding Necessary.
- Develop and post a listing of potential research funding agencies on the MRBP Web Site.
- Host a Risk Assessment Workshop. Panel input is needed to define what it is, how it will be done, who are the players, what are the tools, etc. Approximate Funding Necessary: ~ \$10,000. (meeting costs, travel for speakers)

Long Term Goal (2-5 years):

- Organize a symposium at the Midwest Fish and Wildlife Conference on invasive species research in the MRB to better bridge gaps between science and management. Approximate Funding Necessary: \$15,000

Important Research Questions to Address in the MRB:

- Prevention
 - A pathway analysis is needed for the Basin. Are they changing through time?
 - Risk assessments are needed to identify sensitive species and habitats most vulnerable to invasion.
 - Early detection, rapid response and monitoring information is needed.
- Early detection/Rapid response/Monitoring
 - Develop methods to better monitor for presence/absence of Asian carp (silver carp would

- probably be able to be caught via visual survey). Need to know whether a population is present, declining, or increasing in an area. Need standard monitoring technique for these species. Also need ways to assess recruitment.
- Control and management
 - Develop innovative control measures for aquatic invasive species.
 - Develop life history information on bighead and silver carp and other ANS.
 - Determine weak points in life cycles of introduced invasive species to develop control measures.
 - Determine how lock and dam structures can be used to slow the spread of invasive species.
 - Economics
 - Determine the economic effect of invasive species in the MRB.
 - Ecosystem response and effects
 - Determine the effects of invasive species on native species in the MRB.

Recommendation to Mississippi River Basin Panel

- Continue to invite researchers working on interesting and new research to present at regional panel meetings. Ask for recommendations as to who should be invited. Determine associated travel costs. Suggested talks may include one on aquaculture and the impacts of snails (Drew Mitchell). Another might be from an expert on Asian clams. Talks should be broad enough to thoroughly cover topic/species.
- Recommend that states in the southern part of the basin concentrate efforts.

Recommendations for ANS Task Force:

- Species and ecosystem risk assessments are becoming increasingly important—particularly if NAISA passes. There are few people qualified to conduct these. There is a national need to increase awareness and skills in conducting risk assessments.
- Evaluate potential benefits for fisheries and marketing processes for invasive species that have become established. Complete a risk assessment to determine risk versus benefit.
- Develop a funding mechanism to conduct research on the effects on native species. Does the Task Force have any funding mechanisms at all for invasive species?

Prevention and Control (Kim Bogenschutz, Iowa, Chairperson)

- Prioritize ANS for Prevention and Control
 - Use sub basin species to develop a matrix for the basin.
 - A short term action may include a fish passage issue paper (barrier issue) to integrate facts; L/D 19 may be good place to create barrier.
 - Develop a paper on the need for a marketability/benefits national policy as a big picture issue for Asian carp now and in the future.
 - Make recommendations to the ANS Task Force making it illegal to transport ANS on public roadways.
- Develop a rapid response plan for ANS invasions.
- Identify integrated pest management actions.
- Develop prevention and control issue briefing papers.
- Develop integrated introduction and pathway management procedures.
- Develop regulations and laws for ANS prevention and control.
- Assist the states in promoting the passage of NAISA.
- Long term goals will include developing research and risk assessment information.
- Develop information and education materials to market our needs.
- Develop an eradication and control clearing house.

Information and Education (Bryon Griffith, USEPA, Chairman)

- Work aggressively over the next 90 days to come up with detailed description and diagram of work process flow (i.e. work plan), with accountability, and phased implementation of products.
- Program office in gulf will facilitate product development.
- The product (work plan and priorities) will be delivered in workshop style to the full panel meeting in April.
- FY 2004 work plan will include a projection to FY 2005. The work plan will be performance based, calibrated to our capacity, and include the structure and process necessary to keep continuity as personnel changes over time.
- It is anticipated that the structure presented will find its way into other committees.
- A nexus of all committees is needed, and the Information and Education Committee (IEC) should be a service committee for other committees designed to meet the demands of the full Panel.
- It is anticipated that the work plan will be an actionable item on the next Panel meeting agenda.
- The IEC will look at other panels for input to explore both good and bad in order to identify lessons learned and exploit those panels in operation.
- Bryan Griffith will be chair the IEC until the next Panel meeting

Rendall wrapped up the day's discussions and adjourned the meeting at 5:00 p.m. He said that we are having some growing pains, and that should be expected. He said we want to develop our own identity, and that we had a good start today.

January 9, 2004

Chairman Rendall called the meeting to order at 8:00 a.m.

Discussion of Fulfilling Panel Responsibilities

Vice Chairman Hoff said we made real progress yesterday. He said that what we're trying to do here is to develop a kind of strategic plan for the panel. He said I know it's boring, but we define who we are by what we've done, what we're doing and what we plan to do, and that we need to be able to outpace some of these invasive species, so our plans can't be stagnant. He referred everyone to the goals stated on the Web Site, and then asked the Sub Basin representatives to describe their priorities.

Sub Basin Priorities

Upper Mississippi River Basin, Dan Sallee (IL), UMRCC Chairman

Sallee said he did not get a complete response from all of the Upper Mississippi River (UMR) Basin states, but that he did come up with a list of species of concern. He said that easily the carp species are at the top of the list, second is the zebra mussel, and then probably the round goby followed by the Eurasian watermilfoil. He said that the basin states are currently working on the temporary electric ANS barrier in the Chicago Sanitary and Ship Canal, and that a new, more effective barrier (\$8 million) has been designed and should be operational by the end of the year – at least that is the strategy for now. He said that also a rapid response team has been formed for the Canal. Since the original barrier was designed as a temporary experiment, the electrodes were too light weight and are expected to fail soon. He said that in the event that Asian carp breach the experimental barrier before the second barrier is installed, the Rapid Response Team is prepared to rotenone 5 miles of the canal to keep the Asian carp back. On another front, he said that after the FWS formed their jeopardy opinion on the Higgins Pearly Mussel, in part because of the impact of the zebra mussel on their survival; and that work has begun on recovery of

the species. He said that the Corps of Engineers has put significant funds into Higgin's Eye restoration. One sub team is working on zebra mussel control and another on artificial reproduction and reintroduction of Higgin's Eye into former habitats. He said that no recommendations have come forward yet on zebra mussel control.

Hoff asked Sallee to submit something in writing to Chairman Rendall for collation into the MRBP's Strategic Plan. He said that there will also be local issues that all of us are not aware of, but that we may be able to help in some way to try to acquire funds for further work on them.

Lower Mississippi River Basin, Mike Armstrong (AR)

Like the UMR, Armstrong said, he did not get a complete response from Lower Mississippi River (LMR) Basin states. He said that the majority of the states' concerns are remarkably similar. He said that all identified the same species (Asian carp, Hydrilla, and Eurasian Watermilfoil). The one species missing was the zebra mussel, but he said he went ahead and included anyway. He said that people seem to have come to the position that the zebra mussel is here and that's that. He said that giant salvinia was also mentioned. He didn't, however, get any response regarding priorities. He said that all the states are interested in getting started on their state plans, and that those plans are the gateway to begin this work. He said that the Southeastern states have formed the Southeastern Partnership, modeled after the North American Waterfowl Management Plan Council, and that they have received a grant from the International Association of Fish and Wildlife Agencies to fund a coordinator position (3 years) to assist the states in plan development. He said that this would be an Information and Education effort with public input. He said that public input is critical because the states can only go as far as the publics will allow them to go, so the public needs to be educated ASAP.

Hoff asked Armstrong to go back and ask the states about the zebra mussel. Is it a priority? He said that the "Daughterless" technique being used for Asian carp in Australia might be something we need to look into in the U.S for both Asian carp and zebra mussels. Hoff asked that all of the state representatives be proactive in getting additional funds to develop state plans. He said that we are drastically underfunded for this.

Missouri River Basin, Steve Adams, KS)

Adams said that the Missouri River states responded similarly to the other states. He said the fish mentioned by Missouri River Basin states included the Asian carp, rudd, river rough, round goby, white perch, and zander. Other species listed included the zebra mussels, rusty crayfish, a woodland crayfish species, New Zealand mud snail, spiny waterflea, purple loosestrife, Eurasian watermilfoil, salt cedar, curly leaf pondweed, giant salvinia, and several fish diseases (i.e. whirling disease, IHN, etc.). He said that the pathways most often mentioned were waterways, boats, work platforms for construction, live boxes, and horticulture.

Ohio River, Gary Isbell (OH)

Isbell said that the Ohio River states held a meeting and worked through email, and that all states responded. He said that a draft report was provided (copy attached). He said that the next meeting of the Ohio River Fish Management Team is in February. Species listed included the Asian carp, round goby, and zebra mussels. He said that regarding actions and needs over the short term (6-12 months) we need to improve communications on the distribution and movement of ANS in the basin. He said we also need to identify the means by which the species move into other basins. He said that over the long term (1-3 years) we need to develop a rational fishing policy for the basin. He said that he will work with Jay Troxell (FWS) to get a draft back on this that makes sense. He said we need to standardize fishing regulations to help minimize the spread of ANS fish species. He said that we can identify and plan for pathway interruption to prevent fish passage. He said we need to monitor over the long term, not just for new or existing species, but for the impact of ANS on native species. Ohio River Basin recommendations

to the ANS Task Force include the following:

- Continue to focus on prevention.
- Encourage federal agencies, states, and tribes to use existing authorities to take care of this.
- Eliminate duplication of efforts between the ANS Council, ANS Task force and panels to minimize meetings
- Get behind national invasive species laws that severely change existing laws to get behind prevention.

Tennessee River Basin, Bobby Wilson (TN)

Nothing to report.

Arkansas/Red River Basin, Mike Armstrong (AR)

Nothing to report.

Other MRBP Priorities

Hoff asked for any other suggestions regarding priorities for MRBP priorities. Bobby Wilson (TN) said that we need to capitalize on things like the snakehead that received all the recent attention recently, and that education is needed because his state received several calls on this, but all turned out to be bowfin. Nick Schmal (USDA Forest Service) referenced the Healthy Forest Act and concerns related to fire fighting. He said that as a result of this Act there will be a lot of activity using helicopters to put out fires by dipping water out of lakes and streams. He said we need to be cognizant of that, and the possibility of moving species around as well as diseases such as whirling disease. He said that this could be a real pathway for spread. Ron Martin (WI) agreed that we need to focus on prevention. With NAISA not moving forward, he said, it is important that we put pressure on the states. We need to shut the door on ballast water introductions, and we need to think of a strategy to come together as a panel, or with other panels, to get NAISA passed. It is good legislation he said, but if it doesn't move forward we need to get something in a separate bill for ballast water closure. The second thing that NAISA emphasizes is that the states need help. So far, he said, the states are not asking for enough help on their ANS problems. NAISA authorizes \$50 million for plan development, and unless the states come in with realistic estimates of need, he said, we will never get the amount we need. Finally, he said, we need to look at ways to elevate ANS to the level of other significant natural resource issues. He said we should be getting similar funds and attention to that of acid rain and other big national issues. Hoff agreed that we are moving glacially slow on the ballast water issue, and that significant progress could be made on that issue. Rendall related comments from Alan Hance (Northeast/Midwest Institute) encouraging the states to get letters out from governors and organizations to Congressionals regarding the importance of NAISA passage. He said perhaps we should draft an example letter for the states to send. The time frame is short on this, he said, and perhaps the MRBP Prevention and Control Committee could develop such a draft.

Chapman said that raising the level of visibility is interesting. He said that certain segments of society are well informed, but the message isn't reaching Congress. He said that fishing message boards on the Internet almost all have information regarding Asian carp, gobies, and watermilfoil, and we need to capitalize on this. He said people can see Asian carp jumping into boats, but they cannot see things like feminizing hormones. Hoff agreed that we have a variety of opportunities that our Information and Education Committee can use to foster support. Frank Jernejcic (WV) said that the snakehead got a lot of publicity, far out of proportion with the problem, and that the carp video is also a good thing. Another one is the walleye limits changes on Lake Erie where no tournament are now being held. He said we need to capitalize on all of these types of messages. Sallee wondered how much more we can capitalize. He said if we can't get NAISA passed from what is already out there, how much more can we do? Rendall said we need to link all of it to NAISA. Maybe more media attention isn't needed, but the

connections need to be made. Kolar agreed that the connection is important, but we also need to stress the economics of the issues. How much will it cost? She said that's the way it works, the funding agency needs to push the economics of these issues. Also she said we need better substantiation regarding the claims of impact. Hoff agreed we need to develop a long term study of impacts. Lukens said it is difficult to find agencies that will fund economic studies. He said that there are small scale studies available showing impacts and costs of ANS on a local level. Hoff agreed, but said that we also need to do this type of thing on a regional basis. We have to have that, he said, because the Bush Administration is really keen on economics and how it relates to their programs.

Isbell said that the ANS panels can play discrete rolls in informing Congress. He said it is not illegal or immoral to ask Congressional staffers to attend our meetings. He said we need to create a Congressional champion for NAISA. John Glenn was a good example of this for the zebra mussel he said, and that every panel could create a similar champion for their region. When asked, Hoff said that NAISA is being considered by the Environment and Public Works Committee in Congress. Adams said that we need to identify committee members and then make frequent contacts because staffers change regularly or get reassigned. Their priority is what people contact them about, Congressionals are inundated all the time with requests, and the squeaky wheel usually gets the most grease. Hoff said that Alan Hance volunteered to get key names to us on this issue. Rendall said that the Northeast/Midwest Institute would be our best point of contact on NAISA. He said that Congressman Pombo of California is one of our biggest obstacles. Hoff said that property rights are Pombo's biggest concern. Lukens said that people have referred to NAISA as another ESA, and have raised concern that people will lose control of their own property. Schmal said that this is interesting because we invade houses all the time to confiscate drugs, but we can't do that to control ANS when it may have equally or larger long term impacts.

Hoff said that if other items come up, route them to him or to the appropriate MRBP committee or sub basin representative. Rendall said that we need to have members from the MRBP on all of the ANS Task force work groups and committees. They include the Prevention Committee, Communication Committee, Control Committee, Education Committee, Research Committee, Risk Assessment Committee, Asian carp Work Group, New Zealand Mudsnailed Work Group, Green Crab Work Group, Midden Crab Work Group, and Ruffe Work Group. He said that perhaps our committee chairs should participate on the national committees. Lukens said that the ANS Task Force committee structure has changed, so maybe we could send out email messages to see if people could step forward that way. Mike Stone said that if travel assistance were available that would be helpful. Rendall said we need to have a way to teleconference. O'Leary said we need to ask who is already on the ANS Task Force committees, and that maybe some of our members already attend those meetings.

Rendall said we also need a discussion on panel operations in order to maintain consistency, and we need to update our operational strategy as we evolve. We also need to know who is on the ANS Task Force committees, and how we should adjust for new membership. Perhaps the Executive Board could look at this, he said, and then send out a draft to panel members for comment and review. He said we have several entities who have not yet appointed MRBP members, and we also have the Forest Service and National Park Service who want to participate, so we need to revise our membership list. Tom Mosher asked about Tribal membership. Rasmussen said that we contacted them twice and received no response. Lukens said the Gulf of Mexico Panel also made two contacts with the tribes and received no response. Rendall said silence means consensus so we will proceed to work on our strategy and revised membership lists.

Member Updates.

Jay Troxell (FWS) said that he has been trying for ten years to complete a cyprinid (i.e. minnows and carp) key, and that keys for 12 separate cyprinid early life history stages should be completed in May. He

also said that since Mississippi does not sample its streams, so Mississippi State University has been contracted to conduct an Asian carp survey in the state's streams, creeks, and canals. He said that the interest is in documenting the presence or absence of these fish near fish farms. Also, he said, a study of the Asian swamp eel in Georgia is underway at the University of Georgia. He said that the university is being asked to look at the impact on native species, and then maybe going for eradication. He said this study should be done within the year. Chapman said that a scientist in China is also working on a key to Asian carp, and offered assistance in getting that information. Troxell asked that copies be sent to him and to Jim Williams at the USGS lab in Gainesville, FL. Chapman also that he has had professional photos taken of juvenile Asian carp.

O'Leary said that the Louisiana Sea Grant is sponsoring ballast water technology research using NOAA funds. She said also that a lot of outreach is being done by the sea grants. The IL/IN Sea Grant is extremely busy, she said, in developing a web site on activities for school children both for use during and after school. She said that education of children is valuable to the whole movement. Also, she said, that there is a national clearing house at the Sea Grant Nonindigenous Species site (<http://www.sgnis.org/SGNIS>) that will lead you to lots of other ANS sites. In Louisiana she said, we focus on children as well, doing workshops with children and sponsoring stipends for teachers who integrate invasive species topics into their curriculum. She said that the zebra mussel clearing house started by the NY sea grant at Cornell (Aquatic Nuisance Species Clearing House at http://www.cce.cornell.edu/programs/nansc/nan_ld.cfm) also has a newsletter and database available. She said that Sea Grant is sponsoring annual research conferences to pass along info. She said that Sea Grant is also involved in developing management plans and in Hazard Analysis and Critical Control Points (HACCP) training, helping aquaculture people keep from passing along infestations.

Meyers (PIJAC) said that the aquarium industry and Sea Grant have a \$300k grant to train people to be responsible aquarists. He said that a logo design and brand is being developed for placement on fish bags, aquariums, etc. to inform people to properly dispose of unwanted pet fish. He said this must be a national program, and that it will involve major distributors such as Wal-Mart, Petco, and Petsmart. He said that one company has a pet owner mailing list including 23 million households. He said that at least 20 million fish bags with the new logo will be produced each year, and stickers will be placed on aquariums, etc. He said that in-kind contributions are being provided and that in time all of the industry will be involved in a major project which includes schools, aquarium societies, etc. He said that this is a major initiative. He said we will also be providing written information on how to properly dispose of unwanted fish, and that humane euthanasia is an issue. He said that animal rights people will get involved, and that a meeting is scheduled in Chicago on Monday, January 12 to initiate some of this. He said that the American nursery and landscape folks are also going to work on this project. Rendall said that the Minnesota Sea Grant has been working with the water garden and horticulture industry. He said that communications need to go out that way as well. He said that this industry is one of the fastest growing industries in the country.

Valerie Barko said that the Missouri Department of Conservation has been chosen by the International Association of Fish and Wildlife Agencies to address the ANS issue and work with a consulting firm to try to get information out that is consistent for the Basin. She said that one cohesive message is needed. She said that species to be focused on will include the Asian carp, purple loosestrife, phragmites, zebra mussel, and several fish diseases. She said that they hope to develop a model to get information out to the public. Chapman said that the *Finding NEMO* message put out by the movie of that title was a bad message (i.e., PETA and letting fish go). Meyers said we don't know how much was fact and how much was fiction, but that there was a big controversy on this in California. We really question how much was media hype. He said the industry did go on TV to talk about this, and that the movie did cause some awareness. We're not sure how many fish were dumped. Chapman said that the video will be with us for a long time, and that we need to get our message on that video. Meyers said that the person who provided

the child voice for the *Finding Nemo* movie is now going around talking to people about it, and that a follow-up sticker for the videos would be a good idea.

Hoff said the FWS Region 1 has led development and submittal of the midden crab plan for approval. He said that Region 2 is leading development of the HACCP training course. He said that the HACCP process can be used in a variety of ways to look at management activities and how we might transfer ANS. For example are our gill nets transferring invasive species? He said that a “Train the Trainer” course would be held next week. He said that we sort of need a biologist’s Hippocratic oath to “do no harm”. He said that Region 3 is funding a traveler information service in conjunction with the Lewis and Clark celebration. Also, he said, Region 3 is involved in a number of Asian carp activities, and that the Ashland, WI office is involved in developing a Ruffe control plan, while the La Crosse and Genoa, WI offices are involved in the Higgin’s Eye Pearly Mussel and other native mussel recovery efforts. He said that the states are also involved in raising Higgin’s Eye mussels at the Genoa fish hatchery. He said that 30,000 juveniles have been reintroduced into the UMR. He said that range expansion of Asian carp up river in the Illinois and of the round goby down river are being documented. He said that the FWS Washington Office is supporting state plans, ballast water research, and an Alaska ballast water risk assessment for salmon in the Pacific ocean. Rasmussen wondered why we are not looking at killing the round goby before it advances further downstream since such action is planned for the Asian carp before it moves upstream into the Great Lakes. He wondered further if the MRB just isn’t as important as the Great Lakes. Chapman said the cost would be too high. Sallee said he agreed with Chapman, and that the key is to break the connection between the two ecosystems. He said it does no good to kill the critters if the connection is not broken. Hoff said that the Invasive Species Summit held in Chicago last Spring said just that. The top priority is to break the connection, and that there will hopefully be some major follow-up to that workshop. Rendall said that the irony of the whole thing is that when we tried to focus on goby control there was pressure from bass anglers not to treat the area, and now the bass anglers are faced with possible fish closures in areas such as Lake Erie because of the goby.

Schmal said that he had left a couple of Forest Service (FS) documents for folks to pick up. He said that the FS has put together a framework on non native species. He said also that a biological invasions report is being supported. He noted that the Southern Region of the FS, headquartered in Atlanta, covers a good portion of the MRB and that it needs to get integrated into the MRBP.

McElroy said that the Louisiana management plan is nearing completion. He said that the governor supported the issue so work went quickly, but now we have a new governor as of next Monday. He said that the draft plan will need the new governor’s support. He said that a GIS map will be incorporated into the plan. He said further that Louisiana is uniquely set up for invasion of nonnative species with river and the intercoastal waterway passing right through the state. Also, he said, the latitude of Louisiana is inviting too many invasive species. He said Louisiana has the largest port system in the U.S. He said he isn’t sure what type of body will implement the state plan, but that most likely a council will be created under state legislation.

Meyers said that during the U.S. Coast Guard’s ballast water management planning a lot of telephone conferencing was used and that it works fairly well. He said that about 2 weeks prior to the call we get an email with agenda items, then we get the final agenda back, we block out about 2 hours, and assign people to tasks during the call. He said it works well. Once the ballast program gets going, he said, we’re going to focus public outreach efforts on San Francisco and Houston. He said that town hall meetings will be held in Houston with the public and all port owners. He said that by Federal laws the military is exempt from all ballast water laws, but no commanding officer is going to not comply with the laws.

Mosher said that Kansas is now added to the list of states with zebra mussels. He said that in August they were found in El dorado Reservoir near Wichita. He said that the mussels have apparently been there for

two or three years based on the data we collected – they are now 5 to 25 mm in size. He said that they were found by a lady turning rocks over in a cove. He said that the zebra mussel brochures helped her to identify what she saw. He said that she turned them in to the state park headquarters and we got on to it. He said that we wouldn't have known they were there if it hadn't been for her, so our brochures do help. He said that signs were posted within two days of the finding, and that Coast Guard Auxiliary interviews were conducted during the next week. He said that the 100th meridian group has been in KS, and a cohesive message is planned for this. Also, he said, we initiated a local working group involving local stakeholders to do a 3.5 foot drawdown in order to desiccate and freeze any mussels in near shore zones. He said we had hoped for a 7 ft. drawdown, but since it is a water supply reservoir locals would not allow for more. He said that the drawdown has done a good job of killing the mussels, and he pointed out that something in the near shore zone is catching and eating the mussels. He said that huge deposits of shells are being found under the rocks, and that the rocks are flat to ground so that it is not raccoons, something else is doing it in areas up to ten feet from the water. He said that a state wildlife grant was applied for this last year to develop an all inclusive nonnative invasive species plan. He said that last fall undercover agents went to all pet stores in the state and purchased all the snakeheads we could find and that none have reappeared. He said that Boursock Dam may now get a fishway, and that there are plenty of bighead carp below the dam. He said the state is also working on the Lewis and Clark celebration. Finally he pointed out that several more sitings of western diamondback rattlers have been made in the state, and officials think that people are bringing them in on purpose.

Boxrucker said that zebra mussels infestation of the mainstem impoundments downstream from El dorado Reservoir are now of concern because of the El Dorado infestation found in Kansas. In response, he said, we will use the Kansas signs for consistency of message on the whole Arkansas River system. He said that Oklahoma is sending two staff members to HACCP training next week, and that we will then develop our own best management practices based on that training. He said we need to do a better job of monitoring Asian carp in the lower MRB. He said that we have both bighead and silver carp, and that a significant shad fishery below Lake Texoma is of concern because of the potential for spread of Asian carp through misidentification by fishermen. He said that efforts will be made to try to stop cast netting on Lake Texoma. He said also that the FWS on Lake Texoma is conducting a paddlefish restoration project that could be impacted by Asian carp. Rendall said that Minnesota is also working on changing statutes on the use of certain nets to harvest bait. Boxrucker said that Lake Texoma bait collection supports about 200 full time guides, so it is a problem.

Jernejcic said that a statute to control stocking in WV waters has been developed. He said that this is intended to help stop the spread of largemouth bass virus. He said that the statute makes an exception if you can get disease free certification, but no one provides that, so it's really a moot point. He said it is now against the law to dump bait buckets into public waters. He said that WV now has an invasive species committee, and that half of the group is from the Department of Agriculture. He said that aquaculture is getting very active in WV now, and that we need to sensitize them to the ANS issues. He said that several studies are being conducted on the upper Ohio River regarding the locks and dams as impediments to fish movement, and that dummy lockages have been done on the upper Allegheny to promote the distribution of sauger, so we need to worry about mixed messages being sent regarding fish passage.

Buynak said that during the last few weeks a dialogue has begun in Kentucky on ANS issues. He said we have a lot of cast netting and dipnetting going on in the state. He said that we are concerned that if baitfish enter inland reservoirs they will spawn, so we're toying with how to stop cast netting, but we will likely "get our lunch eaten" over this. He said that an outdoor writers workshop is conducted every year, and that for the first time ever we will do one on ANS issues. Hopefully, he said, these writers will take the information and run with it. He said that Kentucky has received a grant for threatened species mapping, and that down the road we hope to begin looking at the impacts we know using the GIS

layering to map species.

Martin said that Wisconsin has \$1.1 million from boater taxes to do projects. He said that the Information and Education Department is using about \$100k of this annually to fund one full time person. He said that we are also updating our fact sheets and cards, and we have developed a bait poster identifying all small ANS species that need to be eliminated. He said that a feedback questionnaire is now out to review this effort. A new poster on stopping the invasion of Wisconsin waters has also been developed. He said that “wild cards” have really caught on in the state, and that they are not limited to just ANS species. They include a whole array of plant and animal species, and we are looking to expand this effort next year. He said that watercraft inspection is also a large component of the state effort, and that 12 people are hired each summer to do this work, and that another staffer coordinates volunteer efforts and puts together a training packet for local monitoring and boat inspections. He said that boat shows and fishing shows will also have a large presence of state personnel to demonstrate boat inspection and cleaning. Purple loosestrife biocontrol is also going on, and the purple loosestrife beetle is being released at various locations. He said that monitoring is going on for more than just zebra mussel and Eurasian watermilfoil. He said that the monitoring effort will develop an exotic species data base. He said that a contract has been issued with the University Center for Limnology to develop predictive tools as to where invasions will spread. This two year project will have a product available by next summer. He said that Wisconsin now has an Invasive Species Council appointed by the governor to review all state regulations proposed. ANS planning grants are also getting started, and that rules are being written to control what can be funded. He said the state is taking a hard look at costs for control. Costs for chemical control are fairly straightforward, and boat wash stations are being promoted, but some are resisting this due to cost. He said that the state prefers that lake associations come in with plans that augment state plans. He said that a travel information center at Beloit will likely be funded, and that we are looking for partners on this. He said that a boaters survey guide is also being completed. In the wake of the snakehead citing, he said, there has been a flurry of legislation that will likely ban the importation of several fish species. He said that there are about 17 species on that list now. He said that the comprehensive state plan has been approved, so work plans will be coming in now for regional projects.

Stone said that Wyoming does not have a state plan or coordinator position. He said we don't feel we can do a credible job at this time. He said the state has concerns with whirling disease, and that illegal transport and import of species is of concern now. He said that the New Zealand mudsnail is an emerging problem that came from Yellowstone National Park. Downstream species that are of major concern include the zebra mussel and Asian carp. He said that the state has concentrated on outreach over the last couple of years, and that media opportunities have been used for our ANS outreach. He said that they are using boater signs to get out a consistent message. He said that at the Annual (September) hunting and fishing expo modules were set up for kids and that educational/interactive displays reach a lot of people. He said that the state has stepped up enforcement and regulations, and that educating enforcement personnel really helps. He said that the state raises trout and imports cool and warmwater fish from other states, and so we need to decide on how to set a standard or moratorium on the import of cool and warmwater fish. He said that this initiative was not too popular at first, but that it is better now. He said that the state will allow import by the state, but only after an HACCP type inspection. He said that Wyoming is working with others (i.e. panels) to address many of ANS issues, and that they are promoting ANS awareness through a variety of methods.

Rendall said that the Minnesota Asian carp initiative is still plugging away. He said that zebra mussels have been found in the middle of the state this year near a major resort that connects to the Mississippi River. He said that we are trying to find the proper response. He said that funding has increased up to \$1.6 million, primarily from boating licenses. He said that a public awareness effort at *Cabela's* store on I-35 has been successful. He said that *Cabela's* is now the second largest attraction in the state, next to the *Mall of America!* He said that the display at *Cabela's* will have some dead ANS along with all the

other dead animals that *Cabela's* displays. He said that during a state inspection program 32 boats were found with zebra mussels on them leaving infested waters. He said that the ANS Field guide is on hold for now. He said that a state Invasive Species Council now deals with all of these issues. Right now, he said, we're working on ranking and a web site for reporting findings. He said we will develop a state level data base to tie into the national data bases. He said the Council will also be preparing one state plan that all agencies will work from, rather than each agency doing their own. He said that carp research in general going on, and that both pheromone use and daughterless carp are being looked at. He said that Dr. Peter Sorenson, University of Minnesota, is involved in this work and that he also worked on ruffe and sea lamprey projects.

Riecke said that in terms of fish farmers using black carp in Mississippi, about 30 are permitted, and that interest in black carp has sort of faded away. Other chemical techniques such as lime, citric acid and copper sulfate, and hydrated lime are being used to treat the shorelines and waters. He said that the interest is to break the life cycle. He said that disease incidence has increased, but it is not catastrophic, and that we can now use Bayluscide for fingerling treatment. He said that a producer in the state got permission to use it, but would like to use it nationwide, but it is thought that this would endanger its use for lamprey control in the Great lakes. He said that the catfish industry was encouraged to comment on the Lacey Act listings. He said that the industry is now more concerned about country of origin labeling for catfish than they are about the use of black carp. He said the catfish farmers don't like imported catfish. As far as the Lacey Act listing goes, he said that the FWS is studying all of the comments, and that it is most effective if each commenter sit down and write their own letter. He said that the bighead, silver and grass carp are not being used in Mississippi anymore. Unfortunately Mississippi does not sample its rivers he said, and we keep breaking the state record for Asian carp and they are coming in from all over the state. He warned the other states to never lose regulatory control of the aquaculture industry as has happened in Mississippi. The good news, he said, is that we are trying to develop a statewide ANS plan, and he said, I think we will get it done. He said that silver and bighead carp identification cards have been distributed to state biologists. He said that an AFS publication on black carp will be completed soon if Leo Nico can get it finished. He said that Mississippi fish farmers are getting triploids black carp from Arkansas. And finally he said that all catfish ponds in the state are in the floodplain of western Mississippi, and that 50,000 acres of catfish ponds were underwater during the flood of 1999.

Rasmussen said that MICRA agreed at their December meeting to support the joint MRBP and ANS Task Force meetings proposed for the St. Louis area in April. He also said that MICRA has voted to deactivate its ANS committee, and instead to conduct its ANS work through the MRBP. He said that MICRA agreed to support the FWS effort to develop an Asian Carp Management Plan with the assistance of appropriate personnel from both MICRA and the MRBP, and that once a plan is developed the FWS should seek endorsement from MICRA on those actions or recommendations that address fish and other aquatic resources under the jurisdiction of MICRA members. He said that the MICRA Executive Board also voted to endorse the listing of silver and bighead carp as injurious species but that this action, requiring a $\frac{3}{4}$ majority vote from all delegates, is now under consideration. Finally, he said that the MICRA Executive Board voted in December to develop and send a letter to the Fisheries and Water Resources Policy Committee of the IAFWA requesting that they develop and support a legislative initiative to include a screening process (for establishment of clean species lists) prior to importation into the U.S. of any nonindigenous species of aquatic flora and fauna. Even though consensus was reached on this issue by the Executive Board it was recommended that this motion be submitted to the MICRA delegates for added support. Such support is now being solicited from the 34 voting delegates.

Kolar said that a USGS ANS Strategic Plan is now ready for review and that it focuses on risk assessment (i.e. biological risk assessment, range of species, which habitats are vulnerable, etc.). Major research efforts on the effects of ANS species and the impacts on native ecosystems are also being proposed. A

second major focus is on science support for the monitoring of invasive species. A third area of research is to look at the science of ecological restoration and management. Sallee said that there is little in the European literature on the interaction between Asian carp and other species, and that most European states stocked them as a source of protein, so no one looked at the potential impacts. Chapman said that overall production is up so most people like them. Sallee said that an international fisherman said that a foreign lake only had Asian carp and one other small species. Chapman said it is amazing that no one cared. In the Danube, he said, an arsenic spill showed that they the only thing there was silver and bighead carp.

Bogenshutz (provided by mail) said that Iowa will be working on two law changes this session related to ANS. One is amending the current Eurasian Watermilfoil Law to include prohibitions on transporting zebra mussels and other ANS. The other is increasing boat registration fees and designating a portion of that increase to fund the ANS Program. The DNR and Department of Agriculture and Land Stewardship are hosting a workshop in February to begin development of a comprehensive statewide strategy for dealing with all invasive species in Iowa. An FM TIS system has been installed on I-29 south of Sioux City that will play ANS messages related to the Lewis and Clark Bicentennial. Brittle naiad (*Najas minor*) was identified for the first time in Iowa in August 2003. Control options are being looked at for the 7 lakes in which it was located.

Audio/Visual Field Trip

O'Leary organized the Audio/Visual Field Trip and introduced the speakers for the afternoon session. What follows are major points made in the presentations of Rich Campanella and Aleshia Kravits (Tulane and Xavier University), Ed Mouton (Louisiana), Scott Longman (LA) Some of the follow-up discussion is also documented:

Overview of Pathways in Louisiana (Rich Campanella and Aleshia Kravits, Center for Bioenvironmental Research and Tulane and Xavier University)

- Shipping Pathways (ballast water, attachment to vessels, bulk cargo, break-bulk cargo and containerized cargo):
 - Corridors from Houston and other Texas ports
 - Corridors from foreign ports into the Port of New Orleans
 - Corridors from the Mississippi River
 - Corridors from Mobile Bay and other Gulf ports
 - Shipping from the Port of New Orleans to the Mississippi River, Gulf Intercoastal Waterway and the Gulf of Mexico
 - Equipment/object relocation
- Other Pathways:
 - Water of the Mississippi River (30 % of flow goes down the Atchafalaya)
 - Freshwater diversion
 - Currents in the Gulf of Mexico
 - Gulf sediments
 - Recreational boating and fishermen
 - Monocultural croplands
 - Housing stock
- Diffusion Along Pathways:
 - Expansion diffusion
 - Relocation diffusion

- Contagious diffusion
- Hierarchical diffusion
- Other Factors Impacting Louisiana as an Invasive Species Host:
 - Climate
 - Aquaculture, horticulture
 - Cultural orientation
 - Immigrant society
- Example Species of Concern:
 - Asian Carp (Grass, Silver, Bighead)
 - Escaped from Aquaculture facilities where used for biocontrol
 - Now well established in the Mississippi River and adjacent waterways
 - Silver carp leap out of the water and can be hazardous to boaters
 - Adults can be 50+ pounds
 - *Daphnia lumholtzi*
 - Rio Grande Cichlid
 - Probable aquarium release
 - Have since colonized many New Orleans canals, nearby freshwater bayous, and parts of southern Lake Pontchartrain
 - Omnivorous
 - Outcompete and deplete food resources and habitat for native fish
 - Very aggressive
 - Could harbor nonnative parasites
 - Brazilian waterweed
 - Giant salvinia (*Salvinia molesta*)
 - Common salvinia (Common Salvinia, “Water Spangles”, *Salvinia minima*)
 - Origin and Date of Introduction: South America; unknown
 - Pathway/Media: Waterways and wind currents; boats and birds
 - Reason for Introduction: Accidental
 - Preferred Habitat: Slow-moving fresh waters
 - Ecological/Economic Damage: Degrades habitat
 - Control Options: Herbicides, mechanical control, possibly biological control by insects
 - Hydrilla (*Hydrilla verticillata*)
 - Origin and Date of Introduction: Asia; early 1950s
 - Pathway/Media: Waterways and transportation corridors; aquariums, boats and trailers
 - Reason for Introduction: Deliberate, followed by accidental spread
 - Preferred Habitat: Slow-moving waters
 - Ecological/Economic Damage: Degrades habitat, blocks water flow, impedes navigation and water intake
 - Control Options: Manual/mechanical removal, water-level drawdowns, biocontrol insects
 - Zebra mussels
 - Introduced in ballast water discharges to the Great Lakes about 15 years ago
 - Have since colonized the Great Lakes, the Mississippi River Basin, and still spreading
 - Clog intake and sewer pipes, outcompete native mussels

Nutria History and Control in Louisiana (Ed Mouton, Louisiana Department of Wildlife and Fisheries)

- Reproduction
 - Gestation - 130 days
 - Females can breed in one or two days after giving birth

- Litters range in size from 1-13 and average 4.5 with litter size varying with age of female, habitat quality and time of year
- Nutria introductions
 - Placed in captivity in Louisiana in 1933-47
 - Escaped/released into the wild in the mid 1930's-45
 - Widespread across southwest Louisiana by 1943
 - First appeared in the fur harvest during 1943-44 season
- Nutria damage documented in the late 1950's
 - Rice plants and levees in the Southwest
 - Sugarcane plants in the Southeast
- Legislative Action
 - Placed nutria on outlaw list (unprotected) - 1958
 - Established bounty - \$0.25, but never appropriated funds
 - Damage continued until fur market developed in early 1960's
- Nutria Market pre 1980's
 - Nutria -\$15 million
 - All furs- \$25 million
- Market Changes in the 1980's
 - Several mild winters in Northern Europe
 - Saturation of market – 40-50 year olds
 - Shift to leather
 - Animal rights
 - Overproduction of ranch mink
- More damage
 - Landowners began reporting vegetative damage
 - Department of Wildlife and Fisheries first observed damage in 1988
 - Nutria density estimates
 - Brackish marsh habitat - 9 per acre
 - Freshwater marsh habitat - 18 per acre
- Nutria harvest and wetlands demonstration project
 - CWPPRA project started in 1998
 - Objective: Develop a market for nutria meat for human consumption
 - Goal: Add value of meat to value of fur to increase trapper incentive.
- Ranking of control methods
 - Incentive payment – ranked first
 - Chemical control – ranked second
 - Techniques to be used would require testing and registration
 - For non-specific use such as aerial baiting many issues would have to be addressed –fish and wildlife
 - Incentive bonus – ranked third
 - Trapping - fourth
 - Would have little effect without sufficient market
 - Limited effort and limited harvest
 - Hunting – ranked fifth
 - Hunting is generally opportunistic
 - With concentrated hunting animals can become shy
 - Control unrealistic
 - May be used as a method with an incentive payment
 - Induced infertility – not ranked
 - APHIS/USDA has spent 30 years studying induced infertility and there are no techniques

- available for field application.
- Impractical, poses substantial environmental implications
- Chemical repellants – not ranked
- Coastwide nutria control program: Year 1
 - Project goal
 - Reduce or eliminate marsh damage caused by nutria by increasing the harvest to 400,000 nutria annually.
 - In order to increase the harvest to 400,000 nutria, a \$4.00 per nutria incentive payment was given to registered participants.
 - Dates of interest
 - July 2002 – Registration packets developed and distributed
 - October 2002 – *Coastal Environments, Inc.* (CEI) selected as the contractor for tail collections
 - November 20, 2002 – Louisiana’s open trapping season begins
 - November 28, 2002 – Tail collections begin
 - Collection sites
 - Collection sites were established at Rockefeller Refuge, Abbeville, Morgan City, Houma, Luling and Chalmette.
 - Collection Process
 - Registered participants brought in well preserved severed nutria tails (iced, frozen, or salted) to collection sites.
 - Participants indicated the location of the harvest of nutria on maps provided by CEI.
 - Tails were counted by CEI and the participant received a voucher for the number of tails turned in.
 - Participants received checks by mail two to three weeks after turning tails in.
 - Results: December 2002 - April 2003
 - Nutria tails were collected and participants were supplied with a list of fur buyers/dealers.
 - Two aerial surveys were flown to ensure that participants were following the program regulations.
 - March 31, 2003 the open trapping season ended.
 - Last tail collections were made the first week of April.
 - A total of 308,160 nutria tails, worth \$1,232,640, were collected from 342 participants.
 - The parishes with the most participants were: Terrebonne (104), Plaquemines (69), Lafourche (48), St. Charles (24), St. Mary (22) and Jefferson (19)
 - Of the 342 participants that turned in tails: 116 (34%) participants turned in less than, 200 tails, 86 (25%) participants turned in 201-499 tails, 35 (10%) participants turned in 500-799 tails, and 105 (31%) participants turned in 800 or more tails
 - Results of 2003 coastwide nutria herbivory survey
 - 100 sites were surveyed
 - 84 damaged sites were observed totaling 21,888 acres (up 3% from 2002)
 - When extrapolated to a coast wide estimate, there are 82,080 impacted acres
 - 16 damaged sites totaling 1,674 acres were classified as recovered damage sites
 - 78% of the vegetative damage in 2002 was rated as either moderate or severe.
 - That decreased in 2003 to 60%.
 - 16% of the vegetative damage in 2002 was rated as minor.
 - That increased in 2003 to 40%
 - Coastwide nutria control program 1st year success
 - 77% of the goal for nutria harvest was attained.
 - It could possibly take 2-3 years of sustained harvest before any improvement in vegetative health could be seen.
 - The removal of any nutria that are causing or could cause damage is a success.

- Web Site: www.nutria.com

Invasive Aquatic Plants in Louisiana (Scott Longman, Louisiana Department of Wildlife and Fisheries)

- Water hyacinth (*Eichhornia crassipes*)
 - One of the first nuisance exotic plants and the driving force in aquatic plant control.
 - The enticing purple flower attracts people's attention when visiting infested areas and they bring the plants home to place in their ponds.
 - When they become a problem in someone's pond they may simply remove the plants and throw them in the nearest drainage where the plant thrives and becomes a public problem.
 - Native to South America
 - Introduced into U.S. in 1884 by Japanese representatives to the New Orleans International Cotton Exposition
 - Water hyacinth infestation can double every ten days
 - One plant can produce 65,000 daughter plants in an 8 month growing season
 - As many as 900,000 plants can occur in one acre
 - One acre of water hyacinths can yield up to 45 million seeds annually
 - Seeds remain viable for over 20 years
- Alligatorweed (*Alternanthera phyloxeroides*)
 - Imported from South America about the same time as water hyacinths.
 - Characterized by the hollow stem, except for the terrestrial plants, elliptical leaves and white clover like flower.
 - Species can grow as rooted emergent or break off to form floating mats.
 - Mats serve as structure for other plants to seed in on.
 - Closes off canals and impacts irrigation and drainage.
- Hydrilla (*Hydrilla verticillata*)
 - Present in the U.S. since about the early 1960's in Florida.
 - Probably brought in with aquarium trade.
 - Discovered in Louisiana in Sibley Lake near Natchitoches in 1975.
 - Since that time it has spread throughout Louisiana, probably by boat and trailer traffic.
 - Many times the first recorded presence in a lake is adjacent to boat launches where it quickly spreads.
 - Out competing native plants and quickly becomes a monotypic infestation.
 - Can grow up to 1" per day while establishing itself in an area.
 - Can reproduce by fragmentation. Fragment with one whorl of leaves stands a 50% chance of producing a plant.
 - Boats that go through mat spread it by cutting it up.
 - The Louisiana population of Hydrilla is made up of dioecious females (as far as we know) so there is no seed production.
 - Axillary (subterranean) turions or tubers are used by the plant as a means of vegetative reproduction.
 - Produced in response to day length of less than 13 hours for 20 to 38 days.
 - Set down in random clumps up to 12" in depth.
 - Can survive up to 5 years in sediment
 - These subterranean turions or tubers make the plant resistant to many control methods including drying, freezing and herbicides.
- Common salvinia (*Salvinia minima*) and Giant salvinia (*Salvinia molesta*)
 - These are plants that have been of great public concern and the reason for legislative action.
 - Common Salvinia found in St. Mary Parish in 1980 and spread throughout coastal parishes.
 - Giant Salvinia collected in Bayou Teche in July 1988, in Toledo Bend Reservoir in

- September 1988, and in Cameron marshes in September 2001.
- Commonly spread after mild winters.
- Giant Salvinia in Toledo Bend has been reduced but will never be eradicated being spread out in a 186,000 acre lake.
- Giant Salvinia in Cameron has been significantly reduced by Cameron Parish Control Efforts through the use of herbicides and introduction of salinity.
- Common and giant salvinia are difficult to differentiate except by leaf hairs
 - Common salvinia leaf hairs have splayed tips.
 - Giant salvinia leaf hair tips come back together in an egg beater like shape.
- Large fluctuations of water levels can move salvinia in and out of the marsh grass where it is sheltered from herbicide applications.
- Impacts of nuisance plant introductions
 - Ecological
 - Shade out desirable native vegetation
 - Shading reduces oxygen production by phytoplankton
 - Decaying plants further reduce dissolved oxygen needed by fish and other aquatic life
 - Animal habitat altered by reducing or obliterating open water
 - Economical
 - Hunting and fishing opportunities lost
 - Navigation impaired
 - Interferes with agricultural irrigation: rice and crawfish farming
 - Interferes with electric power generation
- Methods of control
 - Prevention
 - Control water garden and aquarium plant trade
 - Control human transport by boats, trailers, and float planes
 - Control contamination through natural flow in river and stream systems
 - Mechanical
 - Expensive to buy and operate
 - Best used on small area
 - Habitat alteration
 - Light penetration
 - Nutrient control
 - Drawdown
 - Best used on submerged plant control
 - Desiccates plants, exposes to freezing.
 - Used to destroy hydrilla turions and prevent fall production of tubers.
 - Impacts local economy (recreational and commercial fishing)
 - Leads to encroachment of terrestrial vegetation
 - Impacts other water uses (irrigation, power production, etc.)
 - Biological
 - Most biological controls to date don't give the desired level of control.
 - Alligator flea beetle works well when populations are at desired levels.
 - Salvinia weevils are being tested now.
 - Water hyacinth weevils were released in the 1970's seems to only stress the plants.
 - Triploid grass carp seem to be an all or none method of control, permitted only where escapement can be controlled.
 - Chemical
 - The mainstay of aquatic plant control since the beginning
 - 2,4-D; Copper; Diquat dibromide; Endothall, Fluridone; Glyphosate; Triclopyr; and Imazapyr to be labeled soon

- Boat applications usually with 2,4-D are used on water hyacinth.
- Aerial applications cost an additional \$15.00 / Acre, but can reach remote areas difficult to access by other means.
- Magnitude of Louisiana’s statewide aquatic plant infestation problem.
 - Estimated statewide aquatic plant infestations
 - Water hyacinth : 155,000 acres
 - Alligatorweed: 112,000 acres
 - Salvinia: 133,000 acres
 - Hydrilla: 72,000 acres
 - Cost/acre for herbicide application
 - Water hyacinth: \$9.15
 - Alligatorweed: \$9.15
 - Salvinia: \$64.00
 - Hydrilla: \$100-\$200 (depth dependent)
 - Herbicide costs for treating estimated acreages
 - Water hyacinth: \$1,420,000
 - Alligatorweed: \$1,025,000
 - Salvinia: \$8,500,000
 - Hydrilla: \$11,000,000
 - Total: \$22,000,000
- State funding for aquatic plant control
 - Sportsfish Restoration Program
 - Approximately \$2 million annually for water-hyacinth control only
 - Aquatic Plant Control Fund (Bill passed in 2002 legislative session)
 - Created fund by raising boat trailer registration fees dedicated to fund.
 - Expected to generate \$800,000 annually for purchase of herbicides to control aquatic nuisance plants, other than water hyacinth.
 - 38 applicators with 4 biologists supervising
 - 15% of fund dedicated to LSU AgCenter for research

Rendall provided a short meeting wrap-up, pointing out that the next meeting will likely occur in May or April along with the ANS Task Force meeting in the St. Louis area. He said that an Asian carp boat trip will be planned, and that we need to think of other ANS issues that can be seen at that time of year in that area. He said that all agenda items are welcome, and that we need to think of presentations for the next meeting. He said that we will probably circulate another questionnaire, like last time, to solicit a critique of this meeting and input for the next meeting agenda. He also said that the Chair and Co-chair of the Panel were initially appointed by MICRA for one year and that their terms expire at the end of June, so we need to develop a process for selection of new chairpersons. He said that the Great Lakes panel has held elections. He then thanked all of the local sponsors of this meeting.

Public comments Period

Rendall asked for any comments from the public. None were provided so the meeting adjourned.

Adjourn

Attendance List

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Ohio River Basin ANS Priorities

Gary Isbell, Chair
Ohio River Fisheries Mgt. Team

I. Basin Priorities - We recognize that many of the ANS issues are common to other states and other sub-basins within the Mississippi basin. It is hard to envision a species or an issue that would be unique to this river basin, given its connectivity to other watersheds. However, we do wish to express some ideas from our geographical perspective.

Species of concern - Asian carp are of primary concern, given their progression throughout the rest of the Mississippi basin. We suspect they will rapidly expand upstream into the Ohio River basin and quickly become very abundant. Round gobies are also a concern. However, we believe that their densities in large river systems will be less than in the Great Lakes, due to habitat and turbidity levels. It is likely that they will be more of a problem in on-stream impoundments. Their distribution may be facilitated by the associated river systems. Zebra mussels and white perch continue to expand their ranges and pose a threat to native species. There are some situations where pumping water from the Ohio River to sub-basin lakes could spread ANS.

Actions/needs - We are pessimistic that anything can be done to curb the expansion of these two species in the Ohio River basin. In our opinion, the minimal actions to be taken are as follows...

6-12 months - We should accurately and quickly communicate their distribution and movements in the basin to interested agencies and constituents. Secondly, we should identify the possible connections/vectors that could result in transfer of these species to their basins. For example- we know of at least one remnant canal structure in Ohio that could allow passage of fish between the Ohio River and Lake Erie.

1 - 3 yrs. - We should develop a rational sport and commercial fishing policy for Asian carp. Currently, these fish are illegal to possess in some states. A policy for harvest, possession, and transportation should be consistent through the Ohio River basin. Such a policy also should not foster their further distribution. Secondly, we should develop mechanisms to prevent passage of fish between basins. There may be a need to construct barriers at sites identified in the first year of this plan.

Long-term - Monitor existing fish communities to assess impacts due to ANS and develop needed compensatory management actions. Especially important as Asian carp become established.

II. Recommendations to the ANSTF- We have the following 4 recommendations that should be forwarded.

Continue to encourage the ANSTF that their focus must remain on prevention. There is a tendency for all of us to give up too easily and be content to toil at control strategies. While that may be satisfying in the short-run, it is not going to help in the long- run. Of particular interest are strategies related to screening species prior to importation to the US.

Continue to encourage the federal agencies to exercise their existing authorities. Many of them have responsibilities (Lacey Act enforcement, navigation projects, and importation inspections) that could directly impact the ANS issue.

Remind the ANSTF to resist duplication of efforts, particularly those related to the National Invasive Species Council. We (and they) should be worried that the aquatic issues might get lost as the national interest focuses too much on alien invaders in general. The NISC is charged with dealing comprehensively with all invaders and this may, in the long-run, reduce efforts to prevent aquatic nuisance species invasions. Furthermore, many of the same people are being stretched between the two organizations.

Urge the federal agencies to get behind the National Aquatic Invasive Species Act, which is being considered by Congress. It is our understanding that at least some of the federal agencies (and the Bush Administration in general) do not support the bill. It will probably go nowhere until this situation changes. Without a major reauthorization bill, the appropriate effort to prevent ANS will simply not occur and we will be stuck with implementation of ineffective control measures forever.