

AQUATIC NUISANCE SPECIES TASK FORCE: MINUTES OF THE 2008 SPRING MEETING APRIL 29–30, 2008

On April 29–30, 2008, the Aquatic Nuisance Species Task Force (ANSTF) met at the Sheraton North Charleston Hotel in Charleston, SC. This document includes the decisions and action items made during the meeting, as well as a summary of the two-day ANSTF meeting.

Decisions

The ANSTF made the following decisions:

- Approved the meeting agenda.
- Approved the summary of the fall 2007 ANSTF meeting.
- Scheduled the next ANSTF meeting for October 28–29 (with alternative dates of October 21–22).

New Action Items

- (Communication, Education, and Outreach Committee) Coordinate with the regional panels to assess existing database resources and their capabilities for addressing the Northeast Aquatic Nuisance Species Panel’s recommendation that the ANSTF design a national tool with data from regional guides.
- (Communication, Education, and Outreach Committee) Per the Mid-Atlantic Regional Panel’s recommendation, determine the feasibility of harmonizing state or regional aquatic nuisance species lists and/or posting them in similar formats; make a recommendation to the ANSTF.
- (Ad Hoc Work Group) Task Michael Hoff, U.S. Fish and Wildlife Service, with leading a work group to flesh out the Mississippi River Basin Panel’s codes of conduct recommendation and bring preliminary options to the ANSTF.
- (Prevention Committee) Per the Western Regional Panel’s recommendation, assess school curricula as a pathway, relative to other pathways, and make a preliminary recommendation to the ANSTF.
- (Executive Secretary) Meet with experienced committee chairs to create a standard process for assessing the feasibility of requested tasks (using as resources the written decision document—pros, cons, and completed staff work—and the Invasive Species Advisory Council agenda form).
- Per the Great Lakes Panel’s request regarding ballast water,
 - (ANSTF co-chairs) Respond to the letter from the Great Lakes Panel regarding ballast water legislation and rulemaking.
 - (Peg Brady, National Oceanic and Atmospheric Administration) Provide the Council on Environmental Quality/Administration policy document.
 - (Bivan Patnaik, U.S. Coast Guard) Present at the next Great Lakes Panel meeting.
 - (ANSTF staff) Post updates regarding recent activities on ballast water to the website for ANSTF members to communicate when they talk publicly.
- (Regional Panels) Per the Gulf and South Atlantic Regional Panel’s request, discuss the desirability of a National Center for Biological Invasions; bring input to the panel heads meeting at the fall ANSTF meeting.
- (Control Committee) As a result of recent requests, including the Mississippi River Basin Panel’s request regarding common carp, discuss options and recommend a framework or approach for responding to requests to identify species as ANS.

April 29 Welcome and Preliminary Business

Co-chair Gary Frazer, Assistant Director of Fisheries and Habitat Conservation for the U.S. Fish and Wildlife Service (USFWS), welcomed ANSTF members and observers. He noted several changes at the USFWS and introduced Darren Benjamin, USFWS, as acting executive secretary for this meeting. Michelle Harmon, National Oceanic and Atmospheric Administration (NOAA), stood in as co-chair for Tim Keeney, NOAA Deputy Assistant Secretary for Oceans and Atmosphere. She thanked meeting organizers and summarized changes in NOAA participation. Peg Brady would replace Dean Wilkinson, who retired, after she completed other duties at the Council on Environmental Quality. In the meantime, Liz Fairey was filling in.

The agenda for this meeting and the minutes for the fall 2007 meeting were approved. Afterwards, there were round-robin introductions by new and existing members to facilitate participants' understanding of others' roles and expectations of the ANSTF. Representatives from regional panels were also asked to sit at the ANSTF table.

Regional Panel Updates

Frazer invited regional panel representatives to present high priorities, emerging issues, and associated recommendations to the ANSTF.

Gulf and South Atlantic Regional Panel

James Ballard, Gulf States Marine Fisheries Commission and recent replacement for David Rice, talked about results of the Gulf and South Atlantic Regional Panel meeting in April. High-priority and emerging regional issues included giant reed (*Arundo donax*) and giant salvinia (*Salvinia molesta*) in Texas and Louisiana, measures regarding the brown tree snake (*Boiga irregularis*), movement and dismantling of obsolete naval ships, progress of rat lung worm (*Angiostrongylus cantonensis*) study, concerns about apple snails (*Pomacea* spp.), and current status of a marine ornamental project.

- **Giant reed**—In the Rio Grande Basin, this invasive riparian plant not only caused water loss, decreased biodiversity, bridge damage, and streambank erosion, but it also impeded law enforcement activities along the border with Mexico. Debris showed that the *A. donax* cover was being heavily used by people. Frazer pointed out Border Control and Mexico as potential partners on control methods.
- **Giant salvinia**—Texas and Louisiana were both dealing with giant salvinia infestations. Due to the heterogeneity of affected water bodies, integrated control measures were being investigated. Unfortunately, many factors hindered their control efforts, such as hairs on the leaves that reduced herbicide effectiveness, the rapid growth rate of the plant, and unusually warm winters that did not offer enough time for states to knock the plants back to manageable levels. Ballard showed photographs of the infested Lake Bistineau and efforts being implemented there.
- **Brown tree snake**—The United States was at risk for brown tree snake establishment. Over \$8 billion of construction would begin on Guam as Marine installations on Okinawa were moved there. In Guam, this invasive species was causing economical, ecological, and human health issues. Pathway pressures to the mainland would increase as servicemen, their families, and materials returned from Guam. The North American Brown Tree Snake Control Team had added an interactive identification system and mapping to its website (www.nabtsct.net) and developed brown tree snake watch cards to educate cargo inspectors and the public about this species and stop an introduction. Agencies were trying to ascertain detection levels and capacity in Hawaii. They were coordinating closely with the North American Brown Tree Snake Control Team. Human health impacts (such as attacks on small children) could provide means for partnering with health agencies.

- **Beaumont fleet of obsolete ships**—The Louisiana Aquatic Invasive Species Council provided a five-point interim plan to the Maritime Administration for addressing aquatic invasives when moving obsolete naval ships of the Beaumont fleet in Texas. The Maritime Administration began sampling the fleet and solicited bids on movement of three ships. Results of biological sampling show low numbers of species; most were native or long-established in the region, but one was a potentially new nudibranch.
- **Rat lung worm**—This parasite needed two hosts to complete its life cycle, one of which was a snail. If people consumed an infested snail, the parasite moved to the brain and caused severe headaches. Death could result. People in New Orleans were now eating apple snails. Samples of snails collected there and in Miami showed no rat lung worms in the Miami samples, but the parasite was found in five New Orleans snails. The Gulf and South Atlantic Regional Panel had discussed outreach on the potential risk. ANSTF members also suggested exploring partnerships with human health agencies such as the Centers for Disease Control and Prevention. The regional panel was not making a related recommendation yet, but if risks to human health were not taken seriously by the state health agencies, the regional panel might ask for ANSTF action.
- **Marine ornamentals**—These were being addressed through a field guide, database coordination, trained volunteers who identify and report their findings, and a coordinated agency/organization response.

Ballard also reported on state ANS management plans. North Carolina was accepted into the regional panel last week. That state and Georgia had formed task forces and begun plan development. Florida and Louisiana's plans were completed. The rest of the plans were in progress and should all be completed by the end of 2009.

Great Lakes Panel

Via teleconference, Kathe Glassner-Shwayder, Great Lakes Commission, spoke about high-priority and emerging issues in her region, such as ballast water regulations, rapid response, organisms in trade vector, ANSTF expert database, and risk assessment and screening.

- **Ballast water regulations**—The Great Lakes region would like ballast water regulations as soon as possible. At the regional level, they were looking to the ANSTF for support and contacting legislators as individuals (not as a formal entity).
- **Rapid response**—Although a model rapid response plan was on the Great Lakes Panel website, the panel would like to move it toward implementation. An ad hoc committee was doing considerable work looking at the organisms-in-trade vector. Committee members planned to characterize the vector, identify pressure points, and hold an organisms-in-trade workshop prior to the June panel meeting.
- **Expert database**—The ANSTF database was showcased in a small workshop at the fall panel meeting. The panel would like the database expanded to include a broader scope of expertise and its use promoted, especially in rapid response planning and implementation.
- **Risk assessment and screening**—This topic was the focus of the fall panel meeting. Although there was no targeted funding, panel members were participating in any projects connected with screening.

Glassner-Shwayder also discussed key events and activities of the Great Lakes Panel, available in the ANSTF website materials, as well as state and interstate activities focused on ANS. She was impressed by these activities and the sharing of lessons learned.

She then read the recommendation submitted to the ANSTF by the Great Lakes Panel. In summary, the panel requested that the ANSTF “lend all possible support to expedite enactment of effective federal regulation of ballast water discharge to prevent further aquatic invasive species introductions in

the Great Lakes through the maritime commerce vector.... Strengthening ballast water regulation is critical to protecting the environmental health and economic strength of the Great Lakes region and beyond.” The recommendation was slated for more discussion after the U.S. Coast Guard update on the ballast water legislation and rulemaking process (see p. 8).

Northeast Aquatic Nuisance Species Panel

Susannah King, Northeast Interstate Water Pollution Control Commission, reported for the Northeast Aquatic Nuisance Species Panel. This group listed as high priority and emerging issues last year’s didymo (*Didymosphenia geminata*) invasion or first detection as well as early detection and rapid response at the regional level.

- **Didymo**—This invasive freshwater alga had been found in Vermont, New Hampshire, New York, and Canada. The region had been looking at strategies from New Zealand, and the panel had begun work on a fact sheet and prevention information.
- **Early detection/rapid response**—In addition to developing their own state programs, states in the panel wanted to develop a program at the regional level to improve responses to new invasions and make eradication feasible. Two workshops had been held so far, and another was planned for the upcoming meeting in Lake George, NY.

King also mentioned numerous panel and state activities listed on the sheet provided on the ANSTF website before the meeting. She then discussed the regional panel Communication, Education, and Outreach Committee’s recommendation to the ANSTF. The committee requested assistance and financial support for a pilot project to produce an online guide for citizens and laypeople. This guide would include downloadable information and accessible public domain photographs. Once done, the guide could be used as a template for other regional panels. In fact, the panel asked that the ANSTF consider designing a tool at the national level on which regional panels would collaborate. They would populate this tool with data from regional guides developed by the panels.

Following the recommendation, ANSTF members expressed concern about creating another database when others already exist and may work. Among those mentioned were the National Biological Information Infrastructure (NBII), Nonindigenous Aquatic Species (NAS) database, the Nonindigenous Species database (NISbase), Global Invasive Species Database, National Exotic Marine and Estuarine Species Information System (NEMESIS), Aquatic Nuisance Species Information System (ANSIS), and Portland State University’s Catalog of Aquatic Invasive Species Education/Outreach Materials. James Ballard, Gulf States Marine Fisheries Commission, commented that volunteers trained to look for marine ornamentals were using NBII fact sheets. Given the work that Pam Fuller, U.S. Geological Survey, had done on the experts database, she preferred to see one resource supported well than numerous resources not supported well. Others reminded King that any funding was tied to evaluation, and evaluation of another database could be an issue. After the discussion, the ANSTF asked the Communication, Education, and Outreach Committee, chaired by Joe Starinchak, USFWS, to coordinate with the regional panels to assess existing database resources and capabilities for addressing the Northeast Aquatic Nuisance Species Panel recommendation.

Mid-Atlantic Regional Panel

Jonathan McKnight, Maryland Department of Natural Resources, reviewed information included in the ANSTF website materials. The two high-priority and/or emerging issues for the Mid-Atlantic Regional Panel were Chinese mitten crabs (*Eriocheir sinensis*) and the rain of biological material coming from international ports through ballast water. Because of good habitat available for Chinese mitten crabs in Chesapeake Bay and Delaware, the monitoring effort was huge. Crab pots provided an effective means for monitoring occurrence. This concern dovetailed with the need for ballast water

regulation. McKnight was pleased to see the same theme coming from other panels. He believed this issue was where federal regulation and national leadership were key.

McKnight commented on a number of panel and state activities, including development of a model rapid response plan, continuation of mapping/listing efforts, and training and certification of panel members in the Incident Command System. Another effort was coordination on monitoring for northern snakehead (*Channa argus*), an emerging issue in the Potomac.

Recommendations for the ANSTF were created at the regional panel's meeting two weeks ago. Members were emphatic that the executive secretary position must be filled to keep the ANSTF and panels moving forward. They commended former Executive Secretary Scott Newsham's work in that role. They also recommended that ANSTF meetings continue to focus on specific themes and that any ANSTF action items have measurable benchmarks or products that can be accomplished between meetings.

Two other recommendations led to further discussion:

- **Harmonizing/posting state and regional ANS lists to create a national biological picture**—Because different databases fill different niches, a diversity of products were available. The ANSTF could weed through them and find where federal seed money could be most effectively used to support them. McKnight reviewed the Mid-Atlantic Regional Panel task of identifying the region's list of highest-priority species of concern. Similar lists from other regions could be compiled with similar formats and posted. These lists would change over time but still provide a national picture of threats. ANSTF participants discussed the difficulty of developing similar lists since states had different kinds of lists (for example, "white lists" vs. "black lists"). Through other efforts, such as Habitattitude, people had tried to do this very thing, mostly without luck.
- **Adopting the Incident Command System as a model for rapid response**—According to McKnight, the basic certification for everyone on the panel took only three hours, yet participants were better prepared to respond to invasions because of it. Several ANSTF members noted that the Incident Command System had already been endorsed by the ANSTF. (See summary of the spring 2007 ANSTF meeting.)

To further discuss the ANS list recommendation, the Communication, Education, and Outreach Committee was tasked with determining the feasibility of harmonizing state or regional ANS lists and/or posting them in similar formats. The committee would then make its recommendation to the ANSTF.

Mississippi River Basin Panel

Kim Bogenschutz, Iowa Department of Natural Resources, said that the highest priority for the Mississippi River Basin Panel was immediate implementation of the Asian carps national management plan. The first meeting of the implementation committee, scheduled for February 2008, had not yet occurred. The panel understood staffing challenges at the USFWS Branch of Invasive Species but emphasized that plan implementation was critical.

Bogenschutz reviewed panel and state activities included in ANSTF website materials. The Mississippi River Basin Panel and Mississippi Interstate Cooperative Resource Association, with Greg Conover as its new coordinator, were planning an Incident Command System mock exercise with a hypothetical occurrence of viral hemorrhagic septicemia in the Mississippi Basin. She then discussed recommendations for the ANSTF:

- **Voluntary codes of conduct**—The panel recommended that the ANSTF lead the effort to develop voluntary codes of conduct for aquatic plant- and animal-related industries. The ANSTF could also modify codes developed for government agencies to apply to state and federal agencies

working on aquatic nuisance species issues. ANSTF participants were concerned about the ability to identify and involve the range of trade associations necessary to affect behavior. Paul Zajicek, National Association of State Aquaculture Coordinators, suggested using a book on environmental best management practices for aquaculture. This book, authored by him and others, covered a diversity of industries. The ANSTF decided to have Michael Hoff, USFWS and originator of this recommendation, form an ad hoc work group to flesh out the Mississippi River Basin Panel recommendation and bring preliminary options to the ANSTF. Zajicek and Starinchak agreed to help.

- **Designation of common carp as an ANS**—Peter Sorensen, University of Minnesota, had given a presentation on the common carp (*Cyprinus carpio*) at the fall 2007 ANSTF meeting. Following the presentation, the Mississippi River Basin Panel had been asked to develop a formal recommendation regarding common carp management and present it to the ANSTF. The panel believed that the ANSTF should recognize the common carp as an aquatic nuisance species with national impact, although they didn't think a national management plan was necessary. Such a recognition would support long-term, innovative research on the common carp and related invasives. Discussion on this recommendation was tabled until later in the meeting (see p. 14).

Western Regional Panel

Tina Proctor, USFWS, reported on several panel and state activities since the fall 2007 ANSTF meeting. Two new committees were working on the Western Regional Panel website and *Threats to the West* brochure updates, respectively. The Columbia River Team of the 100th Meridian Initiative completed an Asian carp risk assessment, and the Columbia Basin rapid response plan for zebra and quagga mussels (*Dreissena polymorpha* and *Dreissena rostriformis bugensis*, respectively) was in the final draft stage and ready for signatures from participating agencies. Of eleven projects requesting Western Regional Panel funding, three were chosen: 1) the Colorado ANS management plan, 2) a University of California–Davis project to train master gardeners on keeping aquatic nuisance species out of water gardens, and 3) an outreach project to policy makers in the Pacific Northwest regarding flowering rush (*Butomus umbellatus*), which had been invading the Flathead River at the headwaters of the Columbia.

Paul Heimowitz, USFWS, then talked about an issue raised during the 2006 Western Regional Panel annual meeting—biology curricula and disposal of species used for schools. At that time, he agreed to lead an ad hoc work group to develop priorities and recommendations. He discussed the Western Regional Panel's history with this seldom-recognized pathway, membership on and findings of the work group, and resulting recommendations. The Western Regional Panel forwarded three of the nine recommendations to the ANSTF:

- **Biological supply houses**—These companies should have current, consolidated information regarding species that were prohibited for sale and possession in specific states and the United States overall.
- **Science curricula**—Associated outreach materials should be developed in collaboration with science curricula providers. These organizations could then provide the materials to their clients and customers to prevent introductions of aquatic nuisance species.
- **Standardized disposal protocols**—In partnership with key national stakeholders, a set of nationally sanctioned, standardized protocols should be developed for the humane euthanasia of aquatic organisms.

Preferably, classrooms would use preserved or live native specimens before turning to live, potentially invasive species. The panel requested that the ANSTF recognize this pathway as an emerging issue and create a work group to make the industry aware of the significance of the issue. Several ANSTF participants commented on challenges they'd run into with other campaigns, such as Habitattitude,

regarding “euthanasia.” The National Humane Society did not recognize ANS, and many other animal rights groups did not sanction euthanasia, even if done humanely. Others commented on an existing Sea Grant project, overseen by Sam Chan, Oregon Sea Grant, who was active in the Western Regional Panel effort, to assess the problem at the national level and any outreach tools that might be useful. Heimowitz thought it was more a prevention issue than an outreach issue at this time, but Prevention Committee chair, Richard Orr, wondered how this pathway rated with others already identified as priorities. The ANSTF requested that the Prevention Committee assess school curricula as a pathway, relative to other pathways, and make a preliminary recommendation to the ANSTF.

Ballast Water Update

Bivan Patnaik, U.S. Coast Guard, discussed ballast water legislation and the rulemaking process. His presentation included background information on the ballast water discharge standard, elements of the proposed rulemaking, environmental and economic analyses, and ballast water legislation. Because of issues with ballast water exchange and its effectiveness, a ballast water discharge standard was deemed preferable. In addition, the National Invasive Species Act of 1996 (which reauthorized and amended the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990) provided the authority needed to establish a standard. He reviewed the history of standard development, starting in 2001 with a Federal Register notice and dovetailing with the International Maritime Organization’s work on the Ballast Water Convention.

Rulemaking would set a concentration-based standard and issue an implementation schedule, vessel applicability, and legal and regulatory exemptions. The standard would be used to approve ballast water technologies and other engineering and operational requirements, but it would have to meet requirements under the Federal Insecticide, Fungicide, and Rodenticide Act regarding biocide use. A standard would also account for ballast water management systems in other programs, such as those that were research based rather than commercial in nature. Patnaik discussed ongoing activities to help the U.S. Coast Guard test ships affirm that they had met a discharge standard.

An environmental analysis under the National Environmental Policy Act was necessary to assess alternative actions, identify and analyze environmental impacts of the alternatives, and inform the public and stakeholders of these impacts. That process began in 2003, involved a number of stakeholder groups and people, and was ongoing. A draft programmatic environmental impact statement (DPEIS) was completed in the spring of 2006, and a workshop to revise the DPEIS was held in May 2007. Initially, the U.S. Coast Guard wanted to publish the DPEIS first. But it was decided that the DPEIS, proposed rulemaking, and cost-benefit analysis should be submitted at the same time.

The DPEIS did have constraints. It evaluated five alternative standards, the first of which was no action. Several treatment systems were now being evaluated, and each would have to have its own analysis prepared under the National Environmental Policy Act before the U.S. Coast Guard could evaluate it. Under the Endangered Species Act, the U.S. Coast Guard was required to consult with the NOAA Fisheries and the USFWS under section 7 to ensure that a treatment system meeting the ballast water discharge standard did not adversely affect threatened or endangered species.

Requiring equipment and testing would be costly to the shipping industry, and those costs would be passed on to the public directly or indirectly. So an economic analysis was also required. Systems were estimated to range from hundreds of thousands to millions of dollars *per vessel*. The Bush Administration was already under criticism for money the government spends on promulgating regulations. For the Office of Management and Budget, approving regulations regarding terrorism/homeland security issues was easier to justify. But it might not be quite as easy to justify the benefits to the environment from preventing invasions in monetary terms.

In 2007, at least 10 pieces of ballast water legislation were introduced or drafted. Each of the bills was submitted to agencies involved with ballast water for review and comment. This process takes time away from working on regulations. Patnaik described two of the bills. A House of Representatives bill, HR 2830 or Coast Guard Authorization Act, included a section about ballast water discharge and passed the House last week. The U.S. Coast Guard issued a press release stating concerns with the act, but most of these concerns were about other programs. The White House also issued a statement that it might veto the bill if it passes both houses of Congress. A Senate bill, S 1578 or the Ballast Water Management Act of 2007, had been introduced but not passed through the Senate. The White House submitted its views in a letter with an attachment entitled “the Administrative proposal.” The Council on Environmental Quality, facilitated by Peg Brady, NOAA, was asked to develop a strategy for addressing 1) the court order requiring the Environmental Protection Agency to permit all vessel discharges and 2) ballast water management regulations. Patnaik had an information sheet on the proposal if people were interested. It was submitted a few weeks ago and the Council on Environmental Quality was waiting for a response. No one was sure whether 2008 being an election year would positively or negatively affect ballast water legislation and/or regulations.

Discussion focused on the following issues:

- Gaps in protection resulting from legal exemptions.
- Compatibility among the International Maritime Organization convention, the rulemaking process, and legislation.
- The Bush Administration’s concerns with U.S. Coast Guard security responsibilities in HR 2830. Brady agreed to provide the Council on Environmental Quality/Administration’s policy document.
- The September 30 deadline for the Environmental Protection Agency to have a permitting program in place. The court order vacates an exemption so that after the deadline, most vessels would violate the Clean Water Act. Per Marilyn Katz, Environmental Protection Agency, a bill had been proposed that would exempt small vessels from National Pollutant Discharge Elimination System permitting. A general permit currently underway would be available for public review and comment by the end of May.

Ballast Water Recommendation from the Great Lakes Panel

Glassner-Shwayder, Great Lakes Commission, reiterated the Great Lakes Panel’s concern about the lack of ballast water regulations. Not only had the panel included the recommendation in its update to the ANSTF (available on the website with other meeting materials), but Mike Conlin, Illinois Department of Natural Resources and chair of the Great Lakes Panel, had also sent a letter to the ANSTF co-chairs on behalf of the panel. Glassner-Shwayder read the letter aloud and noted that, as federal agencies, the U.S. Coast Guard and Army Corps of Engineers had recused themselves from endorsement of the letter and its submission. Given the importance of the Great Lakes, both economically and environmental, pressure needed to be maintained so that regulations would be in place without too much more delay: “Each year that passes without significantly improved ballast regulations risks the introduction of new invasive species.” Although states were trying to address concerns, they were unable to do much without guidance at the federal level.

Frazer clarified that the ANSTF was a federal advisory committee, a forum for exchange of information among entities at the federal and state levels. Federal agencies could act through working within the executive branch of the federal government, such as commenting on proposed rules. The ANSTF could not function as an advocacy group or lobbying organization. He wondered whether the state agencies or Great Lakes Panel were working to ensure that the same message was conveyed to state legislators and regional and national governors’ associations. Glassner-Shwayder affirmed that the Great Lakes Panel was doing so, understood the challenges and limitations, but still hoped

agencies would look at their individual roles and opportunities. The ANSTF could be an excellent source of information when the Administration was researching an issue to make a statement. She appreciated the update by Patnaik and encouraged him to present this information at the next Great Lakes Panel meeting. He agreed. Brady also volunteered to provide the fact sheet and draft proposal from the Administration. It was also suggested that the ANSTF keep current information regarding ballast water regulations and legislation posted on the website to alleviate some of the frustration. To do so, ANSTF members would need to communicate updates.

Viral Hemorrhagic Septicemia Update

At the fall 2007 meeting, the ANSTF discussed a recommendation from the Western Regional Panel and Mississippi River Basin Panel that it recognize viral hemorrhagic septicemia (VHS), a fish pathogen, as an aquatic nuisance species. Following considerable discussion, the ANSTF had agreed on the following statement:

VHS and other nonnative pathogens are recognized as aquatic nuisance species, and the states are encouraged to consider VHS and other nonnative pathogens in their aquatic species management plans and to develop targeted Hazard Analysis and Critical Control Point (HACCP) plans to address the spread within their states as appropriate.

On December 10, the president of the National Association of State Aquaculture Coordinators, Bart Hawcroft, wrote a letter to ANSTF co-chairs Frazer and Keeney opposing the statement. That letter was available in the meeting materials posted on the ANSTF website. The letter detailed the association's reasons for opposing the statement and recommended new ex officio members to the ANSTF if pathogens were to be considered aquatic nuisance species. This letter provided language from the Nonindigenous Aquatic Nuisance Prevention and Control Act showing that pathogens and parasites fall within the purview of the ANSTF. The co-chairs also explained that the ANSTF was not a regulatory body, but it was important for promoting interagency efficiency and federal-state interaction. These processes were necessary, regardless of the invasive of concern.

Ken Seeley, Animal and Plant Health Inspection Service, then updated participants on the rulemaking regarding viral hemorrhagic septicemia. In October 2006, the agency issued an emergency order banning movement of 37 species of fish between states and provinces. Those restrictions eased up a bit, and in April, the emergency order was modified to address slaughterhouses. Since 2006, the Animal and Plant Health Inspection Service had tried to develop an interim rule to replace the federal order. The interim rule was written, and the National Environmental Policy Act and economic analyses done. The rule was now in review and would then go to the Office of Management and Budget. The goal was to publish the draft interim rule sometime this summer.

The new rule established risk ranges to determine the stringency of regulations. At this point, it addressed live fish only, not eggs. It could also be expanded beyond the two provinces and eight states if necessary.

Columbia Basin Rapid Response Plan Update

Stephen Phillips, Pacific States Marine Fisheries Commission, updated participants on the status of the Columbia Basin interagency invasive species response plan for zebra mussels (*Dreissena polymorpha*) and other dreissenid species. Economic impacts of such invasions could be dire for hydropower and irrigation, while ecological impacts could devastate efforts to recover salmon (*Oncorhynchus tshawytscha*) in the Pacific Northwest. Phillips showed a map of zebra and quagga mussel (*Dreissena rostriformis bugensis*) occurrences, including ten dreissenid interceptions in Washington state in 2007 and two so far in 2008.

The response plan strives to coordinate a rapid, effective, and efficient interagency response to such invasions. It uses the National Incident Management System, Incident Command System organizational management structure, and Multiagency Coordinating Group as guidance. A table-top exercise was held in October 2007 and involved 20 state, federal, and tribal agencies. The final draft of the response plan was released February 6, 2008.

Next steps for the plan include edits, signatures, written delegations of authority, regionwide inventories, funding commitments, and plan implementation. A companion strategy document focuses on strategic goals and associated tactics to enhance response preparedness. Phillips displayed lists of strategic goals and tactics, sharing their breadth and depth. Ongoing tasks include developing a rapid response dive team, creating preliminary reporting protocols, identifying water bodies at greatest risk of invasion, conducting a second table-top exercise, and procuring funding. He emphasized the need for National Invasive Species Act reauthorization.

After Phillips's presentation, ANSTF participants watched the video *Don't Move a Mussel*, a follow-up to a previous video called *It Only Takes One*. The video encouraged people to do everything they could to prevent the spread of zebra and quagga mussels and warned them of the economic and ecological consequences of their introduction to the region. Phillips commented that the toll free reporting number that pops up part way through the video was incorrect. It should be 1-877-STOPANS. The number would be corrected in future reprints of the video.

April 30 Welcome and Gulf and South Atlantic Regional Panel Presentations

Frazer welcomed participants to the second day of the ANSTF meeting, which highlighted several regional presentations.

Lionfish and Other Marine Ornamental Introductions to the Western Atlantic

James Morris, Jr., NOAA Center for Coastal Fisheries and Habitat Research, and Lad Akins, Reef Environmental Education Foundation (REEF), delivered presentations focusing on lionfish (*Pterois volitans*), a relatively new invasive for Florida and parts of the Caribbean.

Akins provided background on REEF, a nonprofit educational organization started in the Southeast that documents effects of exotic species. REEF had a number of education and outreach programs about the marine environment, including a fish survey project using data submitted by recreational divers. Data were tracked according to the level of expertise of the diver. In 1997, REEF implemented the project along the western coast of the United States and British Columbia. The program had since expanded to become the largest marine life sightings database in the world, with over 116,000 survey reports. These data were available to researchers and the public at www.reef.org. REEF had been tracking nonnative marine fish species via the fish survey project since 1994.

The lionfish was the first established nonnative marine fish in western Atlantic waters and could impact native fish communities, public health, and tourism. Since January 2007, REEF lionfish volunteers had conducted 11 weeklong projects throughout the Bahamas where lionfish were occurring in large numbers. Lionfish were found in every habitat type. Volunteers collected samples and tagged fish for recapture.

Then Morris described the history of lionfish invasions and their current distribution, which spanned the coast of North Carolina south to the Bahamas and Caribbean (excluding the Florida Keys). Lionfish reproduction occurred multiple times per month throughout the calendar year in the warm waters of the tropical western Atlantic. The female released two buoyant egg balls that were encased in a gelatin matrix. The eggs ascended to the surface, and the matrix dissolved after two days, releasing the embryos to float freely. Ocean currents could disperse the eggs great distances.

Lionfish had evolved to feed in times of plenty and fast during times of scarcity, and early stomach content analysis revealed that lionfish were consuming a variety of finfish and crustaceans. When a human is stung by a lionfish, he or she could experience swelling and paralysis that disappeared within two to three days. Allergic reactions might be more severe, and the site of the sting could become infected. Reactions were caused by the lionfish venom, a neurotoxin located in venom glandular tissue along the spines. Experiments indicated that juvenile lionfish were not considered natural prey by other fish species, including sharks. In fact, most fish avoided the lionfish.

Efforts to determine lionfish abundance had been conducted at specific locations, but as of yet no coastwide abundance estimate existed. Fishery-independent surveys to determine abundance had not been successful since the lionfish did not recruit to the traps. Researchers were working on a new survey protocol capable of monitoring lionfish.

Future collaboration included developing a coordinated rapid response program to prevent future ornamental introductions. Paul Zajicek, National Association of State Aquaculture Coordinators, mentioned a report on www.floridaaquaculture.com about marine ornamental introductions.

Invasive and Nonindigenous Fauna of Coastal South Carolina

David Knott, South Carolina Department of Natural Resources, spoke about the invasive fauna of coastal South Carolina. When he joined the Gulf and South Atlantic Regional Panel in 2005, the main interest was on eradication and control of aquatic plants. But when South Carolina began to develop its ANS management plan, participants saw that the scope needed to be broadened to include animals as well.

Knott shared a lengthy list of nonindigenous aquatic invertebrate species reported from South Carolina. Some were freshwater species, while others were found in neighboring Georgia but not yet in South Carolina. Not all of the 60 invertebrates listed were known to be established, but likely half were. Also, little was known about the ecological or economic impacts of these species. Knott talked about the Asian green mussel (*Perna viridis*), which had drawn considerable attention. It was introduced to Trinidad and spread to Florida's western coast. A second introduction on the Atlantic Coast occurred in northeastern Florida, and the species had spread from there. A year and a half ago, it was discovered in the department's own research facility. Knott summarized past and upcoming surveys for the mussel.

Thanks to the Gulf States Marine Fisheries Commission and others, the state had developed a brochure about the mussel and distributed over 2,000 so far. The brochure educated people about this particular species and invasives in general. It also asked for help from the public in determining species distribution. Although water temperature might constrain these mussels' spread, the global warming trend and possible selection for cold-tolerant individuals might promote their movement up the coast.

He discussed results of preliminary overwintering trials and collections. A large specimen measuring 4.5 inches likely overwintered twice, based on the amount of shell fouling. Among the organisms found on the shell was an invasive tunicate (*Styela plicata*). During other studies, other invasives were found, including an Indo-Pacific crab and titan acorn barnacle (*Megabalanus coccopoma*).

Objectives of the state ANS management plan were to educate the public, identify and implement needed research, and monitor occurrence and spread of aquatic invasive species. The brochure was part of the first objective, while monitoring efforts to date helped meet the third. Some of the monitoring funding had come from Sea Grant and the state. The state also planned to create a comprehensive georeferenced database to update the U.S. Geological Survey's database for use in developing species fact sheets. Funding and implementing the research objective had been more difficult.

South Carolina Aquatic Invasive Species Management Plan

Steve de Kozlowski, South Carolina Department of Natural Resources, discussed development of the state ANS management plan, which would be ready for review and approval soon. This plan was the state's first comprehensive effort to assess the impacts and threats of all marine and freshwater invasive plant and animal species. The Aquatic Invasive Species Task Force that developed the plan included 15 state agencies, 9 federal agencies, and 9 nongovernmental organizations. Because participants could "plagiarize" from other state ANS management plans, they were able to fast-track the plan. He added that South Carolina was a pilot state for an ANS communication plan for the Southeast, with funding from the Association of Fish and Wildlife Agencies.

De Kozlowski reviewed the planning process, which relied heavily on participants doing homework and using a website for intersessional communication. Every meeting had an educational component or presentation as well as a work session. Members also used the U.S. Geological Survey's Nonindigenous Aquatic Species database that Pam Fuller developed.

The plan had the overall goal of preventing and controlling the "introduction, spread and impact of aquatic invasive species in South Carolina." This goal encompassed eight objectives that addressed coordination, education, monitoring, eradication if possible, control, research, legislative and regulatory authority, and funding. The ANSTF provided review and comment on an early draft. The revised draft would next go to Aquatic Invasive Species Task Force members and the governor's office. De Kozlowski reiterated that the ANSTF would soon see the final draft.

South Carolina Aquatic Plant Management Program

Chris Page, South Carolina Department of Natural Resources and coordinator for the state's ANS program, talked about the South Carolina aquatic plant management program established first by executive order in 1980 and then by law in 1990. The original concerns were hydrilla (*Hydrilla verticillata*) and water hyacinth (*Eichhornia crassipes*), but other invasive plants have caused problems since then. The Aquatic Plant Management Council established a trust fund, and funds could be carried over from year to year. Additional funding now came from gas taxes based on the number of registered boats in South Carolina. Page summarized the makeup, responsibilities, and planning process of the 10-member council. He also commented that the state had a contract in place for rapid response. Because the state was small and fostered a good informal network, rapid response had been relatively effective. This network included Clemson University Cooperative Extension Service agents in every county, Department of Natural Resources field personnel, and the public.

All of these stakeholders were important in recent rapid response efforts focusing on giant salvinia (*Salvinia molesta*) in Colleton and Jasper counties. Page reviewed the chronology of events for these efforts. Then he talked about the "big three" concerns and what the state was doing to address them: hydrilla, water hyacinth, and common reed (*Phragmites australis*):

- **Hydrilla**—From 1982 to 2007, 50,376 acres were treated at a cost \$15,039,433. Stocking of triploid grass carp (*Ctenopharyngodon idella*) and selective use of herbicides had drastically reduced control efforts.
- **Water hyacinth**—From 1991 to 2007, 17,153 acres were treated at a cost of \$1,412,780. This species remained the largest problem in South Carolina waters.
- **Common reed**—From 2004 to 2007, 6,481 acres were treated at a cost of \$1,186,848. Most of this work was done by helicopter because of the large expanses the weed covered in relatively undeveloped areas.

Page reviewed partnerships and projects for 2008, which included several lakes in state parks. He invited people to read the aquatic plant management plan at www.dnr.sc.gov/invasiveweeds/plan.html.

Texas Update

Howard Elder, Texas Parks and Wildlife, reported on invasive species inhabiting the reservoirs of Texas. The statewide ANS management plan contained the best available strategies and alternative treatment methods for preventing and controlling nuisance aquatic vegetation. The plan contained three tiers of response: immediate response, maintenance, and monitoring. Prevention was the least expensive so the preferred method of controlling invasive species. Prevention efforts included posting signs and implementing the Stop Aquatic Hitchhikers! campaign.

Texas had several problematic species. Giant reed (*Arundo donax*) was receiving more attention because of expanses covering areas on the Texas–Mexico border that were inhibiting immigration officials. This species also used three times as much water as native vegetation. Hydrilla (*Hydrilla verticillata*) had infested over 100 reservoirs; however, the state of Texas had successfully reduced its presence in Lake Austin and Lake Conroe by stocking triploid grass carp (*Ctenopharyngodon idella*). Water hyacinth (*Eichhornia crassipes*) remained the most problematic species in Texas while giant salvinia (*Salvinia molesta*) and common salvinia (*Salvinia minima*) were the most threatening. Giant salvinia was a highly invasive fern that was cold tolerant, very adaptive, and highly resistant to herbicides. It doubled within five to seven days. Large-scale containment efforts in the form of barriers had proven to be inadequate but had attracted national attention. Control efforts included posting signs, manipulating water levels, physically removing plants, applying herbicides, introducing biocontrols, and taking other ecological interventions.

Situation-specific management plans had been developed for future response and control efforts. In the future, the state would work more closely with controlling authorities and attempt to shift more responsibility to their shoulders.

Pathway Analysis of the Southeast Region

Before Pam Fuller, U.S. Geological Survey, updated the ANSTF about the pathway analysis of the Southeast, Ron Lukens, speaking for the Gulf and South Atlantic Regional Panel, asked that the ANSTF explore establishment of a National Center for Biological Invasions. Following discussion, the regional panels were asked to discuss the desirability of a National Center for Biological Invasions and bring input to the panel heads meeting at the fall 2008 ANSTF meeting.

Fuller began her presentation by referring to a press release that morning about a newly discovered snakehead population in Arkansas. This population had established in canals that connect with the White River and been treated with rotenone.

She then explained the data used in the pathway analysis and colors used in the resulting pie charts. The first set of pie charts showed pathways for all invasive taxa by region and southeastern states (excluding North Carolina, which joined the regional panel later). Although pathways varied by geographical area, dominant pathways were stocking and aquarium releases.

A comparison between marine and freshwater pathways showed that they differed considerably. The dominant pathways for the marine environment were shipping and aquarium releases, but for the freshwater environment, they were stocking and aquarium releases.

An analysis of the taxonomic groups showed that amphibians generally entered through the pet trade and hitchhiking; reptiles almost exclusively through pet releases; mollusks through shipping and aquarium release; crustaceans through shipping, bait, and unknown pathways; and fishes through stocking and aquarium release. Overall, pathways differed by taxonomic group.

Pathways were also assessed over time, in 50-year blocks, for the region overall and each of the taxonomic groups. Fuller added that trout might be included in multiple blocks because they were

stocked over time. The resulting conclusion was that the strength of specific pathways had changed—generally increasing—over time.

Source regions had also changed over time, with almost half native to North America but moving outside their range. Most marine fish off Florida were from the Indo-Pacific region. After 1950, Africa and Australia became new sources. She showed that different pathways have different source regions, adding that most pets came from warmer climates and shipping sources encompassed most regions except Africa.

Because these analyses included species that did not persist, Fuller suggested that future analyses explore the percentage of success by pathway and source region, as well as the taxonomic groups introduced over time and changes in pathways in states over time. She commented that this analysis showed the power of the database and that she was willing to perform this type of analysis for other regional panels. She also hoped to publish the analysis with the charts, appendices, and raw data.

Common Carp Recommendation

The ANSTF resumed discussion of a recommendation to designate the common carp (*Cyprinus carpio*) as an aquatic nuisance species (see p. 5). This nonindigenous species was ubiquitous across the country, and people were already working management efforts. One of the primary questions was about the costs and benefits of including it as an ANS. On one hand, designation could lead to more research funding, more management focus, and possibly a national management plan. On the other hand, regional panels were already free to highlight species as regional priorities without national management plans being developed.

The other question focused on the actual meaning of “designated.” Frazer commented that the most recent parallel was recognizing viral hemorrhagic septicemia and other nonnative pathogens, although Richard Orr, National Invasive Species Council, viewed that issue as different—as the ANSTF determining whether pathogens as a whole could be considered ANS. Some participants hesitated about returning to a species approach, warning that such an approach could set an undesirable precedent. The ANSTF would be continually asked to declare any number of species. Given limited resources and widespread distribution of this species, some wondered whether the ANSTF should focus on those species where it could have some effect.

Based on possible unintended consequences of a designation, participants asked the Control Committee to discuss options and recommend a framework or approach for responding to requests to identify species as ANS.

Committee Matters

Acting Executive Secretary Benjamin summarized that, during the fall 2007 ANSTF meeting, participants discussed whether committees should be standing or ad hoc, given the inactivity of some committees, and how to revitalize standing committees if they remained. Despite a lack of clarity about roles of the ANSTF and standing committees, priorities and tasks of committees, and commitment from member agencies, the ANSTF agreed to continue with the five standing committees. Following the fall 2007 meeting, former Executive Secretary Newsham provided committee charges via email and requested names of people to participate actively. But active members were still needed for the committees. Benjamin asked committee chairs to review their charges and work plans.

Prevention Committee—According to Richard Orr, National Invasive Species Council, the joint Prevention Committee needed additional support and activity from the ANSTF. Only one person, Eileen Ryce of the Montana Department of Fish, Wildlife, and Parks, had responded to Newsham’s request for participation at the previous ANSTF meeting. The Prevention Committee proper consisted

of ANSTF and Invasive Species Advisory Council members, but the only ANSTF representative on the committee at this time was Al Cofrancesco, Army Corps of Engineers. The original five working groups established under the Prevention Committee were designed to accomplish on-the-ground work assigned to the committee. Of those five working groups, two were now being headed and run by specific agencies, leaving three working groups still under the Prevention Committee. The Pathways Working Group had met its original charge and was cleaning up the final documents. No additional members were being added to this working group. Under the new leadership of Cindy Kolar, U.S. Geological Survey, the Risk Analysis Working Group was becoming active once again after a long break in activity. The Aquatic Organism Screening Working Group had struggled and had yet to produce a usable product or move toward developing one. This working group had no chair. Orr encouraged the ANSTF to step forward and support movement on the Aquatic Organism Screening Working Group. He also mentioned that this was his last year of federal service; a new chair for the Prevention Committee would be needed when he retired.

Detection and Monitoring Committee—Pam Fuller, U.S. Geological Survey, reported that this committee had been fairly inactive in the last year or so: Lack of funds for travel to meetings and large-scope projects was the primary culprit. However, protocols for monitoring aquatic nuisance species had been posted to the ANSTF website, and the committee was looking at nationwide monitoring efforts. The chosen database, the National Biological Information Infrastructure (NBII), had been populated with data from 130 projects. So far, all committee efforts had been staffed and funded by the U.S. Geological Survey. A third task was to determine who would maintain data for the first two tasks. Fuller said that no one had approached her about participating on the Detection and Monitoring Committee. ANSTF members briefly discussed how committee tasks were originally assigned and whether the charges had been realistic in terms of staff and funding. Feasibility of adequate staffing and funding should be factored into any job before it is charged to a committee.

Communication, Education, and Outreach Committee—Joe Starinchak, USFWS, summarized the numerous activities and two campaigns—Stop Aquatic Hitchhikers! and Habitattitude—conducted by the Communication, Education, and Outreach Committee. States and other partners to the campaigns were implementing them in different ways, but since 2004, the workload for the committee itself had fallen off. There was some funding for evaluation, and a couple of new people had expressed interest in participating.

Control Committee—Jonathan McKnight, Maryland Department of Natural Resources, said that this newly formed committee had three members and an assignment determined earlier in this meeting (see p. 14). The task was to look at options for any sort of species status listing for the ANSTF and bring a menu of options and recommendations to the next meeting. This task was generated in response to the Mississippi River Basin Panel request for an “official” designation of the common carp as a nuisance species and because no mechanism for “listing” a species was defined.

Research Committee—A report submitted by David Reid, NOAA, the new Research Committee chair, was distributed by Benjamin in Reid’s absence. After checking with the 25 original members, Reid established an updated committee list that included 14 members, some of whom were new, having replaced the original members representing their organizations. A number of agencies dropped off the list, either not responding or declining participation. He asked that ANSTF agencies and organizations confirm their designated representatives or, if there was no representative, provide contact information for one, if desired. The report also reviewed the status of the research protocol review. Comments received on the protocol favored some sort of revision but to varying degrees of complexity. In about a month, a subcommittee would begin a more detailed review. This group planned to have recommendations and options for revisions available for consideration at the fall 2008 ANSTF meeting. In the meantime, Reid would like a sense of the ANSTF regarding whether member agencies used the existing protocols, how resulting responses were reviewed and evaluated, and how

they confirmed adherence to the protocol requirements. People were to send responses and comments to david.reid@noaa.gov.

Frazer commented that an executive secretary was key to having fully functional committees. Orr suggested that, once hired, the new executive secretary should meet with experienced committee chairs to create a standard process for assessing the feasibility of requested tasks, based on available resources.

Response to Quagga Mussels in the Western States

Larry Riley, Arizona Game and Fish Department, updated the ANSTF on the status of quagga mussels (*Dreissena rostriformis bugensis*) in the Southwest since the panel presentation at the fall 2007 ANSTF meeting. The quagga mussel, first found in Lake Mead in January 2007, was no longer a candidate for eradication. He showed maps of quagga mussel distribution in the contiguous United States as of January 2007 and then quagga and zebra mussel (*Dreissena polymorpha*) distribution as of April 2008. The increased distribution was dramatic. In the West, quagga mussels had been confirmed in the lower Colorado River, impacting Arizona, California and Nevada, and they were reported, though not confirmed, in Lake Powell on the upper Colorado. No confirmation had been reported since the August 2007 report that veligers were detected. Zebra mussels had been found in California and Colorado. [Quagga mussels were reported in Colorado as of July 2008, after the ANSTF meeting.]

One area of research had been quagga mussels' growth rate in the Southwest. Evidence indicated that their growth rates, at 1 mm per week, were higher than those in other areas. This higher rate would make them reproductive in their first year of life.

These species were of special interest for their potential impacts to hydroelectric facilities. Riley showed photograph of mussels apparent behind a sight glass for Parker Dam in Arizona. During an outage on the Central Arizona Project, some of these kinds of plumbing features were opened to assess the mussels. The copper in some of the pipes appeared to inhibit them.

Little was known about their reproductive strategies in the Southwest. So far, temperatures had not been cold enough to stop their reproduction, and occupation rates were rapid. Other photographs showed concentrations of quagga mussels on test plates at Parker Dam and their presence at over 200 feet underwater at the Hoover Dam intake tower. Using test plates, researchers found a sharp increase in population density at Parker Dam and Lake Havasu. Another concern was the chemical degradation (corrosion) that quagga mussel pseudofeces might have on metal.

Riley talked about various communications strategies that had been employed. Most of the communications focused on boat owners and utility operators, but the latter had not engaged much yet. The states were seeing enforcement as part of the strategy for containment. California, Utah, and Colorado had pushed legislation, but Arizona had not. Law enforcement had to balance reasonable suspicion and probable cause against the 4th Amendment Constitutional rights of boaters. California had closed some boater access points and required inspections. And border inspection stations were also looking for mussels on boats and trailers coming into the states (not those exiting).

He summarized effects of mussels, such as flow restriction, chemical degradation, and impacts to the food chain, habitat, water quality, water resource industry, and toxic accumulations. He also talked about the kinds of facilities that could be affected by these mussels in the Southwest, including storage reservoirs, diversion structures, conveyance channels and their appurtenant structures such as trashracks and radial gates, drains, and inverted siphons.

Bob Pitman, USFWS, talked further about slowing the spread of aquatic nuisance species in the West, spotlighting zebra and quagga mussels. He showed photographs of mussels on the undersides of boats and trailers, including a National Park Service patrol boat from Lake Mead.

He commented that the rate of spread would depend on actions by state agencies and interagency councils. These entities needed to strengthen state statutes and enforcement, use standard messages with boaters, improve boat-washing capacity, implement rigorous prevention at high-risk waters such as Navajo Reservoir, and engage marinas and stakeholders in prevention efforts.

So far, the Rio Grande Basin was not infested, and aquatic invasive species planning was on a fast-track in New Mexico, with boat ramp inspections being planned. Colorado had implemented emergency regulatory authorities, and Utah had authorities in place, with active preventions underway. In California, a steering committee was forming through the Metropolitan Water District.

Closing Business and Adjournment

The ANSTF reviewed decisions and action items. Then the next meeting was tentatively scheduled to begin October 28 in Arlington, with an alternative date of October 21. The meeting was adjourned at approximately 4:30 P.M.