GULF & SOUTH ATLANTIC REGIONAL PANEL
ON AQUATIC INVASIVE SPECIES
MINUTES
Tuesday, April 8, 2014 & Wednesday, April 9, 2014
Gulfport, MS

On Tuesday, April 8, 2014 Chairman Hartman called the meeting to order at 8:30 a.m. The meeting began with introductions of the members and guests. The following were in attendance:

Members & Proxies
James Ballard, GSMFC, Ocean Springs, MS
Tim Bonvechio, GA DNR, Waycross, GA
Robert Bourgeois, LA Dept. of Wildlife & Fisheries, Baton Rouge, LA
Rick Burris, MS DMR, Biloxi, MS
Paul Carangelo, Port Authority, Corpus Christi, TX
Rob Emens, NC DENR, Raleigh, NC
Pam Fuller, USGS, Gainesville, FL
Leslie Hartman, TPWD, Palacios, TX
Jeffrey Herod, USFWS, Atlanta, GA (By phone)
Chuck Jacoby, Indian River Lagoon National Estuary Program, Palatka, FL
Tom Jackson, NOAA-NMFS-SEFSC, Miami, FL
David Knott, At-Large Member, Charleston, SC
Herb Kumpf, At-Large Member, Stuart, FL
Robert McMahon, UT Arlington, Arlington, TX
Roberto Mendoza, Univ. of Nuevo Leon, Nuevo Leon, Mexico
Craig Newton, AL DCNR, Dauphin Island, AL
Dennis Riecke, MS DWFP, Jackson, MS
Kristen Sommers, FL FWC, Tallahassee, FL
John Teem, FL DOA, Tallahassee, FL

Staff
Alyce Ryan, GSMFC, Ocean Springs, MS

Others
Jason Ballard, MS DMR, Biloxi, MS
Matt Cannister, USGS, Gainesville, FL
Patric Harper, USFWS, Moss Point, MS
Jennifer Hill, Dauphin Island Sea Lab, Dauphin Island, AL
Matt Neilson, USGS, Gainesville, FL
Mike Pursley, MDMR, Biloxi, MS
Tamesha Woulard, USFWS, Arlington, VA

Public Comment
Chairman **Hartman** provided the opportunity for public comment. No public comments were received.

Adoption of Agenda
A motion to adopt the agenda was made, and passed unanimously.

Approval of Minutes
After minor changes, the minutes of the meeting of the April 10-11, 2013 meeting in Atlanta, GA were presented for approval.

A motion was made to approve the minutes. The motion was seconded, and the motion passed.

Constructed Wetland Sewage Treatment Ponds as Pathways and Vectors of Aquatic Invasive Species – A Case Study
Pursley gave a PowerPoint Presentation entitled "Constructed Wetland Sewage Treatment Ponds as Pathways and Vectors of Aquatic Invasive Species". Constructed wetland water treatment ponds are inexpensive to build, energy efficient, an effective water treatment, provide wildlife habitat, and are accepted by the public. However, they require more land, can harbor mosquitoes, they are not for all wastewater types, their performance varies, there is a prolonged start-up time, AIS control options are limited, and they are the ideal habitat for invasive species. The Wes Jackson County Land Treatment Facility treats 5 million gallons of water per day. The pond attracts large numbers of waterfowl. New ponds are planted with aquatic plant species from an out-of-state grower. The facility discharges into Bayou Costapia. In September, a volunteer Audubon birdwatcher reported a giant apple snail egg mass in Jackson County, Mississippi. There were eggs and live snails present. No snails were larger than 6.5cm, and were found only in newly-planted ponds. Baited traps used as a control effort for giant apple snails are ineffective in dense duckweed, and the use of metal salt-based molluscicides are not feasible. Plant workers are removing the egg masses by hand. A recent infestation had no fully-grown snails. Common salvinia was also found in ponds with apple snails.

Another aquatic invasive species found at WJCLTF was the Bloodfluke Planorb, a tropical freshwater snail native to South America, the Caribbean, and Puerto Rico. They have a high reproductive rate, and are considered a threat to agriculture. A large number of these snails were found in the infested ponds. They were observed to be feeding on water lettuce, and trapping was not necessary to capture live specimens. In captivity, they will feed on common salvinia. Escape into Bayou Costapia was prevented by a chlorination chamber, and no exotic snails were found in discharge so far. The USGS has requested funding to genetically identify this population. It is the first US report since 1991, and the first sighting in Mississippi.

The potential means of dispersal of the snails include attaching to crawfish, turtles, alligators, hogs, and bird feet. Also, by passing through the stomachs of birds, and the flooding of treatment plant ponds.

It is recommended that constructed wetland treatment systems and retention ponds be identified and monitored for AIS; require that aquatic plants grown off-site be inspected for AIS,

quarantined, and have a phytosanitary inspection certificate; provide AIS identification/control resources and education to treatment plant personnel.

Conversation on the USFWS Region 4 Transition

Herod provided his report via conference call. He informed the members that he is leaving his position as USFWS Region 4 Aquatic Invasive Species Coordinator, and is transitioning over to a newly created position within the USFWS. There will be a vacancy when he leaves his current position for six months or more. He stated that he is looking for ways that the GSARP can be more incorporated with project selection and development.

To stay connected with the Panel, and provide some stability, **Herod** proposed that USFWS Region 4 would provide the GSARP with $60,000 for each of the next five years for operations of the Panel, travel support, and possibly some funding for some projects.

Herod presented an *Action Item: The GSARP would support receiving $60,000 for each of the next five years from USFWS Region 4 to support the Panel's operations*. **Herod** would grant the funding directly to GSMFC. **Ballard** would be appointed as the Fiscal Officer.

A Motion was made that the GSARP would support receiving $60,000 for each of the next five years from USFWS Region 4. The Motion was seconded, and the Motion passed.

Herod next proposed a workload shift that, for the first year in his absence as the USFWS Region 4 Aquatic Invasive Species Coordinator, would have the Panel convene a work group to review the projects that are submitted to **Herod** at the USFWS for aquatic invasive species funding. **Herod** would pass the projects on to the Panel work group for their review based on scientific merit, then rank the projects, and resubmit a list back to him to discuss funding of the projects with **Ballard**. **Herod** would in turn, provide funding to GSMFC to implement and manage those projects for the first year. After that, USFWS would appoint someone to work through the Panel, and decide if this is a mechanism that they could move forward with in the future. **Herod** asked the Panel members if they would be willing to take on that workload. This would be short-term.

Herod presented a second *Action Item: The GSARP would convene a work group to review the proposals for USFWS Region 4*.

Fuller pointed out that, as a federal employee who has submitted several proposals to **Herod,** if money was given to the GSMFC for projects, it could not be given by GSMFC to federal employees. **Herod** stated that she was correct, but that he has set aside nine proposals from federal agencies. Those proposals would be handled at the USFWS regional office. **Herod** has already ranked the proposals, and will be discussing funding details with his supervisor. The projects that **Herod** is asking the Panel to review would be non-federal partner projects. He stated that he is currently looking at 23 proposals that are not federal. Typically, a proposal is one page. Currently, no ranking matrix has been developed for the proposals. **Ballard** suggested that separate meetings could be held for the work group to review the proposals, rank them, and then send them back to **Herod**.

Herod would like to have the rankings done by sometime in May. He will notify each person on the proposal to notify them of the process, and to see if they want to be removed from the process, due to non-interest.

Herod would provide funding for the selected non-federal projects. Sub-award contracts would be handled through GSMFC by **Ballard**, who would then forward all of them back to the USFWS regional office.

Multi-year proposals? Some of the proposals are phases. None of the proposals are set up for multi-year funding, but they are set up with the option for a grant for the next phase. He recommends that if this process works, it should remain unchanged, even after the person who takes over **Herod**'s position at USFWS is hired. However, that person should also be given autonomy at some point to run the program as they see fit.

Ballard stated that there is a concern that the Panel doesn't have representation from all of the states that are receiving funds, so he recommended that representatives could be selected to sit on the Panel for those states.

Fuller made a Motion to accept Herod's offer to convene a work group to review the proposals for USFWS Region 4. Kumpf seconded the Motion, and the Motion passed.

Wildlife Inspection Overview

Woulard gave a PowerPoint Presentation entitled "U.S. Fish & Wildlife Service Office of Law Enforcement - Wildlife Inspection Overview 2014".

Under the Lacey Act, the injurious wildlife provision regulates the importation and interstate transport of species determined to be injurious to the health and welfare of humans, agriculture, forestry, and wildlife resources of the US. Permits are issued only for zoological, educational, medical, or scientific purposes. The wildlife trafficking provision of the Lacey Act prohibits interstate and international commerce in wildlife taken, transported, or possessed in violation of Federal, State, Tribal, or foreign law.

The Endangered Species Act requires any person or company to obtain permission to engage in business as an importer/exporter of fish and wildlife and as a licensee, to keep records of the import/export and subsequent disposition of the fish or wildlife.

LEMIS (Law Enforcement Management Information System) is a Fish and Wildlife Service Law Enforcement database that is used to collect and store import/export data such as species, quantity imported/exported, country of origin, etc. This data is shared with various other agencies and divisions via FOIA requests.

Approximately 140 of the Fish and Wildlife Service Wildlife Inspectors are located at 18 designated ports and 20 other locations. They are stationed at major international airports, ocean ports, and border crossings. They work the passenger terminals at airports, and conduct inspections at international mail facilities. The inspectors review FWS Declarations, permits and

other paperwork, and conduct physical inspections of shipments. They serve as the nation's front-line defense against illegal international trade in wildlife and wildlife products.

A "Notice to the Wildlife Import/Export Community" is put out periodically. The subject heading is: "Filing Changes Affecting Import and Export of Fish and Crustaceans".

Update on NOAA Fisheries ANS Activities

Jackson gave a PowerPoint Presentation on NOAA Fisheries ANS activities. He spoke on the ongoing Invasive Mangrove (*Lumnitzera*) Removal Project in Biscayne Bay. *Lumnitzera* is an Indo-pacific mangrove genus that was grown in Fairchild Tropical Garden that propagated and spread into the natural mangrove forests. In April and October 2014, NOAA will be hosting surveys, and cooperate in removal or survey days over the remainder of 2014.

There is a focus on the endangered native snail kite, due to the presence of invasive caiman lizards in the Everglades. Snail kites eat native and non-native apple snails, and depend on them for survival. Caiman lizards, which are from South America and grow over a meter in length, also have a preference for freshwater molluscs and crustaceans. This is a topic of concern for the Tropical Audubon Society, and restoration goals.

Another regional invasive of concern is *Xenia macrospiculata*, a soft coral that was initially seen in 2007 as a small colony off the east coast of Venezuela. It has spread several km away from the first observation site, covering 20% of substrate as a monoculture. It overgrows scleractinian corals, which are species critical to NOAA restoration goals. It exhibits a remarkably high reproduction potential, which contributes to its dominance in the Red Sea coral reefs. It is considered an aquarium pest, and an aggressive colonizer. This is a potential ballast water/hull fouling risk for transfer to other locations.

According to FFWCC, the most common pathway by which exotic fish and wildlife species find their way into Florida's habitats is through the pet trade (escape/release/trade). Despite large local and regional campaigns ("Don't let it Loose"), as well as national campaigns in cooperation with industry ("Habitattitude"), releases continue to occur.

It is believed that the lionfish invasion was begun by the release of "pet" lionfish, due to their aggression (eating their fish tank mates), eventual size, and/or lost interest in the fish, causing "empathetic releases". Within 40 years, two lionfish species (*P. miles and P. volitans*) populated 7.3 million km, including the Caribbean, Gulf of Mexico, the southeastern US coastline, and the Bermuda coastline. They are a management problem for 36 countries, and there is no effective control at this time.

Two bills on regulations for lionfish were recently filed by two Florida State Representatives. HB 1060 would prohibit importation, aquaculture, and sale of illegally imported lionfish. It would also provide penalties. The FWCC and DACS would be authorized to adopt rules enforcing those provisions. SB 1336 would provide a definition, prohibit the importation and aquaculture of lionfish and the sale of illegally imported lionfish, provide penalties, and authorize the FWCC and the DACS to adopt rules enforcing those provisions. However, it would allow "Florida caught lionfish" to be sold as pets for the purpose of trade, and allow

continued commercial fisheries development, both being proposed as a "form of control". The bills are still in committee.

It is easy to understand that boat ballast carries a large number of organisms, from microscopic plankton to large fish. However, many people do not understand the number of organisms living on the outside and inside of a released pet. Bony fish species are estimated at approximately 28,000, and contain several species of parasites. The prevailing view has been that only a small number of generalist parasite species infect all sorts of different fish. However, a DNA barcoding study done on freshwater fish in the St. Lawrence River in Canada revealed that fish eye lenses were home to five species of non-specialized flukes that thrived in many different fish species, and even frogs. The immunosuppressed eye is a better habitat for parasite infestation.

As a rule, there is no pressure for documentation for parasite/interactions and their pathways/vectors for imports. For most imported ornamentals, there is no substantial background that could be used in risk assessment analysis. Open filtration systems provide global opportunities of exposure. Such globally exposed released ornamentals are a pathogen vector risk to native species, including threatened and endangered, and commercial species. In a study done on 32 species of tropical fish in Florida, Columbia, and Singapore, antibiotic resistance was found in many of the fish. It was also noted that a number of common bacterial isolates from ornamental fish also possess zoonotic potential.

Recently documented population incursions of invasive *P. monodon* in the western north Atlantic and Gulf of Mexico carry with them the risk of a number of pathogens they are susceptible to, such as white spot syndrome virus. *P. monodon* acts as a vector to commercially important native panaeid shrimps.

Update on Lionfish Activities in Florida

Sommers gave a PowerPoint Presentation entitled "Lionfish – Florida Update". Complete eradication of lionfish is unlikely, as the population is widespread throughout the Gulf of Mexico, Caribbean, and the Atlantic. Deepwater lionfish repopulate shallow reefs, and are difficult to harvest. Harvesting by divers using spears and hand-held nets is currently the primary means of lionfish removal, and localized removal efforts can significantly reduce densities.

Recreational lobster surveys are being done to gather information on lionfish encounters. The number of lobster fishermen who kill and/or remove lionfish increased from 2010-2013. The proportion of respondents to the surveys who observed lionfish increased from 2010-2011. Studies are being done on re-colonization rates, species abundance, and diversity after removal. Tagging, acoustic tracking, and video monitoring are being done to observe lionfish behavior and movement. Fishery independent trawl and camera surveys are being done in the Gulf of Mexico, and lionfish presence in deep-water habitats was observed.

Due to the public's increasing interest in eating lionfish, recent research is being done by FWRI on the mercury content in lionfish in Florida. Results of the research revealed that mercury contents in the fish had lower levels than many other fish that were used for food.

Recent FWC efforts in management and rulemaking include removal of the bag limit for recreational and commercial fishermen; removal of the Collier County spearfishing ban; waived license requirements for harvest by specific gears; creation of the FWC Lionfish Team made up of staff across the agency.

Recent FWC efforts in outreach and collaboration include online and print publications; a new budget request was submitted to facilitate additional outreach efforts for 2014-2015; cooperating with other Gulf Coast states, REEF, Sea Grant, and other organizations; non-native species roundups, and pet amnesty events; outreach and social media; and the FWC Lionfish Summit 2013.

The 2013 FWCC Lionfish Summit was held on October 22-24, 2013 in Cocoa Beach, Florida. The purpose of the summit was to develop a collaborative framework between scientists, managers, and stakeholders for lionfish management, and to identify research gaps and collect stakeholder input on management. A total of 127 people attended the summit, and a wide variety of ideas were exchanged. Discussions included: examining potential incentive programs; developing a formal lionfish management plan; relaxing area-specific spearfishing regulations; considering the development of directed trap areas with high densities; the creation of a vehicle license tag with funds going to lionfish control; and continued research to fill information gaps.

Suggested management approaches to regulatory measures include: curtailing the introductions of new lionfish; and to facilitate removal and localized population control. Non-regulatory strategies include: the development of a FWC Lionfish Control and Action Plan; providing education on the issue of lionfish and how the public can help; encouraging stakeholder involvement and providing incentives where feasible.

One initiative to prevent the introduction of additional lionfish into Florida waters would be to prohibit the importation of live lionfish, which would prevent the introduction of other lionfish species. The continued live harvest and sale of Florida-caught lionfish would be allowed, and an additional demand for Florida-caught fish would be created. Another initiative to prevent the introduction of lionfish into Florida waters would be to prohibit the aquaculture of lionfish by preventing the development of lionfish aquaculture in Florida, and eliminating the potential large-scale accidental aquaculture-related releases. FWC is working with the Legislature on a bill that will aid in these initiatives. Proposed draft rule amendments would reduce the probability of additional lionfish releases, and reduce regulatory barriers to harvest lionfish.

Harvesting marine organisms while diving on a rebreather is prohibited in state waters. The first proposed draft rule would eliminate regulatory barriers by allowing the harvest of lionfish when diving with a rebreather. Other measures would be to increase the number of divers using rebreathers for deep or extended dives, and to provide opportunities for additional lionfish harvest.

The second proposed draft rule would allow the Executive Director or his designee to issue permits to tournaments or other events for the use of spearing gears (in areas where spearfishing is otherwise prohibited by FWC rules) to remove lionfish or other non-native invasive species.

A permit facilitates removal, while limiting impacts to public safety. Also, a reference would be created to the new rule that provides an exception to statewide spearing prohibitions.

The third proposed draft rule would prohibit the importation and aquaculture of lionfish in Florida.

If approved and directed, staff will return for a final public hearing in June. Best-case scenario is that the Draft Rules would be enacted by August.

Staff has coordinated with FDEP, NPS, and the Florida Keys National Marine Sanctuary on the development of the proposed rules. Park permits would still be required in addition to the Saltwater Harvest Exception Permit when harvesting from theses areas.

Ongoing non-regulatory strategies include coordination on a national level; and Outreach efforts which include marketing programs to encourage public participation; FWC-designed t-shirts distributed as an incentive to participate in lionfish derbies; web pages dedicated to lionfish issues; sponsoring lionfish derbies; attending seafood festivals and events; and the development of a Lionfish Reporting App.

The next steps are to pursue a grant to research additional incentive programs; develop an FWC Lionfish Action and Control Plan; identify additional opportunities to remove regulatory impediments to lionfish control efforts; continue evaluating rules that inhibit removal efforts; continue conducting lionfish research; coordinate with universities, other research institutions, and stakeholders to identify potential management options.

Sommers stated that the GSARP could possibly make a recommendation to the Task Force to put lionfish on the injurious species list. **Ballard** stated that the Panel could make the recommendation, since one of the roles of the Panel is to make recommendations to the Task Force that the Panel feel are important. **Hartman** stated that a Motion and a second would be necessary to make an official recommendation to the Task Force. **Sommers** wondered what some of the implications would be in making lionfish injurious. **Jackson** stated that he believed that the conflict was regarding the act being prohibited from having lionfish promoted as a commercial species if it is listed. He stated that this would need to be confirmed before the recommendation is made. **Hartman** pointed out that once it has been made a commercial fisheries, Magnuson-Stevens requires that it would have to be managed as a productive, viable fisheries if it has been designated as fisheries. An exclusion or a modification would need to be done.

Update on Ongoing Aquatic Invasive Species Activities in Mexico

Mendoza gave a PowerPoint Presentation entitled "Aquatic Invasive Species in Mexico". He showed a map of 595 sites of imminent species extinction. Shown on the map were sites either fully or partially contained within protected areas, and sites that were completely unprotected or have unknown protection status. Introduction of exotic species result in the extinction of 54% of native fauna; 70% of fishes from North America; 60% of Mexico's fishes.

Mexico has 545 native species, and 115 exotic species.

Mendoza spoke on *The National Strategy on Invasive Species in Mexico: Prevention, Control and Eradication*, which is a guide for directing the actions in Mexico for the prevention, control, and eradication of invasive species. The strategic objectives are to prevent, detect, and reduce the introduction, establishment, and dispersal of invasive species; establish control and eradication programs of exotic invasive species to minimize or eliminate their negative impacts; and inform society in an efficient way so that people can act responsibly in the prevention, control, and eradication of invasive species. Strategic actions include reviewing and developing the legal framework; developing scientific, technical, and institutional capabilities; fostering coordination between and within the government, institutions, and society; promoting education and public awareness; generating sound knowledge foe decision making.

Mendoza spoke on a book that was written entitled "Aquatic Invasive Species in Mexico". Seventy-seven authors contributed to the book. The book has nine sections, and is about identifying invasive species of greatest risk, and addressing the main pathways of introduction. Management options described are on the prevention, early detection, control and eradication of invasive species. They contribute to the objectives of the National Strategy on Invasive Species.

Mendoza next spoke on Sea Grant's *AIS-HACCP, Aquatic Invasive Species-Hazard Analysis and Critical Control Point* training curriculum that is used for HACCP Hazard Analysis and Critical Control Point workshops. The manual identifies pathways through which aquatic invasive species could invade aquaculture. It also shows methods to prevent accidental transfer to new areas.

Mendoza next spoke on the Commission for Environmental Cooperation's *Trinational Risk Assessment Guidelines for Aquatic Alien Invasive Species – Test Cases for the Snakeheads (Channidae) and Armored Catfishes (Loricariidae) in North American Inland Waters*. These guidelines will be used for risk assessments and socioeconomic impacts and analyses of invasive aquatic species in Canada, Mexico and the United States. Also available in the appendices are: an organism risk assessment form, an inferential estimation of organism risk and pathway risk, and a glossary of terms and definitions. **Jackson** suggested that a link to the book be placed on GSARP's website. **Ballard** stated that he will put a link on the GSARP website.

Update on Panel Funded Projects

Teem gave a PowerPoint Presentation entitled "Trojan Y Chromosome Eradication: Sex-specific DNA Markers for Invasive Fish".

Females with two Y chromosomes produce only male progeny, half of which are Myy. Myy males are viable and produce only male offspring. Four different matings are possible, leading to increased male production. The male/female ratio will increase over time if Fyy added. The addition of a Trojan Y female (Fyy) to a target population will cause females (Fxx) to go to extinction over time. The carrying capacity of the system becomes occupied by Myy fish (males with two Y chromosomes).

Three invasive fish species were screened for sex-specific DNA markers using RAPD PCR: Nile Tilapia, African Jewelfish, and Silver Carp. No primers were identified that demonstrate sex-linkage in individual fish DNA. African Jewelfish have been the first priority because YY

broodstock are being developed for this species by USGS. USGS will sequence the African Jewelfish genome to aid in the identification of sex-specific markers.

There are problems with the Trojan Y chromosome genetic biocontrol strategy. Continuous addition of an autocidal Trojan fish over a long period of time is required, and adding too few autocidal Trojan fish will not cause extinction. It also requires decades to achieve eradication.

Perhaps better genetic biocontrol strategies could be developed by modeling them on natural systems such as the Amazon Molly, and mitochondrial defects that cause male sterility in insects. Amazon Mollies produce only Amazon Mollies as progeny. *P. Formosa* (Amazon Molly) causes local extinction of *P. mexicana*. Extinction of *P. mexicana* will occur with the addition of just a single molly. Development of an Amazon Trojan would require knowledge of the unique reproductive features of the Amazon Molly, and whether or not the reproductive differences can be linked to specific genes that can be genetically modified in an invasive fish species. The Trojan female technique requires that a mitochondrial mutation is isolated that causes male sterility in the invasive species. TRT females must be added continuously to achieve extinction, but in smaller numbers compared to the Trojan Y chromosome strategy.

Other genetic biocontrol strategies that result in propagation of an autocidal fish within the system should be considered (Amazon Trojan, Trojan Female Technique). The Amazon Trojan would be the most effective, requiring only a single autocidal Trojan fish to achieve eradication. The TFT strategy might offer a non-GMO alternative to the Amazon Trojan.

GSARP Research and Management Priorities Lists

Ballard reported that the Panel updated the list at the last meeting. **Ballard** incorporated all of the changes that were discussed at that meeting. **Ballard** asked the Panel members to review the updated list, and if they were satisfied with it, the list would be adopted with the understanding that it would be a living document, and would be reviewed every few years for possible updating. **Ballard** will forward the adopted list to the Task Force.

Ballard instructed the members to email any changes for their state lists to him.

After several suggestions were made, the list was revised. **Hartman** asked the Panel for a Motion to accept the revised GSARP Research and Management Priorities Lists. **A Motion was made by Bonvechio to accept the revised list. The Motion was seconded by Jackson. The Motion passed unanimously.**

Discussion on the 2010-2014 Strategic Plan

Ballard asked the Panel how they wanted to proceed with updating the draft Plan. **Hartman** stated that perhaps changing the name to "Guidance Document" instead of "Strategic Plan" might give a better indication of what it actually is. An actual Strategic Plan is not required, so changing the name would have no impact.

Hartman stated that the gaps in the Plan should be examined. For example, expansion of the knowledge-base of the Panel should be done beyond biology.

Further discussions were deferred until the Work Group sessions on Wednesday.

GSARP Membership Discussion

Ballard stated that he received a letter from Jerry Cook, the President of ISIS (Institute for the Study of Invasive Species), in which he requested a seat on the Panel. A copy of the letter was provided in each Panel member's folder. The seat would be non-standing. It would also be a voting seat. After discussion by the Panel, it was decided that the request be denied due to limited funding and limited available seats. **Ballard** will draft a letter to Mr. Cook. However, if a seat becomes available, his submission for membership would be accepted. All meetings are open to the public, and if he (or someone else) would like to give a presentation, they can contact **Ballard** about being put on the agenda.

The Panel membership will be studied to see which members have not attended meetings, and to possibly seek new members. **Ballard** stated that in the Panel's SOP, it states that if a state or agency standing member misses two years/four meetings, the agency will be contacted and informed that their representative is not participating in meetings, and ask if someone else from that agency can be appointed, or have their representative start attending meetings again. For a non-standing member, the Panel can vote to remove the member from the Panel. For federal members, meeting attendance has been intermittent.

Knott made a Motion to approve Ballard drafting and sending a letter to Jerry Cook declining his request for membership in the GSARP at this time due to limited funding and limited available seats. The letter will also include the dates and location of GSARP's next meeting in Houston, Texas as an invitation to attend. Bonvechio seconded. The Motion passed unanimously.

Tribal Representation on the Panel will be pursued.

Public Comment

Hartman provided the opportunity for public comment. No comments were received.

The meeting recessed at 5:00 p.m.

Wednesday, April 9, 2014

The meeting reconvened at 8:30 a.m. The Chairman again provided the opportunity for public comment. No comments were received.

Aquatic Nuisance Species Task Force Update

Ballard reported that the Executive Secretary of the Task Force, Susan Mangin, has retired. The position will be filled at a later date.

Panel funding and the program budget were discussed at past meetings. At the last meeting, an update was given by FWS. They projected a $1.2 million cut, which would fall out of the bottom 25% of their budget, as the top 75% is fixed. The Panel is in the bottom 25% of the budget.

Ballard has not heard any updated information regarding whether or not Panel funding will remain the same, or be reduced. State Plan funding is also in the bottom 25% of the budget, and it is hoped that it will also not be reduced.

The report to Congress still needs to be done. The last report was done in 2004. The members of the Task Force have been asked to supply information on what their role is, what the role is of the Panels, and what each Panel's accomplishments have been in the past few years. The information will be compiled into one report, which will be sent to Congress.

Ballard stated that the budget cut is drastically hindering the Panels.

There are several decisional items on the Task Force meeting agenda for the May 7-8, 2014 in Arlington, VA. It will be decided what role the Task Force will have in the National Invasive Species Awareness Week; there will be approval of the revision to the Lake Tahoe AIS Management Plan; a decision will be made on the approval of the Snakehead Management and Control Plan; approval is slated for the National Invasive Lionfish Prevention and Management Plan. A full revision was done a month ago, which was reviewed, and edits were made. After revision again, the revised Plan will be sent to the Task Force. Also to be discussed will be fracking as an AIS pathway.

National Invasive Lionfish Prevention and Management Plan Update

Ballard reported that a 22-member Adhoc committee has been formed to draft the Plan. The Plan covers other species in trade, and will address the prevention of those species being released.

Ballard is hoping to have the revised Plan approved by the Committee to send it to the Task Force for a 30-day review. The Task Force will provide their comments, then it will be sent back to the Committee. The comments will addressed, and the Plan will be sent back again to the Task Force. If approved, the Plan will be put into the federal register for 30 days. After the Plan is reviewed and comments are provided by the federal register, it will be sent back to the Task Force. The comments will be addressed, and if approved, the Plan will be signed off on, hopefully at their fall meeting, and be an approved Task Force Plan. Once approved, the Plan can be used by any agency to achieve any action items listed in the Plan, or for states to develop their own specific regional plan. As soon as the Plan is put into the federal register, **Ballard** will send it to the Panel members.

State Reports/ Members Forum

Alabama

Newton reported that the Asian tiger shrimp continues to be a species of concern. Captures of *P. monodon* have increased. However, AMRD has received fewer validated reports in 2013 compared to previous years, despite personnel communications between AMRD and commercial shrimpers which indicate encounters with *P. monodon* do occur within Alabama waters. Commercial shrimpers are no longer recording collection information, preserving the specimen,

or reporting the encounters to AMRD in a timely manner. In 2012, 16 Asian tiger shrimp were validated by AMRD. In 2013, only three were validated. There have been no reports in 2014.

Evidence suggests the Asian tiger shrimp has become established in Alabama's waters. AMRD continues to focus on documenting occurrence, characterizing population structure, and processing samples for genetic investigation. Efforts are also being made by local academic institutions to acquire live specimens and conduct research regarding behavior and interactions of Asian tiger shrimp with native fauna. Ideally, this research will have the ability to identify negative interactions and qualitatively evaluate the impacts.

Encounters with lionfish typically are unknown unless AMRD representatives actively seek potential observers such as dive shops, spearfishing tournament organizers, etc. Numerous unconfirmed reports of lionfish have been made to various government agencies that indicate lionfish are abundant on the Trysler Grounds in 2011. SCUBA divers reported observing up to 30 lionfish during single dives in this area during the 2011 dive season. During 2012-2013, unconfirmed reports indicate lionfish are now more abundant than previous years. During the 2012 diving season, a recreational diver reported observing approximately60 lionfish during a dive at Trysler. During a dive in June 2012 at an artificial pyramid reef, a SCUBA diver reported observing approximately100 lionfish during a dive. Unconfirmed reports being made by SCUBA divers indicate that lionfish are widespread throughout Alabama's artificial reef permit zone. After a lionfish rodeo by a local dive shop in June-July 2012, 26 lionfish were donated.

AMRD pursued financial support to fund outreach efforts and monitoring associated with the lionfish invasion. A $9,240 sub-award agreement was received from the Gulf States Marine Fisheries Commission in December 2012 to monitor reef communities in the Gulf of Mexico, dispatch red lionfish when encountered during SCUBA surveys, increase public awareness of the lionfish invasion, and streamline the general coordination between State agencies, Federal agencies, and the public.

Eighteen dive surveys were completed by AMRD personnel from May 2013 through July 2013. Twenty-eight lionfish were documented, and 34 lionfish were dispatched that were not in the field-of-view of the survey recorder. All lionfish harvested by AMRD during MBLRU operations were delivered to National Marine Fisheries Service (NMFS) for research. Approximately200 red lionfish have been acquired and processed by AMRD, NOAA, and/or GCRL as a result of the increased coordination and dive surveys associated with the GSMFC grant.

Outreach efforts by AMRD has increased the local SCUBA community's awareness of the lionfish invasion. AMRD partnered with REEF to hold a workshop on October 24 to educate the public about the lionfish invasion and demonstrate safe harvesting and handling techniques. As a result, numerous SCUBA divers have become more active at targeting lionfish, and restaurants are beginning to include lionfish on their menus. AMRD has developed an Adopt-a-Reef program that allows SCUBA enthusiasts the ability to submit their lionfish observations more efficiently, and creates enthusiasm of the participants to generate and submit data regarding lionfish.

Educating the public is paramount to obtaining quality information. The DCNR/MRD continues their efforts to enhance public awareness of lionfish and the Asian tiger shrimp. Participation in additional workshops, and the promotion of the Adopt-a-Reef program is expected to produce significantly more lionfish reports and harvest.

A notification that describes the Asian tiger shrimp and provides information concerning proper reporting continues to be distributed to the shrimping community.

A page within the Alabama Marine Information Calendar dedicated to educating the public about lionfish and the Adopt-a-Reef program has been distributed. The calendar has been widely distributed to a variety of establishments.

Rider provided a written freshwater report. Anglers have reported silver carp in the Wilson Dam tailwaters (Pickwick Lake). These reports are unconfirmed.

Bighead carp have been observed during electrofishing below Wilson Dam by ADWFF. They continue to be collected while gillnetting for paddlefish in the lower Tombigbee River, and are more abundant in the lower Tombigbee River than once thought. Bighead carp were also caught in Miller's Ferry Reservoir (Alabama River Basin) by commercial paddlefish harvesters in February 2014.

Blueback herring were first detected in Lewis Smith Reservoir (Black Water Basin) in 2009, and the population continues to expand rapidly. They were likely illegally introduced by anglers fishing for striped bass. They have also been reported in Sipsey Fork.

Flathead catfish population continues to increase in the upper Choctawhatchee River. Sunfish and spotted bullhead numbers have severely decreased. The fish assemblage change is continually monitored with annual sampling each May.

Blue tilapia are now established in Threemile Creek.

Oriental weatherfish continue to expand in the Coosa River basin.

Cuban bulrush and water lettuce continue to expand in the Tombigbee River and the Black Warrior River.

Water hyacinth has been reduced in the Tombigbee River and the Black Warrior River following a cold winter and high flows.

There is no change in hydrilla coverage in the Tombigbee River and the Black Warrior River.

Dauphin Island Sea Lab

Jennifer Hill reported that they received funding from Sea Grant to study the interactions of native shrimp and invasive tiger shrimp. A shrimper brought in six tiger shrimp last fall. On other studies done on tiger shrimp, it was observed that they will consume juvenile blue crabs. The diets of tiger shrimp are also being studied. She stated that they will continue to keep the

Panel updated on their studies. She would like to coordinate with other states to try and obtain as many tiger shrimp as possible so that further experiments can be performed this summer. **Pursley** stated that he would be able to provide her with live tiger shrimp.

Florida

Sommers reported that a lionfish summit was organized and hosted by FWC's Lionfish Team in October 2013. The goal was to develop a collaborative framework for partnering on future lionfish management. Participants generated categorized potential actions that were ranked by their relative importance by the participants. The Lionfish Team is evaluating the action items made at the summit.

FWC passed into rule in 2013 a regulation that waived the license requirement for lionfish harvest by specific gear, and removed the bag limit for recreational and commercial fishermen. Proposed 2014 legislation includes: prohibiting the import and commercial aquaculture of lionfish in Florida; to review the diving rule to allow rebreathers while SCUBA diving for lionfish; and to allow FWC to issue permits to allow spearfishing for lionfish in areas where spearfishing is not allowed.

A small number of tiger shrimp reports from around the state continues to be received. However, commercial shrimpers reported to USGS that they had caught 25 and 40 pounds of tiger shrimp in individual trawls off the coast near St. Augustine. This is highly unusual, based on FWC records.

In central Palm Beach County, a population of bullseye snakehead was recently confirmed in the canal system in the city of Wellington. This canal system empties into the West Palm Beach canal, a major east-west canal interconnected with canals leading to Lake Okeechobee, water conservation areas, and ultimately Everglades National Park. This finding represents a 12.5 mile northern jump from their previous northern boundary. The most likely pathway for this introduction was an illegal angler introduction rather than a range expansion. Once they penetrate the West Palm Beach canal, they will have access to hundreds of miles of canals that support an important recreational sportfishery comprised primarily of native species.

Two non-native fish species new to this canal were collected: Paraneetroplus (Theraps) melanurus x P. zontaus and Asian swamp eel. Both of these collections represent illegal introductions rather than range expansions.

A collaborative study to examine potential interactions between the morphologically similar non-native bullseye snakehead and native bowfin is under way between FWC and researchers at the University of Florida's Tropical Aquaculture Laboratory. A study of selected life history attributes of bowfin collected from everglades-type habitats has been completed and will be compared to bullseye snakehead.

Sommers noted that there are other invasive species considered to be a problem in Florida, such as the Burmese python. She will provide updated reports to the Panel on that issue. Last year, 230 pythons were removed. This year, 135 have been removed so far. The North African python is another problem species in Florida. Due to their elusiveness, only one has been removed so far

this year. Two populations of Nile monitors are in the canal systems. Thirty Caiman have been removed since July 1st. A Nile crocodile was recently removed from the Everglades National Park. Crocodiles have escaped over the years from a facility near the Everglades National Park that breeds crocodiles. Some have been recovered.

Schmitz did not attend the meeting, but provided a written report on Florida's Invasive Plant Management Program for FY 2012-2013. Managers spent about $5.8 million controlling 46,757 acres of floating invasive plants in Florida public lakes and rivers during FY 2012-2013. This was an approximately 40% increase in funds expended and acres controlled in FY 2011-2012.

Hydrilla was reported in 194 public waters in 2013 and is considered to be under maintenance control in 98% of Florida's public lakes and rivers. However, tubers infest about 90,000 acres, and represent the potential for immediate regrowth. Insufficient funding allowed hydrilla to evolve into statewide water, infesting approximately 100,000 acres in 365 of Florida's public lakes and rivers. Sufficient, recurring funding and improved technology aided by FWC-funded research enabled managers to reduce hydrilla to about 28,610 acres in 2013. Among Florida's largest and most important multiple-purpose waterways, 65% of the hydrilla reported in 2013 occurred in the four lakes of the Kissimmee Chain of Lakes. Managers spent $7.43 million treating approximately 14,150 acres of hydrilla in Florida public lakes and rivers during FY 2012-2013.

Invasive non-native plants were reported in 96% of Florida's 451 public lakes and rivers that comprise 1.26 million acres of fresh water.

Floating water hyacinth and water lettuce covered as much as 125,000 acres of Florida public waters. They are FWC's highest management priorities.

The Florida Exotic Pest Plant Council lists 12 Category I invasive plants, capable of disrupting aquatic ecosystems and causing harm in Florida public waters. Seven Category I plant species, in addition to hydrilla, water hyacinth, and water lettuce, were detected covering approximately 6,670 acres in 91% of Florida's public waters in 2013.

During FY 2012-2013, $2.74 million was spent managing over 6,000 acres of aquatic plants other than hydrilla and floating plants during FY 2012-2013.

Georgia

Bonvechio reported on the Satilla River Flathead Catfish Removal Project. In an effort to weaken the impacts on native fish populations, Wildlife Resources Division (WRD) Waycross Fisheries staff began aggressive removals in 1996 via electrofishing. Despite these efforts, the number and size of flathead catfish continued to increase since their introduction. In 2006, Georgia legislature appropriated funding for three new positions (reduced to two in FY 2009). These personnel were assigned the task of reducing the flathead catfish population levels through direct removal, while searching for a long-term population control.

Crew removed 4,725 flathead catfish during the 2013 sampling season. Over 30,000 fish have been removed from the river since the implementation of the full-time flathead management

program in 2007. The size structure has declined, with the average size fish removed progressively dropping from 5.8 pounds in 2007, to 0.8 pounds in 2013. Average length, age structure, and biomass per effort have also declined. There appears to be a compensatory shift in sexual maturity due to increased exploitation.

Given the reported changes in biomass, size and age-structure, maintenance control and/or suppression of flathead catfish in the Satilla River is possible. Intensive harvest needs to be maintained to prevent the flathead population from rebuilding within 2-5 years.

Impressive stringers of large redbreast sunfish are being reported by anglers. There are some reports of some 10" "Roosters", many caught in the area of the flathead removal area. The increase may be due to the reduction of large flathead catfish in the Satilla River, but likely other contributing factors have played a part in the recent catches, such as the water level and fishing effort.

WRD personnel collected eight flathead catfish in the Ochlockonee River in the summer of 2013. Otoliths revealed ages ranged from 3-8 years of age. This is the first time flathead catfish have been documented to exist in the Ochlockonee River in Georgia.

The WRD removal crew documented the non-indigenous range expansion of the blue catfish occurring in the Satilla River, Georgia. Seven blue catfish were recovered in 2011. Ages ranged from 3-5 years old. This is the second large, non-native riverine catfish to be found existing in the Satilla River basin. No blue catfish were collected during sampling in 2012 and 2013.

A report on channeled apple snails was received in December 2013 from UGA on the St. Mary's population.

Louisiana

Bourgeois reported that there were no reports of tiger shrimp from early November 2012 to July 2013. From August 1, 2013 to November 2013, there have been approximately 50 confirmed reports. Many of these shrimp appear smaller than years past. There is an early increase in the red stripe variant than previous years.

Several reports of lionfish have been reported to LDWF from the commercial diving industry. Most of these reports are related to lionfish stings.

In 2013, over 99,000 acres of nuisance aquatic weeds were treated by LDWF.

Throughout 2013, areas previously controlled by the U.S. Army Corps of Engineers remained a priority, especially large areas of the Terrebonne marsh and Henderson Lake. Over 27,000 acres were treated in these areas in 2013. The majority of the effort was directed toward water hyacinth control, but some giant salvinia was treated as well. The USACE Removal of Aquatic Growth Program will resume in 2014 on a limited basis.

Since 2006, giant salvinia has been a major focus of aquatic plant control efforts in Louisiana. The combination of herbicide applications, water level fluctuation, and biological control is

being used to keep giant salvinia coverage at a level that allows for recreational use of waterbodies. The unusually cold temperatures and multiple freezes associated with the past winter should significantly reduce the amount of giant salvinia present this spring, especially in north Louisiana. An aerial survey in early March of Lake Bistineau revealed that less than 100 acres of salvinia was currently on the lake. Prior to a drawdown in 2013, over 3,000 acres had been covered. Concentrated spray efforts will be necessary in 2014 to prevent access issues because of the accelerated growth rate of the plant.

Stocking and monitoring efforts of Giant salvinia weevils will continue in 2014. It appears that weevils continue to increase their level of control on giant salvinia infestations in south Louisiana. New infestations in Henderson Lake and the St. Bernard marsh have been stocked with weevils since 2012. Weevils will continue to be stocked, and established populations are expected to exhibit some level of control on these infestations in 2014.

LDWF and the LSU Agricultural Center will be entering into an agreement in 2014 to research and develop a population of cold-tolerant weevils for use in north Louisiana. Weevils that survived the recent winter in north Louisiana lakes will be the foundation of this population. As the population builds, it will continually be exposed to low temperatures in growth chambers to select those weevils that can survive a cooler winter climate. It is expected that eventually, a cold-tolerant weevil population will be created that can be mass produced for stocking across north Louisiana. The LSU AgCenter will also research factors that may contribute to winter survival, such as habitat type, and flight ability.

Continual reports are being received of apple snails in more of the canals in the New Orleans area and the upper Barataria Basin. New reports have been received of apple snails in City Park and Bayou St. John. Bayou St. John is now open to tidal influence from Lake Pontchatrain, so the potential for the snails to move further is possible. A field investigation found that Apple snails were in small roadside ditches, neighborhood ponds, and in Bayou Manchac in Ascension Parish. This population will be monitored this year to see if it survived last winter's extreme cold weather. So far, no snails or eggs have been seen.

A LDWF 2013 ANS grant to survey selected public urban ponds in Baton Rouge and Lafayette for the presence of ANS is complete, with the exception of some analysis. Fish, plants, and invertebrates were sampled in Baton Rouge and Lafayette. Plants were the only exotic species found so far in the samples.

The 2014 ANS grant will be used to observe the tropic effects of Asian carp on some LA oxbows.

A large effort is being made for better public outreach and education of ANS. LDWF is posting brochures, links, and articles about ANS species and concerns on their Facebook page.

The revision of the state Wildlife Action Plan is underway. The Introduced and Exotic Species section will be expanded in this version. Hopefully, this will result in an increase in state wildlife grants to provide needed research on ANS species. So far, one ANS-related grant has been submitted for funding.

Mississippi

Pursley reported that new infestations of water lettuce, wild taro, and bloodfkuke planorb snail were discovered. Preserved bloodfluke planorbs were sent to the Smithsonian Institution for confirmation of identity.

Two low-altitude aerial photo surveys totaling 303 miles were conducted to aid in early detection of AIS, and to help monitor on-going control efforts.

Seventeen field surveys totaling 239 miles were conducted for early detection of AIS.

One confirmed sighting of an invasive Asian tiger shrimp was reported to the NAS database from a specimen provided to MDMR by a local fisherman.

Populations of giant salvinia, common salvinia, water lettuce, water hyacinth, giant apple snail, and bloodfluke planorb in south Mississippi were suppressed by unusually cold winter temperatures, but not killed. Monitoring efforts to determine survival of introduced salvinia weevils are underway.

AIS personnel participated in the interstate/interagency Mississippi Bight Lionfish Response Unit (MBLRU) and the Mississippi Cooperative Weed Management Area.

First MS pre-proposal was sent to the ANS Task Force to obtain dedicated aquatic invasive species funding made available via the newly-approved state AIS management plan.

A "Water Hyacinth Round-up Day" was held in conjunction with the Audubon Pascagoula River Nature Center. Nineteen United Way-Alternative Spring Break volunteers from Clemson University removed 96 cubic feet of water hyacinth from the Pascagoula River.

In cooperation with members of the MBLRU, 100 "Wanted Poster"-style lionfish awareness t-shirts were designed and produced for distribution early this summer to local dive shops.

Riecke provided the freshwater report. A list was compiled of all bait vendor locations in the state to compose a map to aid anglers and identify locations that will be sent live bait sale regulations when they are promulgated in the future.

A non-native plant species article was written for the agency foundation magazine.

The North American Invasive Species Network survey on the costs of controlling, monitoring, and managing ANS was completed.

A report was received of a helicopter that was transferring water from a river below a reservoir into the upstream reservoir as part of aerial firefighting training. The company was contacted and the trainee was reprimanded, as it was against their company policy.

A meeting was held with three Asian groups that were interested in assessing the harvest and processing possibilities for Asian carp in the MS Delta Region.

Treatment is ongoing of aquatic plants at the Ross Barnett Reservoir, Little Eagle Lake, and Beaver Dam Lake.

MS DWFP is in cooperation with MS Cooperative Weed Management Area on aquatic plant control.

Posting of the "Stop Aquatic Hitchhikers" signs at new boat ramp sites is ongoing.

Distribution of the "Stop Aquatic Hitchhikers" cards with all mailed boat registrations or renewals is ongoing.

The "Stop Aquatic Hitchhikers" logo and bullet list are still being printed in the annual regulation guides – *Mississippi Outdoor Guide* and *Mississippi Saltwater Fishing*.

The department website has posted links to the Mississippi River Basin Panel on Aquatic Nuisance Species, the Gulf and South Atlantic Regional Panel on Aquatic Invasive Species, "Stop Aquatic Hitchhikers", and "Habitattitude".

There is a permanent exhibit on exotic species on display at the Mississippi Museum of Natural Science.

Freshwater fishing bait regulations to specify which bait can be legally sold, possessed, transported, and used in Mississippi will be composed. Wild-caught bait will be prohibited from being used on any water body, except where it was collected.

The activities specified in the Mississippi State Management Plan for Aquatic Invasive Species will be implemented.

An EDRR monitoring program will be established that is comprised of state and federal personnel who routinely sample aquatic species in Mississippi public waterways.

Approval will be sought of legislation required to initiate licensing of retail bait outlets that sell live freshwater fishing bait.

A list will be adopted of approved, restricted, and prohibited species under the authority specified in MS Code 49-7-80, and as specified in the *Mississippi State Management Plan for Aquatic Invasive Species*. The list of approved, restricted, and prohibited species as specified in the public notice that regulates aquaculture activities in Mississippi will be amended.

Information for Mississippi contacts who are listed in the Expert Taxonomic database will be updated and expanded.

North Carolina

Emens reported that in 2012, there were 34 tiger shrimp sightings reported from all along the coast. Of those reports, 30 were confirmed either by photograph or by receiving the specimens. Several shrimp were passed on to James Morris for genetic research.

In 2013, there were 35 tiger shrimp sightings reported. Of those reports, 27 were confirmed. Twenty-one specimens were sent to James Morris for genetic research. There was a report from Atlantic Beach this year of a juvenile tiger shrimp that was later identified as a "red stripe" variant. DMF also confirmed another variant from a photograph taken on a shrimping vessel by an observer off Carolina Beach.

In 2012, a code for tiger shrimp was added by the commercial trip ticket program to the commercial landings database. To date, 29 pounds have been recorded.

The new 2013-2014 budget provides $200,000 for aquatic plant control. The budget specifies that $250,000 of additional funding is available for the Lake Waccamaw Hydrilla Eradication Project. A proposal is being considered for 2014, which calls for fluridone herbicide treatment of the entire infested area, at a cost of $570,000.

South Carolina

Knott reported that a preliminary funding proposal was recently submitted under the state and interstate ANS Management Plan Program. The work will be directed primarily towards improving the understanding of the recent invasion of the south Atlantic Bight and Gulf of Mexico by the Asian tiger shrimp. Tiger shrimp will be collected across a range of habitats. Some of the potential effects of the establishment of the tiger shrimp on native shrimp, crab, and bivalve populations will be examined through an investigation that will look for the ontogenetic shifts in feeding preferences using stable isotope analyses.

The preservation and archiving of pleopod tissue samples for genetic analyses began in 2008. As fresh tissue become available, samples are held in a tissue repository maintained by the NOAA National Centers for Coastal Ocean Science Laboratory. Using this tissue, USGS researchers will attempt to identify the geographic origins of tiger shrimp living along the Gulf and Atlantic coasts of the US. Confirmed reports of tiger shrimp captures continue to be recorded and reported to the USGS as they are received from points of contact in the coastal states of the GSARP region. A manuscript was written by several GSARP members and others, that documents the first seven years (2006-2012) of the tiger shrimp invasion in the western north Atlantic and Gulf of Mexico. Data for the manuscript was from the USGS and SCDNR database.

Recent molecular analysis on the nematode *A. crassus* that was referred to in prior reports as *Anguillicoloides* has resulted in the replacement of this species into the genus *Angillicola.* This native parasite in the Japanese eel has become widespread as an invasive parasite in swim bladders of American and European eels, as well. The parasite is the subject of ongoing research by SCDNR's Inshore Fisheries Research Section. Their recent study found that at least 58% of American eels at larval and adult stages that were sampled in SC estuaries are infected. Infection

prevalence at the glass eel stage becomes high within months of recruitment to freshwater habitats. Funding has been requested by SCDNR to develop and test the use of qPCR to detect and quantify the presence of the parasite in planktonic and benthic fauna, which includes a known intermediate host of *A. crassus*.

Faunal identification of invertebrates scraped from settlement blocks deployed for approximately three months at various locations throughout the ACE Basin NERR is nearing completion. Preliminary results from examination of 12 of the 15 recruitment samples present a faunal list of 60 invertebrate taxa. Four of those species are known to be invasive. An additional species, the South American mussel, was collected from outside of the targeted sampling surface of one block.

Dr. Erik Sotka from the College of Charleston and his colleagues have been investigating the impacts of *Gracilara vermiculophylla*, a nonindigenous seaweed, on mudflats in South Carolina and Georgia. Much of their initial work has now been published. Dr. Sotka and his colleagues will use a new NSF grant to conduct laboratory experiments and use genetic tools on seaweed samples from various locations in order to reconstruct the evolutionary history of the seaweed, and to search for an explanation of its pervasiveness across so much of the world.

Texas

Hartman reported that they are modifying their exotic species rule, chapter 57.

Inland fisheries is planning to survey up to 200 lakes in Texas to look for zebra mussels this summer. Bio-control has begun for salt cedar.

The hydrilla on Lake Austin is under control.

Greenhouses have been constructed to house giant salvinia weevils.

Hartman met with a member of The Nature Conservancy who is working on the lionfish issue. They concluded that there are many people who are doing lionfish work, but no networking is being done. It was decided that a Texas-specific lionfish workgroup should be planned, and plans are underway to schedule a meeting. It will possibly be held in June in Corpus Christi.

Carangelo spoke on ballast water. In 2012, the U.S. Coast Guard published final regulations requiring ship owners to install ballast water treatment equipment. The equipment filters and cleans ballast water to remove aquatic organisms. Ship owners all over the United States must comply with the rules. However, on the international front, this is sometimes not the case. Some ships do not have certified technologies to meet the IMO standards, which have not yet been ratified, and there is concern on whether or not they will be in compliance when IMO does go into effect. A bill was recently introduced that would set uniform ballast water standards for all of the states. The bill would also require all commercial fishing vessels to operate according to a nationwide system of 'best management practices' for discharges incidental to their normal operation, as will be required by regulations to be developed and administered by the US Coast Guard.

McMahon reported that the peak population of zebra mussels in Lake Texoma peaked in 2010. Since then, veliger densities have been studied. It has been discovered that their densities have been falling dramatically. **McMahon** has been doing settlement experiments in the lake. Adult zebra mussels can no longer be seen on the shoreline. It is not known for certain what has caused these changes. There is evidence that, no matter how much food is available, they cannot consume enough to support the metabolic demands, and they starve when the water temperatures rise about 25˚C. Zebra mussels move micro-nutrients from the water column into the sediments, where they get sequestered. It appears that after the zebra mussels become established into huge densities, they remove so much phosphorous and nitrogen, that phytoplankton densities decline. The zebra mussels must put on weight in the winter when water temperatures drop below 25˚C that will sustain them until the next summer. As they reduce primary productivity, they cannot get enough weight back on in the winter to get through the next long period of high temperature starvation. **McMahon** will also be following the zebra mussel population in Lake Ray Roberts over the next several years.

This year, a third population of zebra mussels was confirmed in Belton Lake. In the Trinity River Basin, veligers in low numbers have been found in several rivers, but they cannot be confirmed as an infestation until adults or settled juveniles have been found.

In Lake Texoma and Lake Ray Roberts, zebra mussels have the most rapid growth rates ever reported for mussels anywhere. Once settled, they are of reproducing size within a month or two. They only live a year, instead of 3-4 years. Within this year, they reach full size. They then die. This is evidence that the reproductive cycle is occurring faster. This poses more problems for water-usage facilities, because instead of fouling between 3-4 years, it now occurs within a year.

McMahon has set up a risk-assessment for lakes in Texas, which involves studying summer water temperatures in August (the hottest time of year for lakes), calcium levels, pH and oxygen levels, and surface waters. This assessment is to identify which lakes are not likely to be infested, and which lakes would be.

More rivers are being monitored for zebra mussels. They are spreading into more and more water bodies. Hopefully, some southern lakes will not become infested, due to their high water temperatures. Also, some east lakes do not have enough calcium to support zebra mussels.

USGS

Fuller asked Matt Neilson from USGS to speak on their Nonindigenous Aquatic Species (NAS) Program, and its use of GBIF (Global Biodiversity Information Facility), which is an international organization that focuses on making scientific data on biodiversity available via the internet, using web services. NAS staff are developing tools to retrieve and process data through web services, such as museum collection data that is available from GBIF. Georeferenced occurrence data for each species that was tracked by NAS will be downloaded and processed. Also included will be the known introduced range, and locations inside and outside the species' known ranges. A new bulk data entry tool has been developed, which has increased their data entry capabilities tremendously. **Fuller** added that previously they had to enter each record by hand. She stated that they have found many museum errors, such as georeferencing or

identification errors, and the errors can now be corrected to improve the museum's data, their data, and GBIF's data.

Ballard asked about the status of NEMESIS. **Fuller** replied that they reached their technology limits, and funding was cut off. It is still operational, but it is not growing.

Indian River Lagoon

Jacoby gave a PowerPoint Presentation entitled "Phase IV – Can We Expect Any Help from Predators?" That hypothesis has not been tested. According to a survey done by a group from Australia, in locations where there is a large presence of predator fish, lionfish numbers were down. In another study done by a different group, that finding was discounted.

Jacoby reported on Phase IV of a lionfish study being done. With assistance from The University of Florida and other partners, tethering experiments were done on lionfish in the Cayman Islands to discover if predator fish could help with the eradication of lionfish. Lionfish culling is now regularly being done in the Cayman Islands. Tethering of the lionfish was done in three different types of habitats – seagrass where no culling occurred, rarely culled reefs, and intensely culled reefs. Results of the experiments revealed that predation was 13 times more likely on culled reefs than on rarely culled reefs, and approximately 30 times more likely on culled reefs than on seagrass. Videos surveillance was also done, and showed that Nassau grouper and nurse sharks were feeding on the tethered lionfish. **Jacoby** noted that each phase of studies has shown that: lionfish removals can be effective (Phase II), maintenance control is a viable option (Phase III), and predators are proving to be helpful (Phase IV).

Work Group Breakout Session

Each work group independently met to discuss their task recommendations listed in the Strategic Plan. **Hartman** reminded the Panel that the purpose of the work groups is to go through the Strategic Plan, keeping in mind that the main focus should be to discover what the Panel can do better, what gaps they can fill, what their accomplishments have been, while keeping in mind what their historic priorities have been and what their current priorities are.

Work Group Updates and Future Directions

Pathways/Prevention Group: **Riecke** stated that Strategy C. on page 9 should be removed, because VHS is a disease that occurs mainly in cooler climates, and is not a threat to the Gulf region. Resources will be re-diverted elsewhere. He further stated that "Evaluate Current Shrimp Virus Issue" should also be removed, as it is not a threat. For the Task "State & Federal Prohibited Species Lists Linked", **Riecke** suggested developing a comparison of what each state has as a prohibited species list, a restricted list, and a white list of approved species. A new Task suggestion was to compile a list of risk assessment methods, and put them on the GSARP website. Also, to investigate if there are lists of aquatic plant species that have had risk assessments done on them. Several members stated that there are clearinghouses of completed risk assessments. **Ballard** noted that Mike Hoff at FWS had informed him that they will be developing a clearinghouse, and a link could be created. A clearinghouse database of many agencies can be set up on the GSARP website. **Riecke** suggested that perhaps that could be a recommendation from the Panel to the Task Force. He also suggested encouraging each state to

create an "Amnesty Day" program, such as the one Florida has. **Fuller** introduced suggesting to neighboring states, and potentially to the Task Force, to develop a list of inherently dangerous species to humans. Also, possibly species that are currently in the pet trade that shouldn't be, due to the fact that they grow too large, too quickly. The list would be proposed to the states and FWS to see if they would be interested in listing those. Also discussed were parasite transfers from aquatics, and if FWS would consult with the CDC before letting species in. **Riecke** also stated that **Fuller** would undertake the new Task: "Review Pathways Document".

Eradication/Control/Restoration Group: **Bourgeois** stated that on page 3 in the "Eradication/Control/Restoration" section, they rewrote the "Charge" section and added the heading: "Identify, Evaluate, and Share". Underneath are four bullets: Non-native organisms for which eradication is possible; non-native organisms for which management and control actions are needed: actions to halt and minimize the growth and spread of invasive species populations; actions to restore habitats and native populations.

On page 10, under Objective 4 - Strategy A, **Bourgeois** stated that after the work group collects and evaluates the information regarding eradication, control, and restoration methods and techniques, they want to develop white papers for species of concern in the GSARP region. Other strategies include: identify speakers for meetings who support the role of eradication/control/restoration; keep abreast of new research by having conference calls between meetings; collect papers and critical literature and direct and suggest presentations for the meetings; identify promising and innovative research to support eradication/control/restoration.

Bourgeois noted that they also deleted the timeline because the tasks are ongoing. It was decided that all of the work groups would drop the timelines.

Ballard asked the Panel members how they wanted the eradication, control, and restoration methods and techniques addressed on the GSARP website. Several suggestions were made, but it was decided that more future discussion will be needed to determine what exactly should and could be put on the website.

Research and Development Work Group: **Teem** stated that Strategy A on page 8, under Goal 2. – Objective 1. – Task 2. to examine appropriate partnership opportunities for conducting research or collecting data through workshops and/or conference calls, was a completed activity, and also an ongoing activity. They looked at each of the research and development items and decided whether or not they were completed, incomplete, ongoing, or needed to be removed. They added one new item for research and development work group activities.

On page 13, under Goal 3. – Objective 1. – Task 2. – Strategy A: **Teem** stated that they had made a list of all of the grant opportunities that were available for invasive species research, but that list became quickly outdated. Even though the task was completed, they do not consider it to be useful, and have decided not to continue it in the future.

On page 14 – Task 3. – Strategy B: **Teem** stated that they consider the strategy to identify multi-agency proposal needs as a completed activity. They have made a list of research priorities that would be relevant to multi-agency proposals, if that were to be initiated.

Also on page 14 – Objective 2 – Task1: **Teem** stated that the strategy to develop a list of funding programs that will consider funding invasive species work is redundant. A list was developed, but they felt it was not useful. They decided to reword the Strategy to state that the Research and Development Work Group will lead the review of research proposals submitted for funding through GSARP. **Ballard** suggested also adding the chairs of the other work groups. **Teem** added that they also decided to remove the statement that the GSARP will create an information/funding clearinghouse using the website.

On page 17 – Objective 2 – Task 1 Strategy: **Teem** stated that the Strategy for the Research and Development Work Group to review the need to update the document entitled *An Initial Survey of Aquatic Invasive Species Issues in the Gulf of Mexico Region* is a completed activity, and also an ongoing task. However, the Species of Concern table in the document, which has been redone, is relevant and should be revised every five years.

Also on page 17 – Objective 2 – Task 2 Strategy: **Teem** stated that a workshop to develop guidelines for conducting rapid assessments based on the AMRAT experience was not held and they feel that it is not necessary to hold one. **Hartman** noted that she has created an in-house guidelines document. **Riecke** suggested putting the document on the GSARP website.

Teem stated that they are also rethinking GSARP Research Priority #10 (Assess the adaptations that have allowed zebra mussels to recently invade warm southern water bodies that were believed to be outside the physiological tolerance of the species). It has been reworded to incorporate Priority #1, and now states: To conduct long-term studies on established non-native species to understand the ecological, evolutionary, and physiological adaptations and explain why a species is invasive in one geographic region and not in another.

Education/Outreach Work Group: **Jacoby** stated that Strategy B. on page 9 to examine appropriate partnership opportunities for implementing outreach activities and distribution of information using workshops and/or conference calls will be kept as an ongoing effort. They also added the concept of evaluating the effectiveness of their efforts.

On page 12 – Objective 6., the Strategy to target environmental user groups that utilize the resources affected by aquatic invasive species with outreach material and for research within the Gulf and South Atlantic Region was reworded. The Objective was changed to: Evaluate the extent and effectiveness of outreach efforts in the region. **Jacoby** felt that the word "target" should be removed. To progress the Panel, information will be gathered from the states so that it can be noticed at the Task Force level. Rewording for Task 1: Organize and facilitate recording of outreach efforts, and meet on an annual basis to see what outreach efforts have been done in the various states. Task 2: Review and compile the results of the evaluation of outreach, and possibly write a synopsis to put on the GSARP website. Task 3: Encourage incorporation of voluntary recording of all education and outreach materials that go out, and compile statistics on reporting.

On page 13 – Objective 7. - Reworded to: Facilitate the education of the public on aquatic invasive species issues.

On page 17 – Objective 3. – Task 1 that stated to review Panel activities for consistency with the priorities identified in the National Management Plan was deleted.

On page 4, the Education/Outreach Charge was changed to: Identify, recommend specific education and outreach materials; facilitate distribution in the region. Review the existing methodologies for evaluating the effectiveness of education and outreach efforts, and encourage their use in the region.

It was pointed out that Page 11 has Tasks 1, 2, and 3, but page 12 starts with Task 5, instead of Task 4.

Riecke suggested that the Strategic Plans of other Panels be looked at to see what some of their objectives and work groups are, which could be beneficial to the GSARP. **Hartman** asked **Riecke** to look at the Mississippi River Basin Panel's Plan.

Early Detection/Rapid Response Work Group: **Newton** stated that they moved the Charge of Early Detection/Rapid Response activities to: for the eradication, control, and restoration.

For the Task of State Rapid Response Plan Components: They are in the process of being developed, and each state plan is at some level of acceptance, approval, etc. For the Task to ID Data Elements Needed in Volunteer Reports: USGS will compile a list of different fields that are needed for the reports. For the Task to ID Monitoring Programs: They suggest that the monitoring programs incorporate some type of sampling with gears similar to what the particular state uses for those areas that are most susceptible for initial introductions of invasive species.

On page 11 – Task 2: They discussed using some MOUs to help outline early response activities between states in the event that an adjacent state, or one in the Region, needed operational or logistical assistance dealing with the occurrence. Other states with specialists for that particular issue would be able to provide the support needed.

For the Task to develop a Taxonomic Expert Database: Several Panel members stated that the list had been done. **Newton** noted that it needed to be updated.

For the Task to Explore Potential for Swat Teams: **Newton** stated that this has not been done, but it could easily fall into the idea of using MOAs between the states, and developing Task Force swat teams.

Hartman added that an Early Detection/Rapid Response Plan for the Gulf was already developed, revised, and then sent for editing. There was a large amount of editing done, but no final document. It has come up that the group is willing to re-address whatever version it is currently in, and provide the document to the GSARP. **Hartman** suggested that, instead of attempting to get consensus with everyone, a straight up or down vote on the document might be something the Panel could possibly consider. She asked the Panel if they would consider accepting a simple majority up/down vote on the document. This matter will be addressed in the future.

Hartman discussed intrastate and inter-agency MOUs, their value for early detection and rapid response, and the importance of having them done and established before an event occurs. This will possibly be a recommendation made to the ANS Task Force, to encourage states to consider doing MOUs with their neighboring states for early detection and rapid response.

Information Management Work Group: Cannister stated that the three Tasks for Objective 3 on page 15 that all relate to the GSARP website should be marked off the list as completed. **Ballard** pointed out that the website has been developed, but the Information Management Work Group has not edited its content. These Tasks are ongoing.

Ballard asked the work group chairs to send all of their edits to him so that he can incorporate them into the Strategic Plan.

Discussion of ANSTF Recommendations

Riecke recommended that the Task Force find funding for non-indigenous aquatic plant species so they could be tracked again, and to make the data available for access. **Ballard** stated that he will work with **Fuller** to determine exactly how to word the recommendation. **Emens** stated that it would be a good idea to have a dollar amount when requesting the funding. **Riecke** replied that the amount he would request is possibly $150,000.

Fuller recommended that the Task Force consider adding all species of lionfish to the Lacey Act's injurious wildlife list. **Ballard** asked if the Panel wanted to list just the lionfish that are in trade, or in general. **Kumpf** and **Knott** suggested adding just three genera of lionfish. **McMahon** stated that he would recommend adding all species.

Riecke stated that the AFS's introduced fishes section received word of a bill in Congress that would give agencies the authority to ban imports of invasive species.

Hartman also recommended asking the Task Force to suggest to the states that they do preemptory intrastate and inter-agency MOUs for an early detection and rapid response event, and have them done and established before the event occurs. After discussion, it was decided that this recommendation not be presented to the Task Force, as they are hesitant about making suggestions to the states.

Riecke also recommended that the ANSTF should explore alternative funding mechanisms and sources of funds for the Panel's aquatic nuisance species state management plans. After discussion, it was decided that this recommendation not be presented to the Task Force, as they are hesitant about requesting funds from any sources.

McMahon asked if an ad hoc working group should be formed to review the Strategic Plan. **Hartman** stated that it might be a good idea. **Ballard** will revise the Plan, and send it to the Panel before the next meeting.

Election of Officers

Pam Fuller was nominated for Chairman. It was seconded, and with no other nominations, Fuller was elected as Chairman.

Kristin Sommers was nominated for Vice Chairman. It was seconded, and with no other nominations, Sommers was elected as Vice Chairman.

A Motion was made to close nominations. The Motion was seconded, and was passed unanimously.

Next Meeting Time and Place

It was decided that Houston, TX would be the location of the next meeting.
The next meeting will take place on September 17-19, 2014.

Public Comment

Hartman provided the opportunity for public comment. There was none.

A Motion was made to adjourn the meeting, and the Motion was approved. There being no further business, the meeting adjourned at 5:00 p.m.