

AQUATIC NUISANCE SPECIES TASK FORCE: MINUTES OF THE 2005 FALL MEETING

On October 19 and 20, 2005, the ANSTF met at the Hyatt Dulles in Washington, DC. This document includes the following sections:

- Summary of the two-day ANSTF meeting
- Summary of the ANSTF and regional panel heads meeting (held on the afternoon of October 19)
- An acronym list for easy reference
- A list of the common and scientific names of species mentioned

ANSTF FALL MEETING OCTOBER 19 AND 20, 2005

Decisions

- The spring 2005 meeting minutes were approved.
- Sharon Gross (USGS) accepted appointment as co-chair of the ANSTF Research Committee.
- The USCG appointed Dr. Richard Everett to represent it on the Research Committee.
- Although the ANSTF Report to Congress for FY 2004 will be submitted without budget information, an appropriate level of budget detail will be included in future annual reports.
- The ANSTF unanimously approved the *Caulerpa National Management Plan*.
- The ANSTF approved the list of action items.

Action Items

- ANSTF co-chairs will ascertain the interest of the Pacific islands in participating on the existing Screening Aquatic Organisms Working Group and/or creating a Pacific islands regional panel. Communications on this issue will be provided to Richard Orr (NISC), Prevention Committee chair.
- Pam Thibodeaux (USFWS) will implement the clearance process for the FY 2004 Report to Congress.
- Executive Secretary Scott Newsham, working with ANSTF members and regional panels, will develop an annual reporting process and associated document formats. The target date for a draft process is December 15, 2005.
- The Executive Secretary will look into FACA concerns of the regional panels.
- Pam Fuller and Tom Stohlgren, both of the USGS, will coordinate to discuss the relationship of Stohlgren's predictive modeling work with objectives of the Detection and Monitoring Committee. Fuller will report results of their discussion at the next ANSTF meeting.
- The Executive Secretary will coordinate with Jeff Herod (USFWS) on a list of assistance needs regarding *Nerodia* species to disseminate to members.
- Jeff Herod will seek opportunities to work with other groups concerned with invasive and/or declining herptiles (such as the Partners in Amphibian and Reptile Conservation and Declining Amphibian Population Task Force).

For easy reference, acronym and species lists are included at the end of this document

- ANSTF members are to look at primary priorities in the *Caulerpa* NMP, determine whether their organization is in a position to assist, and if applicable, provide contact information directly to David Bergendorf (USFWS).
- The Executive Secretary will distribute copies of the draft Asian carp NMP for review and comment when it is complete.
- Regional panel chairs will submit research priorities to Dorn Carlson (NOAA) by December 15.
- The Executive Secretary will invite appropriate Congressional staff members to future ANSTF meetings.
- The Executive Secretary will coordinate with Bill Wallace (APHIS) to assume the lead on revision of the ANSTF strategic plan.

Spring 2006 and Future Agenda Items

- Updates from each working group of the Prevention Committee
- Presentation on global climate change
- Discussion on estuary projects on the East Coast
- Update on the relationship of Stohlgren's predictive modeling work with objectives of the Detection and Monitoring Committee
- Interest of the Pacific islands in participating in the Screening Aquatic Organisms Working Group of the Prevention Committee or creating a new regional panel

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Day One Welcome and Preliminary Business

ANSTF co-chair Tim Keeney (Deputy Assistant Secretary for Oceans and Atmosphere, NOAA) welcomed participants to the ANSTF, had them introduce themselves, and conducted the following preliminary business:

New Executive Secretary—Scott Newsham, 1998–2003 ANSTF representative from the USCG, accepted the offer to be the new ANSTF Executive Secretary and began work September 19.

New ISAC Chair—Last week, ISAC elected Ron Lukens (GSMFC) as its new chair.

Changes in ANSTF Membership—New members include the NPS (Mike Soukop) and MARAD (Carolyn Junemann). Representation to the ANSTF has changed for the DOS (Dr. Virginia “Ginny” Cox, American Association for the Advancement of Science fellow) and MICRA (Mike Armstrong, Arkansas Game and Fish Commission). Fisheries and Oceans Canada, which holds observer status on the ANSTF, has designated Denis Rivard (Acting Director General of Fisheries, Environment and Biodiversity Science) as its representative. Rivard is co-chair of the Canadian Council of Fisheries and Aquaculture Ministers’ Aquatic Invasive Species Task Group.

Members Unable to Attend—Neither Soukop nor his alternate from the NPS was able to attend. Soukop had submitted highlights of FY 2005 invasive species management (included in the briefing book). Melissa Brandt (Office of Oceans Affairs) substituted for Cox as the DOS representative; and Russ Mason substituted for Larry Riley as the IAFWA representative. Other members unable to attend included John Dekam (American Water Works Association), John Kahabka (American Public Power Association), and Mike Ripley (Chippewa Ottawa Resource Authority). Knowing that he would be unable to attend, Ripley had asked that ANSTF members read the section of the GLRC’s draft action plan in the briefing book. The Chippewa Ottawa Resource Authority has worked with representatives from the Great Lakes states, Great Lakes Fishery Commission, NOAA, and others on what he believes is a concise, comprehensive document that deserves to be considered by policymakers.

Meeting Management—Keeney reviewed meeting logistics and procedures, including accommodations for public input. He asked for modifications to the draft agenda. None were made, and the agenda was approved by the ANSTF.

May 2005 ANSTF Meeting Minutes—Natalie Chavez (Chavez Writing & Editing) was present to document the meeting, allowing ANSTF administrative staff to engage in the meeting and interact with participants. The USFWS is working to contract with Chavez for the next two years. ANSTF members voted to approve the May 2005 meeting minutes.

Review of Spring 2005 Action Items

Executive Secretary Newsham reviewed the following action items from the May 2005 meeting:

Task	Status
Get the draft annual report to ANSTF members by the end of June.	Complete. Will discuss timeline/process.
Develop a timeline/process for developing information for future annual reports (attempting to submit the report by the end of the calendar year).	Pending, based on completion of annual report.

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Task	Status
Develop a template/structure for information requested for the annual report.	Pending, based on completion of annual report.
Give IAFWA 60 days to see if they can find a Control Committee chair.	In progress (may not be possible). Unable to find a chair but have interest in participation.
Charge Steve Kendrot (APHIS) with determining whether a nutria control committee is necessary (including developing a scoping meeting, potential membership, and potential responsibilities if a national management plan is deemed unnecessary).	In progress. Spoke with Kendrot. Not much progress over summer, but actively pursuing. Has interest from number of people. Will keep informed.
Once the Control Committee is formed, have its members decide whether to add restoration to its name or to create a restoration working group.	Pending, based on formation of the Control Committee.
Work with regional panels and their state contacts to get input on the revision process for state ANS management plans.	Complete. Finalized the revision process and final version is in the process of being distributed.
Get comments on the North Dakota ANS management plan to the Executive Secretary by June 15, 2005.	Complete. Comments forwarded to North Dakota and incorporated; final plan now complete.
Get comments on the Kansas ANS management plan to the Executive Secretary by July 1, 2005.	Complete. Comments forwarded to Kansas and incorporated; final plan now complete.
Hire an Executive Secretary.	Complete.
Continue website development, including dealing with site update/maintenance issues and looking for software to help manage links (Web Page Working Group).	In progress. New web page coming online now; other issues still being addressed. Will speak about later.
Seek participation from the U.S. Department of Homeland Security Borders/Customs in the Stop Aquatic Hitchhikers! campaign.	Pending. Will work with Joe Starinchak (USFWS). Inspectors in the USDA were transferred to the Department of Homeland Security. Staff at APHIS are dealing with quarantine policy. Part of job is to coordinate, so willing to facilitate meeting. Anyone involved is to see Bill Wallace (APHIS) to set up in a couple of weeks.
Send letter to Fisheries and Oceans Canada, MARAD, and NPS regarding membership status (ANSTF co-chairs).	Complete. Representatives have been designated.

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Federal Members Annual Reports

To spend more meeting time on the future and on the work of regional panels and committees, the meeting structure was changed somewhat. Each federal agency was asked to prepare a written annual report for the briefing book or handout, and then spend two to three minutes talking to the highlights of the report. Agencies that had not provided written summaries were asked to submit these summaries to Executive Secretary Newsham within the week. He will include them in the ANSTF files that are maintained for FACA purposes.

U.S. Army Corps of Engineers

Al Cofrancesco (ACOE) focused on work that the agency has been doing to study the impacts of AIS on river systems. Operations are significantly impacted, so there has been a big thrust. The budget for FY 2005 was about \$75 million, \$55 million of which was spent on operations. This amount will be increasing by about 4% to 8%, depending on the year. The ACOE is seeing an increased emphasis on ecological restoration projects. Invasives are a major component of these restoration projects because the agency generally wants to reestablish natives. Congress recently gave the ACOE an increase of about \$2.3 million, which it used for several initiatives highlighted in the report.

Animal and Plant Health Inspection Service

Bill Wallace (APHIS) highlighted several issues for the ANSTF. The first—solid wood packing material rule enforcement—isn't an aquatic issue, but it has implications for APHIS regulations in general. This rule requires that packing materials imported into the United States be treated with heat or methyl bromide to stop introduction of forest pests. This rule represents the first significant adoption of an international standard and shifts the focus to nontraditional pathways.

Another area of regulation under consideration by APHIS is Quarantine 37, a longstanding federal quarantine regulating the importation of nursery plants, roots, bulbs, seeds and other plant products into the United States. An advance notice of proposed rulemaking was published December 2004. APHIS held a workshop to develop criteria for categorizing plants that would be excluded from importation pending risk evaluation and approval. This plan is similar to screening systems that have been proposed.

In October 2004, APHIS published a request for information on petitions requesting that APHIS begin regulating other strains of *Caulerpa taxifolia* and other species of the genus *Caulerpa*. APHIS is now conducting a risk analysis to determine whether to list such strains and species on the noxious weed list.

Several years ago, APHIS began programs with Maine and Virginia to eliminate the infectious salmon anemia and spring viremia of carp, respectively. Both programs are now in surveillance modes.

U.S. Coast Guard

LT Heather St. Pierre (USCG) highlighted USCG activities regarding BW since CDR Kathy Moore was unable to attend the first portion of the meeting. More detail is provided in the briefing book. Federal agencies, led by the USCG, actively participate in meetings of the IMO and MEPC. On July 11–15, 2005, the USCG attended the Fourth Intersessional Ballast Water Working Group to continue development and review of several guidelines for the Ballast Water Management Convention. Several completed guidelines were forwarded to MEPC 53, which was held July 18–22. Several sets of guidelines were adopted, including those for approving BW management systems. At this meeting, Moore discussed the review of BW treatment technologies, and as a result, the committee determined that there was no need to change the implementation schedule from the Convention, but due to the uncertainties, another review was recommended for MEPC 55 in October 2006.

Domestically, the USCG has been conducting enforcement and compliance programs for BWM regulations, including penalties for not submitting reports. The USCG conducts BWM examinations together with regularly scheduled commercial vessel examinations and inspections to verify compliance with mandatory BWM practices and recordkeeping requirements. On August 31, 2005, the USCG published a notice of policy outlining best management practices for vessels declaring NOBOB entering the Great Lakes, encouraging them to conduct mid-ocean exchanges on ballast-laden voyages. If they are unable to conduct this exchange, they are encouraged to conduct a saltwater flushing of their empty ballast tanks.

The BW technology test facility at the Naval Research Lab in Key West, FL, is now preparing to install a candidate BW treatment technology for pilot testing to validate the USEPA's Environmental Technology Verification Program protocols. Six applications were reviewed, and the candidates will be announced shortly. Work on the Ballast Exchange Assurance Meter (BEAM) to verify BW exchange continues.

U.S. Environmental Protection Agency

Marilyn Katz (USEPA) distributed copies of her report with USEPA highlights pertaining to ANS. First, she wanted to update people on the BW litigation. The lawsuit arose from plaintiffs' concerns about discharges of ship BW containing potentially invasive species and involved the validity of the USEPA regulation excluding vessels' operational discharges from the CWA National Pollution Discharge Elimination System permitting program. Katz thanked the USCG for its hard work on two key affidavits regarding difficulties in setting BW discharge standards and the state of BW technology development. The lawsuit is still pending, and briefs are now being taken by the plaintiffs (Northwest Environmental Advocates, Ocean Conservancy, and Waterkeepers of Northern California). The government's brief is due October 21. Both parties will appear in California and bring their arguments before the court on November 30. A decision is expected soon after the briefs are filed and both parties appear.

In FY 2004, the Office of Research and Development held its second USEPA invasive species workshop, which was a great success. It also initiated development of models to predict potential distributions of invaders and vulnerable ecosystems and continued work to determine distributions of estuarine invaders in Pacific Coast estuaries.

Two National Estuary Programs in USEPA's Region 6 took major steps this year. The Barataria-Terrebonne National Estuary Program served on the Louisiana Aquatic Invasive Species Task Force and helped develop the state invasive species management plan. The Galveston Bay National Estuary Program formed an invasive species work group, conducted a baseline survey of species, and performed a comparative risk assessment to rank species posing the most serious risk. Both efforts are a good sign that people in Region 6 are becoming more involved.

The Great Lakes National Program Office issued a two-year grant to the University of Illinois to evaluate the effectiveness of an electric dispersal barrier and other grants for development of early detection protocols in the Great Lakes basin.

U.S. Fish and Wildlife Service

Mamie Parker (USFWS) updated participants on ANS activities of the USFWS. A new USFWS director, Dale Hall, was sworn in October 12, 2005. Hall came to the position with a background in fisheries.

This year's budget provided \$460,000 for meetings, support services, and federal notices in support of NANPCA and the ANSTF. Despite budget cuts in FY 2006 and FY 2007, ANSTF activities have not been cut. The USFWS is proud that ANS continues to be a priority.

The USFWS is evaluating whether to list black carp as an injurious species. A public comment period is open on the proposed rule and draft environmental analysis. The USFWS plans to look at silver carp next.

Parker commented that the USFWS is grateful to have Newsham as Executive Secretary of the ANSTF and has already seen benefits in the last three weeks. As “Celebration Queen,” Parker celebrated Kari Duncan, Pam Thibodeaux, and Don MacLean for planning this meeting.

Maritime Administration

Carolyn E. Junemann (USDOT) expressed her appreciation for the opportunity to speak. MARAD is a small part of the USDOT with fewer than 1,000 employees. However, once people join, they rarely leave. Because MARAD is underfunded, staff leverage whatever they can. MARAD has teamed with NOAA and the USFWS on a federal funding opportunity that allows researchers to apply for grant funding. Applicants may make use of a ship from MARAD’s Ready Reserve Force to serve as an experimental test platform. Most ships were activated by the hurricanes, while several are in use in Iraq, but accommodations can be made.

MARAD signed a memorandum of understanding with NOAA last year to convert one of the MARAD barges into a platform for testing technologies. Since engineering contract work can be costly, MARAD is using in-house engineers and naval architects. MARAD is actively seeking a barge for use on the West Coast. Discussions with the Washington State Office of Fish and Wildlife have led to the determination that excess barges or other suitable platforms for conversion are needed.

MARAD is a member of the GLRC and represents the USDOT on the Regional Working Group. MARAD is also a member of the Invasive Species Maritime Commerce Drafting Team. MARAD representatives will attend the GLRC’s Summit II where they hope to introduce the barge.

The website (www.marad.dot.gov) is now functional, allowing visitors to see activities around the country. MARAD also assists researchers looking for commercial vessels. In the future, MARAD hopes to obtain additional funding since members definitely want to “make a difference.” Junemann will have more news to report at the next meeting.

National Oceanic and Atmospheric Administration

In his update of ANS activities for FY 2005, Dean Wilkinson (NOAA) commented that, for the second year, NOAA has been constrained by limited funding. Despite this limitation, some of the earmarked funds were used to address ANSTF priorities. He mentioned the following projects:

- Biennial AIS research and outreach grants competition, resulting in 12 research projects and 4 outreach projects being funded
- Annual BW technology development program, resulting in 12 new projects being funded
- Final report by the Great Lakes Environmental Research Laboratory, evaluating NOBOB vessels as a potential source of new species introductions and recommending further actions (www.glerl.noaa.gov/res/projects/nonbob/products/)
- Final report on surveys for NIS in National Marine Sanctuaries and National Estuarine Reserves on the West Coast, providing baseline information on species occurrence (especially European green crab), and a common method for facilitating comparisons
- Updated version of the Great Lakes Sea Grant Network HACCP training curriculum, aimed at preventing inadvertent contamination of bait shipments and hatcheries with NIS
- Continued collection of biological and distribution information on several species, such as the lionfish on the East Coast, introduced tunicate species, and green crab on the West Coast

- Interagency meetings to coordinate federal efforts regarding BW issues, including a meeting in Washington, DC, and follow-up meeting at the Naval Research Lab in Key West, FL
- Workshop of several federal agencies regarding coordination of 10 federally funded aquatic species databases, leading to formation of the National Aquatic Invasive Species Database Working Group
- Memorandum of understanding on rapid response in the Great Lakes

More detail on these projects is provided in the briefing book.

U.S. Geological Survey

Sharon Gross (USGS) reported on the agency's highlighted AIS research activities for FY 2005 as reported in the briefing book. In cooperation with the USFWS, USGS researchers completed a comprehensive Asian carp biological synopsis. In addition, researchers have studied the life history of silver and bighead carp in their attempt to address a number of research objectives. Scientists at the USGS Columbia Environmental Research Center are researching pheromones, which may prove more successful in controlling these species than chemical methods.

Researchers at the USGS Florida Integrated Science Center have developed a practical, illustrated identification guide to nonindigenous cyprinid fishes in the United States to be used as a tool for early identification of new occurrences of invasive fish species. Pam Schofield was a primary author. USGS researchers at the Florida Integrated Science Center also developed the Nonindigenous Aquatic Species Alert System that can be used to track the spread of exotic aquatic species nationwide. Pam Fuller has been working on this project and the development of NISbase with the Smithsonian Institute and others. They have collected information from many sources.

Researchers at the USGS Fort Collins Science Center have been working with the NASA Goddard Space Center and Colorado University on a national invasive species forecasting system for the management and control of invasive species. Dr. Tom Stohlgren was scheduled to report on this project later in the meeting (see p. 25). The system has been successfully used for saltcedar (or tamarisk), and an effort to use the system for aquatic species is underway. Gross commented that Stohlgren had made a presentation at ISAC the previous week on ways to provide data.

Research on novel techniques to control and manage nutria populations has continued, primarily in Louisiana but also in Maryland. This work focuses mostly on control and restoration.

Gross added that the USGS will have money to conduct research on snakehead fish next year and plans to continue working with Steve Minkinen (USFWS) on a snakehead management plan.

U.S. Department of State

Melissa Brandt (DOS) provided an update in place of Dr. Virginia "Ginny" Cox, who was unable to attend. The DOS has an international mandate and therefore does not address IAS management at a local level. However, it addresses invasive species issues in regional and international negotiations and meetings.

She cited the example of the Asia-Pacific Economic Cooperation (APEC) Invasive Alien Species Workshop held in Beijing in September 2005, which was cosponsored by the United States and China. The workshop was well attended by U.S. technical agencies as well as by state colleagues in the Bureau of Oceans and International Environmental and Scientific Affairs. Others who attended and, in some cases, provided funding included the DOI, U.S. Forest Service, USGS, USDA, and National Science Foundation. The workshop was convened to develop themes of an overarching APEC strategy on invasive species and a cross-cutting action plan. The following recommendations were drafted at the meeting:

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- Encourage development and harmonization of APEC member economy regulatory systems, especially in regard to integrating cross-sectoral approaches to IAS management, and encourage collaboration with other institutions at the regional and national level
- Promote and support research and development among APEC economies that address specific human, infrastructural, and technological capacity-building action needs for improving prevention, detection, control, and management of harmful IAS
- Increase capacity such that all APEC economies can undertake risk assessments and effectively communicate risk assessments between economies
- Recognize that prevention of IAS is the most cost-effective and environmentally sound solution to combating IAS and implement actions that prevent the spread of IAS among APEC economies
- Assist in gathering and collating information on websites and in synthesizing information of management of IAS
- Promote awareness of IAS issues among senior officials, policymakers, community stakeholders, industry, and the general public through media, educational curricula, and other communication vehicles
- Develop management frameworks targeting IAS surveillance, early detection, rapid response, provisional measures, control and management, including voluntary surveillance and other initiatives and technology transfer
- Encourage, through national, subregional, and pathway-specific guidelines, industry-specific best management practices and national legislation
- Increase funding for prevention and management from governments, the private sector, and development partners
- Monitor IAS projects across APEC working groups

ANSTF Committee Reports

Prevention

Richard Orr (NISC) reported on the activities of the joint NISC and ANSTF Prevention Committee. More information is available in the briefing book. Orr thanked the federal agencies for work that they do and distributed a handout describing the committee's current structure (after conferring with NISC last week) and roles and responsibilities of the Prevention Committee and its three working groups. He noted that the report in the briefing book outlines suggestions about the future of the Prevention Committee.

The Prevention Committee has not been holding regular meetings, but the working groups have been meeting and experiencing tremendous activity. Orr suggested having the chair from each working group address the ANSTF for 30 minutes over the next three meetings.

Because the ANSTF is revisiting its strategic plan and NISC is updating the *National Invasive Species Management Plan*, Orr commented that the Prevention Committee may need to reflect on its vision and what it wishes to accomplish.

The structure of the Prevention Committee has been simplified with removal of the Propagative Plant Screening and Hawaiian Island Screening working groups. APHIS took on responsibility for addressing propagative plant screening (per 69 FR 71736–71744). This change was not difficult because the current members of the Propagative Plant Screen Working Group were already tied to the APHIS development, resulting in redundancy. Craig Regelbrugge (American Nursery and Landscape Association) has agreed to keep the Prevention Committee abreast of APHIS's progress.

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The Hawaiian Island Screening Working Group was hard for Orr to drop, but Hawaii has state regulations in place, and screening is already very good. The real need is a committee to address the other 23 Pacific islands that need to be screened, but the Prevention Committee was unsuccessful at involving these islands. He recommended addressing the issue through the International Committee of NISC.

Orr asked for input on the Hawaiian Island Screening Working Group from ANSTF members. Russ Mason (IAFWA) wanted to see the Hawaiian Islands Screening Working Group continue since movement of invasive species to and from the Hawaiian islands still needs significant attention. Others commented on the need for interest from the islands themselves: the ANSTF could not dictate their participation. One suggestion was to see whether the islands were interested in forming their own regional panel. Or they may be willing to participate in the Aquatic Organisms Screening Working Group, chaired by Pam Thibodeaux (USFWS). ANSTF co-chairs agreed to ascertain the interest of the Pacific islands in participating on the Thibodeaux's working group and/or creating a Pacific islands regional panel. Communications will be provided to Orr.

Detection and Monitoring

Pamela J. Schofield (USGS) reported on the activities of the Detection and Monitoring Committee. The committee was charged with developing a database of sampling protocols and then compiling standardized protocols for aquatic invasives. To develop the database, the committee compiled over 200 protocols, mostly for invertebrates and fish. The Detection and Monitoring Committee continues to add hundreds of protocols and refine the searchability of the database. Although the database is not yet available for public distribution, the website at which it will be accessed, <http://nas.er.usgs.gov/queries/protocols>, is operational. The committee is working on a version of the database for public distribution.

At the spring Detection and Monitoring Committee meeting held March 22, 2005, members divided into working groups based on particular taxa and developed a questionnaire to help them write the protocols. A team was sent into the field with the questionnaire and will be presenting its findings at the November meeting in Portland.

Because of difficulties with the process and concept, the fishes group was used as a model. This working group compiled a packet of five protocols based on input from experts and the protocols database. These packets were mailed to committee members for review and comment in mid-October. Comments are due at the November meeting. Some of the questions being asked of committee members are how specific protocols can be; whether they are flexible enough to adapt to various regions but similar enough to be compared statistically across regions; how many are needed for each species; whether it is possible to have only one protocol for each species, given equipment specificity; and what the role of volunteer efforts is.

Schofield plans to attend a protocol meeting, held jointly by the IAFWA, NPS, and USGS, in San Diego, CA, in November. The goals of this meeting are twofold: to develop a library of protocols (similar to the efforts of the Detection and Monitoring Committee) and also to develop a database of current and past sampling efforts in various regions.

Following the presentation, ANSTF members talked about the desirability of numerous sampling protocols for individual species rather than different types of systems. Schofield explained that specific species differ enough that it is impossible to organize them by categories or systems. Pam Fuller (USGS) added that they had initially looked for protocols that were transferable but found that approach infeasible for the most part. The Detection and Monitoring Committee is still seeking working group members, especially for the Benthic Invertebrates Working Group. Anyone interested is to contact Fuller.

Research

Dorn Carlson (NOAA) talked about activities of the Research Committee. The first meeting was held July 12, 2005, at NOAA headquarters in Silver Spring, MD. Carlson displayed the list of participants and thanked both ANSTF co-chairs for attending.

The meeting was well represented by agencies and regional panels. Keeney had delivered the welcome where he reminded members to be responsive to issues on a national scale. The role of the Research Committee is to legitimize AIS research, not only by developing priorities but also justifications for those priorities. Co-chair Parker had delivered this charge to the committee and asked them to advise the ANSTF on long-term, medium-term, and annual research priorities and needs; facilitate regional panel research planning and coordination; showcase research outcomes; facilitate other committees' research needs; facilitate information sharing among government and nongovernment researchers; report at each ANSTF meeting; and examine research protocols to ensure that the research itself didn't become a pathway for invasion.

The Research Committee has several steps planned:

- Identify others who should be involved in committee efforts to maintain a well-balanced membership
- Ask ANSTF co-chairs to invite the USCG to provide a committee member
- Ask ANSTF co-chairs to appoint Sharon Gross (USGS) as committee co-chair
- Set up a working group to update the protocols so as to prevent accidental introduction of AIS during research (to be led by Dave Reid [NOAA] and Julie Thompson [MARP])
- Assemble existing research priority documents from members' organizations
- Assemble regional and other available examples of criteria for prioritizing research needs
- Prepare a strawman document setting out criteria for research prioritization
- Work with a student group from Worcester Polytechnic Institute to prepare an inventory of AIS research projects (to be led by Melissa Pearson [NOAA])
- Review the draft ANSTF strategic plan
- Meet again before the spring 2006 ANSTF meeting

Following the presentation, Gross accepted the co-chair position. Kathe Glassner-Shwayder (GLP) asked whether the committee had thought about how to market research outcomes. Carlson noted that they would connect with the ANSTF Communication, Education and Outreach Committee about this issue.

Later in the meeting, Heather St. Pierre reported that Dr. Richard Everett will represent the USCG on the Research Committee.

Communication, Education and Outreach

Joe Starinchak (USFWS) reported that the Communication, Education and Outreach Committee has focused on two campaigns: Stop Aquatic Hitchhikers! and Habitattitude™. The Stop Aquatic Hitchhikers! campaign continues to grow and partners continue to join. Since the last update in November 2004, website usage increased 20%, partner organizations increased 24% to 193 formal partners, e-mail news subscribers increased 17% to 2,168 subscribers, and a new alternate brand signature was developed with western partners to address hitchhikers transported by wading anglers.

The alternate brand signature is an advancement given the spread of the New Zealand mudsnail and whirling disease. It has attracted the attention of the fly-fishing industry and New Zealand. In fact, New Zealand is actively implementing the campaign nationally and flew Starinchak there in February

to advise them about the process for developing, implementing, and evaluating campaigns. They have already seen results, with a 17% increase in awareness due to active application of the campaign.

Other notes of interest include completion of the IAFWA project by the spring of 2006, which will include results from four pilot states. Stop Aquatic Hitchhikers! is being considered as a regional communications vehicle to address high-profile AIS in and around the Greater Yellowstone Ecosystem. The focus is now on states where he hopes to get additional authorities and funding.

Starinchak recently spoke with Marshall Meyers (Pet Industry Joint Advisory Council) and learned that Habitattitude™ is up and running. Industry education and outreach, baselines surveys, and initial outreach are the current areas of focus. Petco inserted the campaign brand into newspaper circulars for September, October, and November, allowing the message to reach 32 million people. Petco also held employee training in October, and in-store displays and fish bags will be introduced soon. Baseline surveys confirmed assumptions about the target audience being part of the problem and established that the target audience sees itself and the Habitattitude™ campaign as part of the solution. The campaign has attracted 62 partner organizations representing agencies, public aquaria, hobbyist clubs, retail outlets, and more. Meyers is also speaking with a potential spokesperson of international fame (Starinchak couldn't share the celebrity's identify) and exploring ways to create independent, ongoing funding sources.

These campaigns have clearly established the ANSTF as the national leader and international presence in AIS public awareness activities. In addition, they have redefined the role of communications, education, and outreach; created new expectations and accountability; and created a new relationship between government and industry. He showed examples of messages being provided to the public, including a document that Patagonia has been including with waders that it sells.

Following the presentation, ANSTF members suggested working through the panels themselves on promoting Habitattitude™. Starinchak replied that the committee was encouraging panels to spread the word within their memberships about how to work with the pet industry and raise awareness. He added that the first Native American tribe just joined, adding to the diversity of partners.

2004 Annual Report/Process for the 2005 Report

Pam Thibodeaux (USFWS) reported on the ANSTF annual report for FY 2004, which is nearing completion. This is the first annual report prepared under NANPCA. Significant structural and other changes have been made based on comments received. Staff included a short preface with the ANSTF charge, which is a requirement under the law. An executive summary will be written. The report highlights items of collaboration with agencies, including the Diplomatic Conference on Ballast Water Management for Ships, Stop Aquatic Hitchhikers! campaign, and the 100th Meridian Initiative.

Based on comments, staff decided to reformat the report to follow the organizational structure of the law. Prevention of unintentional introductions of nonindigenous aquatic species is the first section and includes information about the ballast water management and regulatory program and the ballast water technology demonstration program. The final section before the conclusion is about prevention and control of ANS dispersal. This section contains descriptions of the ANSTF, ANS program, and committees. A subsection on regional coordination highlights accomplishments of each regional panel. A separate subsection on state and interstate ANS management plans was added, with brief descriptions of accomplishments for states that received funding. The final subsection discusses the brown tree snake control program.

In the first version of the annual report, agency reports were added as appendices. Comments from the ANSTF led to removing those reports. Members felt that appending these reports emphasized what individual organizations were doing, regardless of the ANSTF.

According to Thibodeaux, two components are still missing. In 2004, a fair amount of work was done with barriers, so a paragraph or two is needed about that work. Al Cofrancesco (ACOE) agreed to write this information and provide it to Thibodeaux. Dorn Carlson (NOAA) agreed to write about an education piece in the law that charges Sea Grant with providing funding (via its competitions).

Executive Secretary Newsham then talked about the timeline for the ANSTF report. The report will be released on October 24 to 31 for ANSTF review and comment. Editing will occur October 31 to November 7, with ANSTF clearance scheduled for November 8 through 15. The report will go to Congress under Tim Keeney and Mamie Parker's signatures. He asked that members look for anything that would "raise red flags." When the editing is finished, staff will implement the clearance process for the report, which does not need Office of Management and Budget clearance. Then staff will begin working on the annual report for FY 2005.

Following the presentation, ANSTF members discussed whether budget information should be included in future reports. Some members believed that Congress knew how much money was appropriated, but not everyone agreed. Some felt that accomplishments rather than expenditures needed to be the focus. Still others noted that, when headquarters started to investigate their expenditures, they were quite shocked at the escalation. During the 2005 budget process, considerable funds were appropriated for invasive species, but some funds come from operational budgets so seeing the budget information may help Congress understand the impact of invasive species. The ANSTF approved accepting the approach without budget for 2004 but including an appropriate level of budget information in the annual report for 2005.

Newsham proposed that the ANSTF develop an annual reporting process and associated document formats. The target date for a draft process is December 15, 2005. He will coordinate with regional panels and ANSTF members on this process.

Legislative Update

Keeney commented that ANSTF agencies continue to reach out to congressional staff to help develop and advance ANS legislation. He then introduced Joy Mulinex (Great Lakes Task Force) of Senator Carl Levin's (MI) office to give her perspective on the status of ANS legislation before Congress. Mulinex said that Senator Levin is concerned about AIS issues since there is a continual threat of species entering the Great Lakes region through shipping vectors and other pathways.

In 2002, Senators Levin and Susan Collins (ME) introduced the National Aquatic Invasive Species Act (NAISA, S770) and Congressmen Wayne Gilchrest (MD) and Vernon Ehlers (MI) introduced companion legislation (HR1591 [Management] and HR1592 [Research]). The House and Senate bills differ slightly since the Senate bill has been restructured somewhat in the ballast water title to address comments.

NAISA is a comprehensive bill, meaning that it addresses prevention of introductions through a variety of vectors, rapid response to new introductions, control of invaders once they are established, and continuing research. It is a national bill responding to a national problem, although some people in Congress believe that invasive species are a Great Lakes concern only.

NAISA focuses on prevention. It seeks to reduce invasive species introductions from ships by establishing a mandatory BWM program for the country, requiring ships to have an invasive species management plan that outlines ways to minimize transfers on a whole-ship basis, and creating a BW treatment technology certification program. NAISA also seeks to prevent invasive species introductions from other pathways by identifying and managing those pathways that pose the highest risk. The bill authorizes resources for rapid response measures and increases funding and resources for dispersal barrier projects. The bill also addresses education, outreach, and research.

For easy reference, acronym and species lists are included at the end of this document

Because Mulinex works for Senator Levin, she will work to get the bill passed. But she added that she had been asked to talk about other legislative options as well. Both last year and this, Senators Dan Inouye (HI) and Ted Stevens (AK) introduced the Ballast Water Management Act (S363). While Mulinex referred the ANSTF to staff for those Senators for an explanation of S363, she highlighted some of the issues being discussed in Congress with respect to the legislation. One debate centers on when to require BW technology for ships and the desired level of performance. Because BW technology is in the early stages of development, no option is readily available for immediate installation. Congress wonders what will drive technology forward. The two views are to set standards now or wait for technology to advance and set standards later. Some members want to be sure that a proven technology is available before mandating standards. Others believe that the best way to drive technology is to set a standard and deadline. But the question remains: what standard should be imposed, the IMO's or something else. Senator Levin has taken the middle ground. NAISA states that BW exchange will expire in 2011, and BW treatment must begin at that time. The USCG will need to set a standard that "ensures there is no measurable risk that viable organisms will be established." If no technology is available to meet such a standard, then the USCG will require the best performing technology at that time.

Considerable support exists for addressing other ship vectors such as hulls and sea chests. Both NAISA and S363 require the USCG to address these other ship vectors. However, in both the House and Senate, one committee deals with ship vectors and another deals with all other vectors, as well as rapid response, control, and research. Getting these committees to work together can be a challenge.

NAISA addresses all the vectors of introduction. Senator Levin believes that a comprehensive approach is preferable to a ship vector bill because Congress may believe that, once legislation on the ship vector has been addressed, the problem will be solved. S363 was written to stay within the jurisdiction of the Senate Commerce Committee, and it only addresses ship vectors.

Staff has talked about litigation over the USEPA's exemption of ballast water from the CWA and what, if anything, Congress should do. S363 does exempt discharges of invasive species in BW from the CWA; NAISA does not. As S363 moved forward this summer, Senator Levin heard considerable concern from the Great Lakes region opposed to superceding the CWA.

State preemption is also an issue. In the absence of federal legislation, several states moved forward with their own statutes. The shipping industry doesn't want to have to deal with multiple state ballast requirements and has asked Congress to preempt states from enacting differing ballast requirements. S363 would preempt states, while NAISA is silent on the issue. In discussions, other states have said that they would prefer the federal government to take the lead, but they are against state preemption if federal efforts aren't strong enough.

If Senator Levin didn't think legislation was needed he wouldn't have introduced the bill, which has received overwhelming support in Michigan and the Great Lakes region. Senator Levin's office has heard comments about the limitations of existing programs and laws. Every state has a poster child for moving forward with federal legislation. The best chance for passing the bill will be in the second session (2006). Committee staff are focused on the issue of endangered species, but Mulinex noted that the ANS issue is next in line. Many staff are just becoming aware of the issue. She encouraged participants to talk with their legislators and let them know the importance of the issue.

In response to the issue of budgeting and accountability raised during the discussion of the FY 2004 Report to Congress, Mulinex agreed that people do want to see results in federal programs. She suggested that, in showing successes, the ANSTF include budget information in the report, even if it doesn't go into detailed analysis.

Pam Thibodeaux (USFWS) commented that S363 would amend NANPCA as amended by NISA. She wondered what would happen to the remaining portions of the 1996 act if S363 moved forward.

Mulinex answered that the other components would remain in their current status, but she agreed that they would have to be reauthorized at some point.

ANSTF and Regional Panel Heads Meeting

Keeney welcomed regional panel chairs to the table with ANSTF members. He commented that the ANSTF has made a commitment to improving coordination and communication between the regional panels and the ANSTF. The first integrated meeting of the full ANSTF and panel chairs occurred at the November 2004 meeting in Arlington, VA. Based on the positive response, the ANSTF plans to continue with that format at this and future fall meetings.

Many of the regional panel chairs had provided summaries of their annual reports, which were then included in the briefing book. Keeney encouraged regional panel chairs to share regional priorities, accomplishments, and ways in which ANSTF members can individually and collectively help them meet their priorities.

Mid-Atlantic

Julie Thompson (USFWS and Panel Coordinator) talked about MARP activities. The panel had its second meeting September 7 and 8 at Cacapon State Park in Berkeley Springs, WV. The goals of the meeting were to review and approve the standard operating procedures, nominate a chair and vice-chair, develop annual workplans for the working groups, and propose and vote on projects for funding. At the meeting, Dr. Fredrika Moser was elected as chair. Moser has considerable experience with ANS issues. From 1999 to 2001, she represented the DOS on the ANSTF and was a member of the U.S. delegation to the IMO. Moser is now the Assistant Director for Research at the Maryland Sea Grant. In addition, she was actively engages in the Chesapeake Bay Program's invasive species work group and is now involved in MARP. Jim Bean, BASF, was elected to the position of vice-chair.

MARP members had previously formed three working groups: Science and Management, Policy, and Education and Outreach. Each working group presented its annual goals. The Education and Outreach Working Group highlighted four goals:

- Move the panel website to Penn State for further expansion and development
- Develop a brochure about the panel featuring AIS in the region
- Evaluate education and outreach strategies defined in Chesapeake Bay Program's six invasive species plans and select the top two or three to compare with what other panels have done
- Hold a panel logo contest and use the winning logo for the letterhead and website

The Policy Working Group also highlighted four main goals:

- Develop a survey for the member states to determine status, gaps, and needs for management of AIS
- Identify key state legislators, committees, and contacts to reach at a policy level
- Conduct a workshop to assist member states in developing AIS management plans
- Develop an action plan modeled after the *Great Lakes Action Plan* for the governors to sign to demonstrate their commitment to preventing the introduction and spread of AIS

In addition to a survey of the member states to determine AIS priorities and funding needs that will be coordinated with the Policy Working Group, the Science and Management working group had three goals:

- Coordinate with the Policy Working Group on the survey of members states to determine AIS research priorities and funding needs
- Conduct a database review to determine AIS occurrences and ranges within MARP boundaries
- Develop a “Who’s Who” directory on the panel website that will include state, federal, and academic contacts
- Review the national snakehead plan that is being developed by the USFWS

At the end of meeting, MARP members voted to fund the development and expansion of the panel website and the development of a panel brochure. The panel will receive funds from NOAA in the spring of 2006 to develop a rapid response plan.

One of the panel priorities is to help member states develop AIS management plans. States provided updates on their plans at the September meeting. Although West Virginia has no plan, it has support from state fisheries management to develop a plan. Delaware has a comprehensive plan for terrestrial and aquatic invasives that was signed by the governor. However, the plan does not have a detailed species list or implementation table. The state does have funds to implement the plan. Pennsylvania will hold a workshop at the end of October to develop the framework for a comprehensive plan. Maryland didn’t sound very interested and has no plan at this time. In addition, Maryland wanted to focus more on individual species, so the state may need to see the benefits of coordinating with the ANSTF. North Carolina has no plan but will be convening a group to develop one. Neither Washington, DC, nor New Jersey has a plan at this time. However, New Jersey has a state executive order requiring the development of a comprehensive management plan. New York drafted a revised ANSTF AIS plan that has stalled until the New York State Invasive Species Task Force delivers its report to the governor this year.

Following her presentation, Thompson confirmed that only members of the states in the regional panel would be mentioned in the “Who’s Who” directory. Marilyn Katz (USEPA) noted that she has contacts in Maryland and Delaware who may be able to help facilitate state management plans. She will provide this information to Thompson. Thompson also asked others to provide her with information about benefits of developing plans through the ANSTF.

Western Regional Panel

Tina Proctor (USFWS and Panel Coordinator) updated the ANSTF on the WRP. The panel is still working on a work plan for 2006. The panel has decided to return to a different committee structure. Being an older panel, it has gone through several iterations. For the last couple of years, only one committee, the Work Plan Committee, has existed, but the WRP has decided to create others.

The website has been redesigned. Once it has been reviewed, it will be uploaded. The panel recently held elections. Kevin Anderson (Puget Sound Action Team) was elected chair, and Eileen Ryce (Montana Department of Fish, Wildlife, and Parks) was elected co-chair. Proctor praised the considerable work and involvement of the executive committee.

Several projects are underway:

- A rapid response plan is being developed for zebra mussels in the Pacific Northwest. A meeting was held in Portland, OR, September 27 and 28 to convene federal, state, and private players who could be involved in the response to a zebra mussel infestation in the Columbia River basin. The result will be a draft document that sets out a process for response and criteria for capacity building. This project was made possible through funding from NOAA.
- A workshop will be held December 13 and 14 in La Jolla, CA, to develop research priorities for invasive aquatic plants. Several partners will be attending.

- In November, a daylong session is planned for the annual Desert Fishes Council meeting in Cuatro Ciénegas, Mexico. The meeting will cover ANS issues of mutual concern between the United States and Mexico. Cuatro Ciénegas contains the greatest number of endemic species (70) of any place in North America. The WRP will fund a translator and travel costs for eight Mexican scientists.
- Leigh Johnson, CA Sea Grant, is working with Mexican scientists and West Coast port and marina staff to develop materials to educate boat owners about transporting invasive species. Brochures will be developed in English and Spanish.

Proctor reported that the first joint meeting of the WRP and MRBP was held September 7, 8, and 9, 2005, in downtown Wichita, KS. It was an enjoyable meeting at which many topics and needs were discussed. Presentations focused on issues of mutual concern and opportunities to commingle. The following recommendations were developed during the meeting, although they have not yet been prioritized:

- Plan and convene a risk assessment workshop similar to the one sponsored in Tampa, FL
- Determine whether an adequate website exists for saltcedar and develop one if needed
- Extend the 100th Meridian Initiative boater survey to states east of the meridian since data collected so far have been useful when determining the location of hotspots
- Develop a policy on classroom programs including Habitattitude™ and live release of organisms and submit the policy to the ANSTF
- Continue reaching out to the USCG Auxiliary by briefing staff, as invited, and providing packages of outreach materials
- Develop a list of species of common concern and provide expertise to develop models
- Develop and maintain lists of state-regulated species and add them to panel websites
- Provide data and recommendations to the USFWS that will assist in injurious wildlife listings
- Continue interpanel communications concerning activities, issues, and species of common concern through the executive committees

Several other recommendations were offered from the floor:

- Develop a more organized effort (symposium or workshop) on controlling aquatic animal species
- Develop a database on controlling AIS
- Develop an experts database that can be integrated with the USGS database on species
- Perform a global warming risk assessment
- Coordinate baseline survey needs on shared waters
- Develop a tribal involvement model with panels
- Coordinate on research priorities for shared waters

Proctor noted that the two regional panels plan to work jointly on activities from the list of recommendations, but no decisions had been made about which ones.

Gulf and South Atlantic Regional Panel Update

Pam Fuller (USGS) presented the GSARP update on behalf of Ron Lukens (GSMFC) who was unable to attend. The GSARP had not met since the last ANSTF meeting but was scheduled to meet

November 30 and December 1 in Corpus Christi, TX. The 2006 workplan will be discussed at this meeting.

Based on the 2005 operations plan, conference calls were conducted in July 2005 for the Education and Outreach and Pathways and Prevention work groups. The Education and Outreach Work Group discussed tasks identified in the 2005 operations plan and decided to schedule a meeting for September 19 and 20 in Biloxi, MS. However, Hurricane Katrina destroyed the host facility, so the meeting was cancelled. The group may meet in conjunction with the next panel meeting.

The Pathways and Prevention Work Group discussed development of a state-by-state analysis of pathways of AIS introductions using the USGS NAS database. Fuller agreed to conduct the analysis. The analysis is complete and Fuller has written a report. In late August, a conference call was held with the work group to discuss Fuller's report. The group determined that additional analysis should be done. Using the final results, the work group will survey panel members and others to develop pathway priorities.

On August 23 and 24, the GSARP and MRBP cosponsored a risk assessment training workshop in Tampa, FL. The workshop hosted over 40 participants. Bob Pitman (USFWS) and Cindy Kolar (USGS) presented. The purpose of the workshop was to provide training regarding several approaches to conducting risk assessments for AIS. The following presentations and classroom exercises were provided:

- Original ANSTF generic risk assessment
- New ANSTF generic risk assessment
- Process for conducting an actual risk assessment
- USEPA risk assessment process
- Species Analyst and GARP (Genetic Algorithm for Rule Set Production) models
- USGS biological risk assessment model
- The Nature Conservancy plan risk prioritization process
- ISAC/NISC pathways risk assessment process
- HACCP risk assessment
- USFWS and USDA use of risk assessments in rulemaking

The GSARP hopes to host another workshop in approximately six months where a couple of risk assessment approaches will be discussed in depth and participants will do a trial. At its November 30–December 1 meeting, the panel will hold a follow-up discussion on the training workshop.

The GSARP is also coordinating with conveners of the 14th Annual International Conference on Aquatic Invasive Species to sponsor a Gulf and South Atlantic AIS session.

Following the presentation, Fuller noted that no summary materials were available at the ANSTF meeting from the Tampa workshop since workbooks of supporting materials and research papers had been distributed. However, she could provide extra copies of the workbooks for anyone interested.

Northeast Regional Panel Update

John McPhedran (Maine Department of Environmental Protection) summarized recent NEANS activities. McPhedran is the NEANS panel co-chair with Judy Pederson (Massachusetts Institute of Technology Sea Grant College Program). A new co-chair, with expertise in freshwater species, will be elected next year.

NEANS membership includes the states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont, as well as the provinces of New Brunswick, Nova Scotia, and Quebec. However, NEANS has trouble getting representation from Canadians at the meetings because of funding limitations. A possible solution is to hold meetings in Canada. NEANS is also searching to expand participation among the states.

The next regular meeting will be held in Stowe, VT, in November 2005. The steering committee has held extra sessions to explore issues regarding NEANS direction. Last spring, another extra session was held to discuss key components of a successful program for implementing rapid response to ANS in the Northeast. The workshop included presenters from a variety of perspectives including science, policy, regulation, and enforcement. Proceedings will be available this winter. The November meeting will also be used to develop strategies for obtaining resources to do more, including grants and donations from agencies.

Last year, NEANS received a grant from its host organization, the Gulf of Maine Council on the Marine Environment, to revise its website. The new website is expected to be operational before the end of the year.

This year, NEANS applied for a grant through the Gulf of Maine Council on the Marine Environment for contracting with a social marketing expert to design and conduct a workshop on how to achieve behavioral changes and work together on a regional approach to implement social change aimed at preventing the spread of hydrilla. If funded, the workshop will be held concurrently with the panel's May 2006 meeting in Massachusetts.

McPhedran commented that Pederson plans to address the use of aquatic nuisance species in research protocols. Another concern on the marine side, other than ballast water, is other ways (ship hulls, aquaculture, and recreation) of species introduction.

Following the presentation, Marilyn Katz (USEPA) noted that the Office of Research and Development may have started developing research protocols. She will check and provide McPhedran with any relevant information. Dorn Carlson (NOAA) added that the ANSTF has developed a research protocol that the Research Committee may update. ANSTF members also discussed whether the regional hydrilla plan should become a national plan. Although no decision was made, Dean Wilkinson emphasized the need for regional panels to consider rapid response plans.

Great Lakes Regional Panel Update

Kathe Glassner-Shwayder (GLP) presented on recent GLP activities. She noted that, in this climate of fiscal conservation, it's important to collaborate. The Great Lakes region has recently been participating in the Great Lakes Regional Collaboration (GLRC). Although not necessarily a panel activity, the GLRC has direct implications on panel priorities. Glassner-Shwayder distributed an article ("Regional Collaboration Offers Strategy for Curbing Aquatic Invasive Species" by Ted Lawrence [Great Lakes Fishery Commission]) describing the GLRC in more detail.

The GLP has developed a preliminary draft of the *Great Lakes Panel Organizational Strategy and Guidance for Operations*, which was presented for discussion at its April 14–15 meeting in Ann Arbor, MI. This document formalizes the organizational structure and operations of the GLP, which is the first panel to develop such a document. The final document will benefit legislators as well.

Roger Eberhardt, Michigan Department of Environmental Quality, has helped the panel shift from being more information oriented to more action oriented. The GLC provides staff and administrative and technical support. Currently, Tom Crane is serving as Interim Executive Director. In addition, a diverse group of stakeholders makes up the Executive Committee.

At the GLP's spring meeting in Ann Arbor, several agenda items were of national and regional significance: NAISA, USCG ballast water management standards, the United States–Canada bilateral actions report from the DOS, aquaculture operations in the Great Lakes region, Habitattitude™, and the GLRC. All information from the spring meeting is available on the panel website (www.glc.org/ans/).

Each of the three standing committees (Information and Education, Research Coordination, and Policy and Legislation) discussed the status of its priorities document, which will be used as guidance for funding and project development. The Policy and Legislation Committee has yet to start on the document while the Information and Education Committee has a priorities document in process with approval planned for this fall. The Research Coordination Committee has an approved priorities document in place and is constructing an AIS priority species list.

The GLRC was established in a May 2004 Presidential Executive Order as an historic basinwide initiative to address the region's ecological, economic, and social concerns. The GLRC established eight issue-area strategy teams, including one to address AIS, and engaged stakeholders representing public, commercial, recreational, and governmental interests. The AIS Strategy Team was charged with developing an action plan to stop the introduction and spread of nonnative AIS into the Great Lakes. Areas of focus included aquaculture, maritime commerce, canals and waterways, organisms in trade, and recreational activities. The action plan for the AIS Strategy Team is a powerful statement of needs and direction for protection and restoration of the Great Lakes related to AIS. There was a high level of participation from GLP members during the drafting process for the action plan. Eberhardt stated, "The fact that so much was accomplished so quickly was due in part to the groundwork of communications, networking, and actions laid out by the Panel over the last few years." The final document of the AIS Strategy Team was combined with documents from other strategy teams and released for public comment. Once comments are incorporated, the final draft will be presented to the administration in December 2005, where participants of the GLRC will offer it as a road map to direct more funding into the region to accomplish consensus-based goals.

The GLP will hold its fall meeting November 16–17, 2005, in Ann Arbor. The agenda includes updates on regional and national programs and federal and state legislation, discussion of the *Great Lakes Panel Organizational Strategy and Operational Guidance* document, a progress report on the new Great Lakes AIS brochure, committee reports, and a new discussion on joining the Stop Aquatic Hitchhikers! campaign.

The Information and Education Committee priorities document is being developed under the leadership of the committee chair, Emily Finnell (Michigan Department of Environmental Quality) and focuses on prevention, collaboration and partnerships, information management, marketing, education, and evaluation. A completed draft of the document was disseminated in September to the full panel membership for a 30-day comment period (available at www.glc.org/ans/pdf/I-Epriorities4-12-05.pdf). As mentioned earlier, the revised document will be presented at the fall GLP meeting for approval.

The Research Coordination Committee priorities document was developed under the leadership of Phil Moy (Wisconsin Sea Grant) and focuses on prevention through ballast water, NOBOB vessels, and other vectors; coordination and information management; detection, monitoring, and rapid response; control and management; economics; and ecosystem response and impacts. The final document was approved in the fall of 2004 (available at www.glc.org/ans/pdf/researchpriorities2004.pdf). Updates are in progress, and more discussion will occur at the upcoming fall panel meeting.

When developing the *Great Lakes Panel Organizational Strategy and Guidance for Operations* (available at www.glc.org/ans/pdf/05-04-11_opguidance.pdf), staff referred to ANSTF guidance documents from other regional panels. To aid in its development, Kari Duncan (USFWS) presented on

operating procedures of the ANSTF. As the document is finalized, the GLP must address issues under FACA. The final draft is to be presented at the November panel meeting, with approval soon following.

Other updates include the panel newsletter, which is used to inform a wide audience of emerging AIS issues and state and federal developments. The fall 2004 issue's feature article was titled "The Live Food Fish Industry: New Challenges in Preventing the Introduction and Spread of Aquatic Invasive Species." The spring 2005 issue's feature article was titled "U.S. Coast Guard Pushes Ahead for Ballast Water Solutions." And the fall 2005 issue will feature regional collaboration as strategy. All newsletters are available online.

The GLC provides staff support to the GLP and undertakes projects through special funding. With guidance from the GLP, the GLC is developing a brochure. The GLC is also collaborating with the NOAA National Sea Grant Program on state ANS management planning, which will build capacity for development and implementation. Representatives are going to each state and offering workshops. Benefits are already obvious: Wisconsin has an outreach handbook for a specific target audience, and Minnesota will develop a plan that combines terrestrial and aquatic invasive species, an approach that many states are taking. Finally, the GLC is developing a Great Lakes rapid response model, which is available on the GLP website.

Following the presentation, ANSTF members asked about the possibility of Canadian representation on the GLP since the Great Lakes area has a history of cooperation with Canada. Shwayder responded that FACA issues have to be addressed when determining how to include Canadian partners across jurisdictional lines. International relationships are very important and revoking voting privileges would be a difficult thing to do.

Mississippi River Basin Regional Panel Update

Mike Armstrong (Arkansas Game and Fish Commission) reported on MRBP activities. The MRBP, formed in July 2003 at an organizational meeting held in Bloomington, MN, covers the largest geographic area (all or portions of 31 states in the Mississippi River basin) of any of the regional panels. Because it is a newer panel, the learning curve has been steep. Members have been learning from other panels by attending their meetings. Doug Nygren (MICRA), Mike Hoff (USFWS), and Jay Rendall (Minnesota Department of Natural Resources) were attending other ANS workshops and therefore unable to attend this meeting.

The MRBP recently cosponsored a risk assessment training workshop with the GSARP and hopes to work with the GSARP and WRP to convene another training workshop within the next six months.

The spread of Asian carp and their impacts is a priority concern of the panel. This concern brought the Mississippi River states together and is the most contentious issue for coordinators. There is still no consensus agreement on how these species should be addressed. They threaten to impact other resources in the Great Lakes, and MICRA has requested that the black carp be listed as an injurious species. National issues of interest to members include Asian carp regulations, an Asian carp management and control plan, NAISA (NISA reauthorization), and other ballast bills such as the Ballast Water Management Act (S363).

The panel's working committees continue to refine their responsibilities and work plans. The MRBP has also drafted a position statement on barriers and fish passage that is available on the MRBP website, is developing a brochure available this winter that will be a field guide to AIS in the Mississippi River and Great Lakes basins, and will be determining research priorities and sending them to NOAA for the next request for proposal. In addition to the field guide, the MRBP will reprint and distribute the Stop Aquatic Hitchhikers! brochure to all Mississippi River basin states.

The MRBP is attentive to the Chicago Sanitation and Ship Canal dispersal barrier and supports full federal funding of that project. The MRBP is also researching the feasibility of adding fish passage barriers in the Mississippi River to prevent further expansion of Asian carp to pools in the Minnesota area.

The panel will hold officer elections later in 2005. Rendall and Hoff are currently co-chairs, but they will be rotating out.

Regional Panel Issues

Following presentations about regional panel activities, the following issues were raised and discussed:

- **Economic Impacts of AIS**—Participants expressed frustration about the need to provide information on the cost of AIS to the economy but having no real understanding of that cost. Marilyn Katz (USEPA) agreed that the only numbers available are based on accounting methods. She planned to talk the next day about an USEPA-sponsored effort to develop a method for estimating economic impacts, first at regional (ecological) levels and then at the national level. The USEPA's Office of Water is committed to providing funding, and NOAA is interested. She encouraged other agencies to collaborate on and/or help sponsor the project. She believed it could take 12 to 18 months to pilot the analysis for a couple of regions.
- **Effects of FACA on Regional Panel Business**—Kathe Glassner-Shwayder (GLP) asked for clarification on how FACA impacts regional panels. The issue of how FACA applies has concerned regional panels and other multiagency organizations that have representation from Mexico and/or Canada. Attorneys say that these representatives cannot be members of the panels but can advise them on an ad hoc basis. But the panels don't want to undermine the trust and relationships that have developed. In addition, the panels themselves can become conflicted, with some members wanting to "go on with business as usual" and others wanting to "follow the letter of the law." The ANSTF is a FACA committee. Ex officio members do not have a formal vote, but they provide advice and counsel. Executive Secretary Newsham said that he has been speaking with Glassner-Shwayder and others from the USFWS about the issue. He believed that the issue to be clarified is the relationship of the regional panels to the ANSTF. His initial inquiries indicate that the regional panels are not bound to FACA requirements since they are committees of the FACA-chartered ANSTF and report directly to the ANSTF. He will continue researching the issue and formalize his findings into the guidelines for the regional panels. John McPhedran (NEANS) also requested that Newsham look into whether FACA constrains regional panels from engaging other funding sources.
- **Funding to Help Create a Taxonomic Expert Database**—Pam Fuller (USGS) reported that the GSARP had identified development of a taxonomic experts database as a regional priority. After learning that other panels and organizations also thought it was a priority, she sent a joint recommendation to Kari Duncan (USFWS) for the ANSTF to establish the database at a national level. Specifically, Fuller was interested in obtaining funding for developing the database framework. She anticipates that the project will cost about \$40,000. She has requested \$15,000 from the National Biological Information Infrastructure (NBII), and NOAA has expressed interest but confirmed no dollar amount. She requested that the six regional panels contribute about \$4,000 each. Regional panel heads were concerned that the additional cost of populating the database would preclude them from contributing to creation of the framework. They were also concerned about how the database would be maintained once it was created and populated.

Earlier in the year, Fuller had distributed a strawman proposal to panel members (included in the registration packet). She will resend it to panel members as well as to Russ Mason (IAFWA) to forward to invasive species folks at state agencies for input. She said that she could move into

database design if NOAA could provide \$20,000 to supplement the \$15,000 from the NBII. ANSTF members requested that regional panels talk about the database at their next meetings. Keeney would like to get a commitment from the regional panels to populate the database once it is designed. The ANSTF also thought it was worth requesting that the NBII provide funding to maintain the database.

- **Regional Priorities for the Sea Grant Competition**—Carlson renewed his request that regional panels submit their research needs to him so that this information could be used in NOAA's Sea Grant competition. In light of the discussion on FACA, he wondered whether the regional panels should submit their research needs to the ANSTF for forwarding to him as it sees fit. ANSTF members felt that the regional panels' input was informational and should be provided directly to Carlson. The information needs to be about 500 characters long and submitted by December 15.
- **ANS Funding/Enhanced Awareness among Legislative Staff Members**—When asked about 2006 ANS funding, Kari Duncan (USFWS) reported that the USFWS received a \$1 million increase, a quarter of which is dedicated to development and implementation. State plan funding totals \$1.075 million for the coming year, and appropriations appear to be stable. Duncan notes, however, that as more states develop plans and money is distributed among them, the net effect is a reduction. Nineteen states were eligible for funding in FY 2005. Plans for Texas and Connecticut have been reviewed and others are expected to be submitted for review in calendar year 2006. Several participants commented that funding is not the only reason for states to develop ANS management plans: the plans also help coordinate infrastructure and efforts. However, the ANSTF's role is not to seek appropriations but to facilitate development of state plans. Al Cofrancesco (ACOE) urged the ANSTF to consider the potential to raise congressional personnel or staffers' awareness so that they can communicate the magnitude of the problem to the senators and representatives for whom they work. He also suggested that field trips associated with the ANSTF meetings was a key vehicle for raising legislative staff awareness.
- **ACOE Meeting in Florida**—Cofrancesco reported that the ACOE Chief of Engineers would be holding an Environmental Advisory Board meeting on December 1 at the Embassy Suites Hotel in Orlando, FL. The Environmental Advisory Board advises the Chief of Engineers on environmental policy; identification and resolution of environmental issues and missions; and address of challenges, problems, and opportunities in an environmentally sustainable manner. He said that, at the last few meetings, few comments have been provided by outside agencies or civilians. The agency would like to have more discussion. He encouraged anyone having anything to discuss regarding adaptive management to make public comment. Cofrancesco added that he would circulate the Federal Register notice (70 FR 69321) to ANSTF members.
- **Template for Regional Panel Annual Reports**—Duncan noted that, under ANSTF procedures, regional panels are expected to provide meeting minutes, recommendations, and annual reports to the ANSTF. Financial reports are required from those panels receiving funding from the USFWS under a grant agreement. The ANSTF has talked about creating a template the annual report to facilitate completion and submission, but this has not been done due to the vacancy in the Executive Secretary position. Newsham will work with ANSTF members and regional panels to develop the annual reporting process and template. He aims to have a strawman process and template available for review by December 15.
- **Reports on State and Interstate Management Plans**—Lisa Windhausen (Lake Champlain Basin Program) asked about a template for reports on state and interstate management plan accomplishments. Those reports are due in November, and she wondered whether they provided the necessary information for the annual report to Congress. Duncan thought that this template could be developed next year as the strategic plan was revised. She believed the ANSTF should definitely consider the issue since those reports reflect how the ANSTF does business at the state level.

For easy reference, acronym and species lists are included at the end of this document

Day Two Welcome

Parker welcomed participants to the second day of the meeting. She introduced new member Susan Haseltine, representing the USGS. Parker also announced the upcoming retirement of Bill Wallace (APHIS) and wished him well. She hoped that he followed the example set by Dean Wilkinson (NOAA) who had “retired” but stayed very much involved. Wallace spoke about how much he has enjoyed working with the ANSTF. APHIS has a mission to protect resources, and he has valued being able to work with the ANSTF, which has a different perspective but a similar mission. He has enjoyed the policy analysis, budget, and planning discussions, but mostly he has enjoyed the people.

Invasive Species Forecasting System

Sue Haseltine (USGS) introduced Tom Stohlgren who works at the USGS Fort Collins Science Center in Colorado. As result of his work and other monitoring occurring within the USGS, the department asked him to focus his efforts on forecasting related to AIS early detection and rapid response. The hope is that forecasting will promote early, proactive efforts so that agencies do not always have to operate in “control mode.” She added that Stohlgren brought integrity to the ecological side of forecast modeling, while NASA brought the technical help. Although such modeling is generally easier on the terrestrial side, they intend to encompass aquatic systems as well.

Stohlgren then talked about improving prediction of AIS invasions. Because invasive species are not easy to catch, proaction is crucial. Saltcedar (also called tamarisk [*Tamarix*]) has been the poster child for this project. He said that his team began with terrestrial plants because they were easier to follow and model. At a recent NASA–USGS team meeting held in Fort Collins in June 2005, they unveiled new, improved forecasting models that met a broader range of user needs.

When studying tamarisk in Colorado, they found 40 different databases, none of which had been combined. There were also substantial gaps in most of the databases such as whether invasions were heavy or light or what relationships tamarisk had to habitat. These individual databases didn’t allow managers to predict with much success areas of potential invasive. More information was needed on other species, characteristics of the environment, and the presence/absence of tamarisk. Managers want to be able to use their web-based solution that has early detection and rapid response capabilities as well as information about native and nonnative species (see www.niiss.org/). They want to be able to produce “real-time living maps” of harmful invaders to inform and support control and restoration efforts.

Stohlgren and John Schnase (NASA) have had an article accepted for publication in *Risk Analysis* (“Risk Analysis for Biological Hazards: What We Need to Know about Invasive Species”). In this paper, they note that, to forecast invasions, certain information needs to be known: current distribution and abundance, data completeness, potential distribution and abundance, past and potential rates of spread, risks, containment potential, opportunity costs, and legal mandates. The tamarisk mapping initiative includes database creation of living maps, literature reviews, biomass study, habitat suitability modeling with NASA, a tamarisk white paper with the U.S. Bureau of Reclamation, and a tamarisk economics study, all aiding the development of national early detection and rapid response capability for invasive plants, animals, and wildlife diseases.

Stohlgren then showed slides of mapping that had been done for Grand Staircase–Escalante National Monument (priority weeds) and Cerro Grande, NM (predicted spatial map of total plant species richness). Spatial modeling techniques can show spatial variation and uncertainty, a capability that helps managers allocate funds to the most effective areas instead of randomly guessing.

The USGS is successfully developing a system to track and monitor all invasive species on the globe, called the Global Organism Detection and Monitoring (GODM) system. It is now available for various

users to input data on all species of concern (www.niiss.org/). The GODM database documents and maps terrestrial and aquatic plants, animals, and wildlife diseases at local, state, regional, national, and global scales. Although it is security controlled with log-in and metadata, thousands of users (project managers) can contribute data and attributes, and everyone can access data shared by a project manager.

Stohlgren said that they have started gathering data points. Over 400 people have contributed to the database online, and these data are free to the public at the National Institute of Invasive Species Science website (www.niiss.org). A map of any spot can be created and downloaded to a laptop, including potential and probable distributions. Data are added in real time and subtracted when a spot is treated. He demonstrated use of the database. Ultimately, the Invasive Species Forecast System will be able to create landscape-scale predictive maps of invasive species distribution. These maps can be adapted to suit the diverse needs of state, local, and federal agencies; land managers; tribes; ranchers and farmers; and interest groups.

Stohlgren compared modeling efforts to date as modeling haystacks when we need to model the needles in haystacks so that we can see where invasions start. To help address this issue, NASA was involved. NASA researchers suggested adding MODIS time series data, collected at satellites, for solar radiation, evapotranspiration, and other factors. Stohlgren commented that it was like having a weather station for every square kilometer. The combined effort and data are resulting in a model that will take substantially less time, under 2 minutes, to run. The team expects the Invasive Species Forecasting System and GODM system to be fully operational in 18 months.

Stohlgren continued demonstrating model output as he talked about data collection, statistical accuracy, and process. That process starts with inputting outside data and targeting surveys for invasive species. Then data are automatically uploaded to GODM and checked for quality. Managers can access data online to inform and support decisions regarding early detection. These actions lead to rapid response measures, which in turn provide more data to the system. Stohlgren emphasized the need for agencies to share their data.

He then demonstrated the process with an aquatic species, *Didymosphenia geminata*, a freshwater diatom that, until recently, was found in boreal, subboreal, and alpine areas of northern Europe and northern North America. It now appears to form nuisance growths with greater frequency and extent and for a longer season. Recently, the species invaded the southern hemisphere. He showed photographs of *D. geminata* growths in various streams of the United States and New Zealand. Impacts can be severe. In South Dakota, *D. geminata* was reported in a 22-km reach of Rapid Creek below Pactola Reservoir in 2002. In that stream, concentrations of nitrogen and phosphorus are higher than they were historically, aquatic invertebrates and brown trout populations have declined, and the remaining fish are diseased. The state is now funding a study on the impacts of *D. geminata* and possible mitigations.

Stohlgren showed a global map of where the species has been recorded. With these data, as well as water quality and water chemistry data, they can start modeling and using the same approach to predict potential invasions. They can also find out where threatened and endangered species are relative to the species of concern. He believed that this kind of proactive approach would be the “wave of the future.” He envisions sharing of data among all groups and public information available to public who paid for it. He added that, if we want to be on the leading edge of invasions and pandemics—such as the bird flu—we have to start today.

Several issues were raised and discussed following Stohlgren’s presentation:

- Marilyn Katz (USEPA) and Bill Wallace (APHIS) knew of others involved in predictability research and disease surveillance. They wondered if Stohlgren had coordinated with these people. He responded that there has been no full meeting of forecasters yet. To date, the work has been

more “multidisciplinary” than “interdisciplinary.” He hopes to have workshops with mandatory participation, if necessary.

- Whitman Miller (Smithsonian Environmental Research Center) wondered about the model’s effectiveness for species that may change their behavior over time, such as the diatom. Stohlgren admitted that the process was iterative. It will be more successful with some species than others. Species that change behavior add a wrinkle, but continuing to monitor and add data is likely the only way to improve understanding.
- Kathe Glassner-Shwayder (GLP) asked about challenges specific to aquatic species. Stohlgren responded that depth is a challenge, but the terrestrial side has elevation. Temperature, energy, and precipitation are factors for most species, while chemistry, names and locations of water bodies, and other factors are necessary base layers for prediction of aquatic species invasions. All organisms have environmental space that must be considered.

At the end of the presentation, Stohlgren encouraged people to provide him data or the names of those who could provide data. These data do not have to be species data. Environmental data can be added to base layers in the database. ANSTF members suggested that Detection and Monitoring Committee co-chair, Pam Fuller (USGS), coordinate with Stohlgren about how his work could feed into or relate to the committee’s work and report back at the next ANSTF meeting.

Southern Watersnake Issue in California

Jeff Herod (USFWS) reported on two species of *Nerodia* (eastern watersnakes) that have established populations in western states. The objectives of his presentation were to raise awareness and request support. Although snake species rarely establish populations, there have been some exceptions, such as the brown tree snake, Brahminy blind snake, and Burmese python. Now, two species of watersnakes have been introduced and become established in California with isolated populations in Arizona and Texas.

According to Herod, the taxonomy is very confusing. There are 10 species and 15 subspecies of North American watersnakes. Natural distribution extends east of the Rocky Mountains from Canada to Mexico. *Nerodia* species are habitat generalists, using mostly aquatic microhabitats for feeding, resting, and escaping. Closely related to garter snakes, they are large and heavy bodied. In good habitat, they can be quite numerous. These snakes have the potential to colonize new areas quickly because they are viviparous (bearing live young). *Nerodia* species are also dietary generalists that feed primarily on fish and amphibians.

N. rhombifer (diamondback watersnake) is a single species with no subspecies. It shares some overlap of geographical distribution in the American Southeast with *N. fasciata* (banded watersnake), which has three subspecies (*N. f. fasciata*, *N. f. pictiventris*, and *N. f. confluens*). The USGS recognizes *N. fasciata* as a nonindigenous aquatic species in California. *N. fasciata* has been recorded in Folsom, CA; *N. f. pictiventris* and *N. f. confluens* have been collected in Brownsville, TX; and *N. rhombifer* has been recorded in Lafayette, CA, and Phoenix, AZ.

In California, two individuals of *N. rhombifer* were collected in Lafayette Reservoir in 1990. The population persisted for about seven years, but nothing was done until the public started complaining. Then a consultant collected 35 snakes between June 1996 and January 1997. Several gear types were tested, and it was believed that *N. rhombifer* could be eradicated within three years. In December 1997, there was a mass die-off. Some snakes were necropsied, at which time a respiratory fungal infection was found. Other species were found dead as well. Since 1999, no confirmed snakes have been found, although there have been repeated unconfirmed reports.

Herod displayed a map of unconfirmed and confirmed sightings of *N. fasciata* at Folsom Lake. Seven kilometers of wet areas below Folsom Lake have been surveyed and snakes have been collected. The concern is that the lake flows downstream into the Sacramento area where several threatened species exist, including a federally threatened giant garter snake, which is the ecological equivalent of the watersnake. Another species of concern in this area is the federally threatened California red-legged frog.

Work undertaken in the areas below Folsom Lake has resulted in many observation records and population data on *Nerodia*. In 1992 and 1993, eight *N. fasciata* adults were captured in Lyon Pond. From 1993 to 1999, no monitoring or sampling took place. Then, in 1999, six individuals were captured in a stormwater drainage pond. The total number of field captures from 1992 to 2004 was 69.

One thought is that *Nerodia* species were able to establish so quickly because the landscape that was once ephemeral has been altered to a perennial water system. Observations also point out that mixed communities of mosquitofish and centrarchids populate the water bodies. These wet areas contain introduced species that have similar native geographic distributions as *Nerodia*.

On July 19, 2005, a meeting was convened in Rancho Cordova, CA, by the California Department of Fish and Game to discuss *Nerodia* issues. Six action items related to Folsom were developed during the meeting:

- Develop proposed language to add *N. fasciata* to Section 671, Title 14 of the California Code of Regulations
- Check the availability of grants to secure funding for *N. fasciata* management
- Contact the U.S. Bureau of Reclamation and city of Folsom
- Distribute flyers to the Nimbus Fish Hatchery, discuss the issue of its being a checkpoint for downstream dispersal, and check the progress of the hatchery's HACCP plan
- Provide landowner information
- Conduct surveys in the spring of 2006

In California, *Nerodia* species seem to exhibit invasive characteristics, such as having a diet that is very generalized and being able to establish populations. The greatest concern in the Folsom area is downstream dispersal, which may lead to negative impacts on the giant garter snake, native fish (e.g., steelhead), and native ranid frogs (e.g., California red-legged frog).

In Phoenix, two *N. rhombifer*—a juvenile in 1998 and an adult female in 2005—were collected from a golf course pond. Then in 2005, a self-funded trapping effort began late in the active season. Very little information is available for this population, and needs have yet to be identified. It is still unknown whether there is a population to be eradicated or these occurrences were isolated.

The Brownsville reports of *N. f. pictiventris* (the Florida species) are believed to be transplants. These sightings are approximately 100 to 200 miles outside the species' native range. After 30 search hours in 2004, surveys were unable to detect any specimens.

Herod summarized that *Nerodia* species have been introduced in several locations over several decades, and two species have demonstrated the ability to become established. Two working groups have been created, one in Folsom and one in Phoenix. The Folsom group is developing a control and management plan and seeking funding from several sources. Members recently developed a flyer and have been going door-to-door to get an expanded understanding of the range. The Phoenix group has initiated a distribution assessment and education/outreach activities.

He then encouraged coordination among ANSTF members by seeking participation in a watersnake working group or exploring potential joint meetings with other groups working on this or other

invasive snakes (such as the brown tree snake) in the United States. Distributional assessments and management and control options include requesting information on introduced *Nerodia* species from across the country and researching the biology and ecology of *Nerodia* species for population control. For example, in Folsom, preliminary telemetry work suggests that tagging individuals and then locating the denning site could prove to be a more efficient manner of collecting snakes.

Following the presentation, members of the ANSTF asked how the snake had been introduced into California, since it was important to stop the introduction process as well. According to Herod, anecdotal evidence indicates that the snake was introduced through being discarded (potentially unwanted pets). An education effort is now underway to reduce the introduction of amphibians and reptiles of concern. He also noted that no specimens were preserved of the respiratory fungus that killed a massive number of snakes, so it's unknown whether the fungus was native.

After discussing possible means for helping Herod address these *Nerodia* species, the ANSTF determined that Executive Secretary Newsham will coordinate with Herod on a list of assistance needs to disseminate to members. In addition, Herod will seek opportunities to work with other groups concerned with invasive and/or declining herptiles (such as the Partners in Amphibian and Reptile Conservation and Declining Amphibian Population Task Force).

Update on California *Caulerpa* Eradication

David Bergendorf (USFWS) gave two presentations, one of California *Caulerpa* eradication efforts and one on the *National Management Plan for the Genus Caulerpa*.

There are 70 to 100 species of *Caulerpa*, 28 of which have been found in the United States. Plastic growth forms make identification difficult, which sometimes must be done by DNA analysis. *Caulerpa* has a distinctive creeping rhizome with photosynthetic branches and rhizoids. Many species exhibit invasive characteristics such as a high growth rate, clonal growth form, nutrient uptake from sediments, and low-temperature tolerance that results in a lack of consumers. Although sea slugs and other herbivores feed on *Caulerpa* (one slug lives exclusively on *Caulerpa*) and controls it in native areas, in temperate waters, *Caulerpa* is essentially free of predators. Temperature maps of the ocean indicate substantial areas of the United States where *Caulerpa* could invade.

In June 2000, *C. taxifolia* (the Mediterranean strain) was discovered in California. Probably because of the publicity, a second colony was found soon thereafter. These first two infestations were large colonies (300 to 1,000 m²) at Agua Hedionda, but a third infestation at Huntington Harbor consisted of hundreds of small colonies spread over an area of 10,000 m². Because *Caulerpa* is clonal, a new colony can establish from a small fragment torn away from the original colony.

The good news was that Agua Hedionda and Huntington Harbor were isolated from the coast. It is unknown how these colonies were introduced, but it is suspected that people dumped aquaria in the area. The Southern California *Caulerpa* Action Team (SCCAT) was quickly formed and treated the areas with solid and liquid chlorine and tarps. The areas are also marked for intensive long-term monitoring.

As of September 30, 2005, no *Caulerpa* had been found in Agua Hedionda since September 2002 and no *Caulerpa* had been found in Huntington Harbor since November 2002. To check the accuracy of divers at finding *Caulerpa*, fake *Caulerpa* are regularly planted in the water bodies. Divers have exhibited a 67% find rate for fake *Caulerpa*, which is relatively good. Surveys will continue this fall (2005), with regular updates available online at www.sccat.net.

If no new occurrences are found, SCCAT will recommend that the California Department of Fish and Game declare eradication in 2006. SCCAT will continue monitoring waters in southern California and

conducting outreach programs. When asked about the lessons they had learned, SCCAT members provided a two-page handout that Bergendorf made available on the registration table.

Tropical Florida waters contain several species of *Caulerpa*. In 2001, *C. brachypus* was found off the Florida coast at West Palm Beach. The variety of *C. brachypus* was identified as a nonnative species. In 2004, Hurricanes Francis and Jeanne dispersed *Caulerpa* off the east Florida reefs. It may return or it may have been removed to deep water. A two-year monitoring survey is underway by the Harbor Branch Oceanographic Institute and Florida Fish and Wildlife Commission. Monitoring is difficult because *C. brachypus* can grow to a depth of 300 feet.

Currently, *C. taxifolia* (Mediterranean strain) is a noxious weed listed under the Plant Protection Act. In April 2003, two petitions were submitted to the USDA. One asked to list *C. taxifolia* (entire species) while the second was to list the entire *Caulerpa* genus under the Plant Protection Act. Notices of Availability for public comments were released on October 2004 and January 2005. Currently, APHIS is working on a pest risk assessment for *Caulerpa*.

Caulerpa NMP Final Approval

Bergendorf reported that, in 2003, the ANS staff at the California/Nevada Operations Office of the USFWS was tasked with expanding the *Caulerpa taxifolia* Prevention Program into an NMP for the genus *Caulerpa*. In fall 2003, the *Caulerpa* Working Group (CWG) was formed and held its first meeting in February 2004. CWG tasks included enhancing the prevention program for *C. taxifolia* and expanding it to address other invasive *Caulerpa* species. Bergendorf displayed the members of the CWG and others who provided input and assistance, a group including European scientists who provided a literature review of *C. taxifolia* (Mediterranean strain).

In 2004, the NMP development process included establishing goals, objectives, and actions. The actions component was a wish list of tasks that needed to be done without worrying about who would fund or implement them. Then in 2004 and 2005, the CWG was divided into several subgroups: prevention, rapid response, eradication, long-term management, outreach, and research needs. The subgroups contributed to, edited, and revised the draft. Action items were ranked in relevance to objectives and prioritized by rank. The draft plan was presented to the ANSTF in fall 2004. Bergendorf said that current tasks are to seek final approval of the plan, identify partners to implement actions, and begin implementation.

The plan has undergone several hundred edits and substantial proofreading. There were 124 significant edits based on ANSTF comments, and the plan received 99 significant public comments through 37 letters. Several broad trends were apparent in the public comments. Most felt that *Caulerpa* is a significant threat to the United States and suggested that the NMP recommend listing *Caulerpa* as a noxious weed. Many who commented also expressed remorse that the Prevention Program for the Mediterranean strain of *C. taxifolia* (PPCATA) had not been substantially implemented.

New partnerships in 2005 include the USFWS/California Sea Grant and University of Central Florida, both of which are conducting educational outreach to retailers, hobby groups, and customs agents. The USFWS and Florida Department of Agriculture and Consumer Services are developing a rapid DNA assay test for invasive *Caulerpa*, while the USFWS and University of Arizona are developing a national *Caulerpa* website.

Bergendorf requested that the ANSTF approve the final draft of the NMP and encourage agency support for implementation of the NMP. Specifically, he listed six primary priorities in need of support:

- Provide “No aquarium dumping” signage for high-risk waterways

- Incorporate *Caulerpa* detection monitoring into ongoing marine surveys
- Map the extent of existing populations
- Evaluate additional biological control for temperate waters
- Conduct outreach to target audiences, independent aquarium supply, custom agents, and dive clubs
- Provide additional contacts that can assist in implementation of the NMP

He asked that agencies wanting to support other actions in the NMP contact him. The ANSTF voted unanimously to approve the *Caulerpa* NMP.

Following the presentation, ANSTF members discussed the issue of native versus nonnative species of *Caulerpa* and concerns about which are invasive and where. Problems with identification of species was also discussed, and possible DNA analysis in the future might help solve this confusing issue.

Successful eradication is rare and can be powerful if handled correctly. Among the lessons learned from most successful eradications is the need to deal with the problem while it is still localized. The group that dealt with *Caulerpa* eradication in California responded within a couple of weeks. Lars Anderson (USDA Agricultural Research Service) has written an article pending publication in *Biological Invasions* explaining why SCCAT was so successful and what problems the team encountered. Other agencies substantially involved with the rapid response include NOAA, California Department of Fish and Game, and the USFWS. ANSTF members noted that an outreach program and state support are critical to rapid response.

Generic Risk Analysis Process

Keeney introduced this topic by commenting that there appears to be some ambiguity regarding the role of the ANSTF in development and use of the ANSTF's 1996 *Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process*. He introduced two speakers—Paul Zajicek, the ex officio ANSTF member representing NASAC who was instrumental in raising the issue, and Richard Orr, chair of the committee that developed the process.

Zajicek expressed his concern that the process is not being used effectively. Since 1996, it has been implemented about eight times by various groups. Of these, most of the federal agencies have used the risk assessment component only, while only one agency has used the risk assessment and risk management components in full. He believes that the tool is most effective when both components are used because this approach brings biologists and managers together so that all parties get “the full picture.” Zajicek encouraged the ANSTF members to use the tool as it was originally designed—to link risk assessment and risk management and include all stakeholders. He believes that the results will be better.

Orr summarized the history of the generic risk analysis process. He had been working on risk assessment processes for APHIS and was fairly new to AIS issues in the early 1990s when he was asked to chair the Risk Assessment and Management Committee. The committee compiled the best document they could at the time, and although only 32 pages long, it included considerable information. Because of changes to methods and the ability to capture uncertainty since its publication in 1996, the process is now being revised by the Risk Analysis Working Group led by Anne Sergeant (USEPA). The issue of connections between risk assessment and risk management has always plagued the working group. Risk assessment is fairly straightforward and easy to describe as a process, but risk management is more complex. So often, the effectiveness of mitigation measures, alone and together, is unknown. Decisions are made within agencies, often with little communication about how those decisions are based.

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Keeney asked other federal agencies to discuss how they implement the risk analysis process. Sue Haseltine (USGS) said that Mamie Parker had recently asked her to look at the process as a new member to the ANSTF. The USGS emphasizes risk assessment and adaptive management. Adaptive management allows follow-up on criteria after decisions are made. She suggested that the process revision emphasize the landscape and regional risk criteria that should be used. This framework is lacking in the current model. She also recommended considering the economics of ecosystem services rather than just traditional economics. Thinking about risk analysis as part of the whole ecological change format is also important, as is more focus on monitoring mitigation and management measures. Zajicek agreed with Haseltine's comments, adding that risk management is often done before the assessment is done (and therefore not based on the science) or long after it's done (and therefore based on "old" science). He highlighted the need to get "cross-fertilization" with managers on the ground.

Orr suggested that Sergeant talk about the status of the process revision: he believed that she could address some of the concerns. Sergeant commented that the Risk Analysis Working group report was included on p. 5 of the joint ANSTF/NISC Prevention Committee update in the briefing book. The working group has met three times in the past six months and developed a list of improvements to be made to the existing *Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process* document. These improvements include a general enough approach to include any potential biological stressor; an explicit planning step for examining the decisions that users are trying to inform; a process for using quantitative data where available (instead of categorical data); a more specific process for documenting data quality and sources; a more robust treatment of uncertainty; improved transparency; explicit discussions of temporal and geographical scales; inclusion of propagule pressure (under colonization potential), stakeholders, risk communication/risk perception, and examples; provisions for testing the revised document; consideration of uncertainty in receiving environment conditions; inclusion of the concept that organisms may come as "biological packages"; a list of species of concern; revised organization so that method descriptions are no longer in appendices but early in the document; and suggestions for executing peer review. In addition, the working group is striving to focus on science and avoid politics as much as possible, as well as taking a more optimistic or idealistic approach.

Bill Wallace (APHIS) reiterated Zajicek's concern as he understood it: that ANSTF agencies are not applying the risk analysis process as it is laid out in the generic document. He then commented that, for APHIS, risk analysis is important. He said that the agency doesn't use the generic document per se, but it does use processes and protocols based on international standards. Orr and his colleagues were influential in providing guidance on these standards, so they are consistent with the generic risk analysis process. The standards are scientific and stepwise, leading the user through identifying risks and costs of introduction and establishment, identifying mitigation options, and determining the extent to which they reduce the likelihood of risks. He believes that whatever process agencies use, it needs to adhere to certain standards: it needs to treat uncertainty thoroughly and be science based, transparent, well documented, simple if possible, and open to review.

Zajicek agreed that different agencies have different responsibilities and their approach needs to be integrated. The practice in the past has been to do a risk assessment and then walk away. He hopes that expertise can be leveraged from across the country. He believes that Greg Conover's (USFWS) process in developing the Asian carp control and management plan is a good example of bringing the assessment and management components together.

Parker and Keeney summarized what they had heard to ensure that it was the consensus of the group. Agencies should use the process document as they see fit within their own regulations, considering all stakeholders and perspectives and making information as transparent as possible. Parker looked forward to the document's revision. Sergeant felt that the concerns shared today are being addressed by the working group. Zajicek suggested that the snakehead management plan be developed using the

same approach as that used for Asian carp; ANSTF members agreed. Kari Duncan (USFWS) affirmed that the USFWS was recently tasked with developing the snakehead management plan.

Asian Carp Management and Control Plan

Greg Conover (USFWS) updated ANSTF members on the management and control plan for Asian carp in the United States. Although the process was initially slow, considerable progress has been made on the plan. The Asian Carp Working Group (ACWG) was formed in 2004. Because some stakeholders have a commercial interest in these fish and want to keep them while resource managers want to eliminate these species, the process has been very interesting and complex. The ACWG includes over 60 members. Six drafting teams were created to develop the draft plan, with each responsible for writing a different component of the plan.

The complete first draft was submitted to the full ACWG on July 29, 2005. The ACWG then met from August 22 to 25 to discuss any revisions necessary so that the plan represented the ACWG as a whole and not just the drafting teams. Revisions were made, and the document was redistributed for ACWG review on October 18, 2005. Comments are due back by November 4. It is hoped that a final draft will be submitted for ANSTF review by mid-December, but the number and degree of comments received will determine the time needed for developing the final draft.

The plan includes seven goals, the first four of which clearly identify actions. The last three goals are repetitive themes found in the first four goals but considered important enough to emphasize separately as well.

- Prevent unauthorized introductions
- Contain and control feral populations
- Reduce abundance of feral populations
- Minimize potential negative effects
- Education and outreach
- Research
- Implementation

The most complex goal is preventing unauthorized introductions. Twenty-two pathways have been identified, including wild-caught baitfish; stocking for biological control; boats, barges, and ships; natural resource management actions; importation into the United States; aquaculture; live transport; unauthorized intentional release; aquarium and hobby industry; research and educational institutions; and recreational boaters and anglers. To address these pathways, ACWG members agreed that no Asian carp should occur in the wild, except sterile carp in planned locations for planned purposes. Wild Asian carp were divided into two groupings: feral and domestic. Feral populations are a continued risk. Domestic stocks that are properly sited are considered a low risk, while those that are poorly sited are considered a high risk.

Additional considerations that went into the recommendations include differences among species and fertility status. Prevention actions were prioritized by uninhabited basins, uninhabited waters within basins, and actions that prevent additional introductions within the existing range.

Conover displayed several slides of management recommendations for biocontrol and live transport and sales for grass carp, bighead carp, and black carp. Because silver carp are not currently in commercial production, the ACWG's recommendation is that states should prohibit the possession, shipment, commercial production, and sales of live silver carp.

The education and outreach section of the plan recommends understanding specific information needs and developing science-based materials and programs. Specific needs outlined within this section are a stakeholder-involved process. The draft plan specifically recommends that the ANSTF provide outreach leadership. Research strategies in the plan include studying the life history and population dynamics, effective sampling and control techniques, ecological and economic effects, and alternatives to farm-raised carps.

The plan contains seven steps to coordinate, oversee, and drive implementation:

- Develop an ANSTF Asian carp management and control committee
- Formalize the roles and responsibilities of partner agencies through institutional arrangements
- Integrate, sequence, and prioritize recommendations
- Seek new funds
- Create criteria and performance measures for evaluation
- Develop an adaptive management framework
- Improve communication and coordination

Recommendations were ranked as primary, secondary, or tertiary, and preliminary costs for implementation were estimated for years 1 through 5 individually and years 6 through 20. Full implementation was estimated to cost \$236 million. Part of the expense comes from recommendations for barriers, which are the most expensive pieces. The costs decrease after the first couple of years when barriers are built. Implementation of one action likely reduces the costs of others, so this cost estimate may be higher than actual.

Following the presentation, ANSTF members spoke about reversion of triploid organisms. Although no reversion of grass carp has been reported, reversions have been reported for other organisms. Daughterless carp technology was also discussed. This technology is being investigated in Australia with common carp. The technology could be considered transgenic, which may raise red flags in the United States. However, there is no movement of genes between species so it should be less controversial. Conover stated that Australia may be within a few years of trying the technology in the field. Daughterless technology works by producing all male offspring, which changes the sex ratios of a population over time and makes it harder for a male to find a mate. Modeling shows that theoretically a population could be eliminated over generations (100 years). The technology is being investigated with common carp, which reproduce more quickly, so the ACWG recommends a wait-and-see approach before beginning research with other Asian carps. ANSTF members also asked about the uncertainty expressed on requiring production of triploid carps. Conover said that the cost of raising triploids could be higher if triploids grow more slowly. Producers are reluctant to agree to triploids without an understanding of the economics and markets for triploid Asian carps.

After the discussion, Executive Secretary Newsham agreed to distribute copies of the draft plan once he received it (possibly in December).

Ballast Water Management

CDR Kathy Moore (USCG) updated the ANSTF on the Coast Guard's international and domestic ballast water involvement, programs, and policy. MEPC 53 was held at the end of July. Prior to MEPC 53, the Ballast Water Work Group met and reviewed ballast water guidelines. During MEPC 53, several sets of guidelines were adopted. These guidelines addressed ballast water management, BWM equivalent compliance, BWM plans, BW exchange, the approval process for BWM systems, and

approval of BWM systems that use active substances. Approval of these guidelines helps set the stage for Ballast Water Management Convention implementation.

Technologies were also reviewed at MEPC 53, as required by the Ballast Water Management Convention, to determine the feasibility of requiring treatment technologies by 2009. No changes were recommended to the Convention. The committee concluded that enough technology development is underway to meet this deadline. Another review will be conducted at MEPC 55 in October 2006.

Additional BW guidelines will be discussed and adopted in later committee and subcommittee sessions. Guidelines for prototype BW treatment technology will be discussed at MEPC 54 in March 2006. Later in 2006, the Bulk Liquids and Gases Subcommittee will further develop and may finalize guidelines for BW sampling, risk assessment, additional measures, and designated areas for BW exchange. A great deal of controversy exists over issues in these remaining guidelines, particularly for the sampling guidelines. It is difficult to develop consensus on what the sampling guidelines are intended to cover, what is outside the bounds of guidance, and what is purely at the discretion of the port state.

At the time of the last ANSTF meeting, there were no signatories to the Convention. However, per Moore, it has now been ratified by several countries including the Maldives, Spain, St. Kitts and Nevis, Syrian Arabic Republic, and Nigeria.

Several ANS bills were introduced into Congress that contained language pertaining to ballast water. The USCG and NOAA participated in two Congressional hearings in the span of three months. The Senate's National Ocean Policy Subcommittee hearing on June 15, 2005, covered both BWM issues and coral reefs. Much of the ballast water portion focused on S363, which was subsequently reported out by the Commerce Committee and sent to the full Senate for consideration. The House's Regulatory Affairs Subcommittee hearing on September 9, 2005, was a field hearing in Michigan that explored issues with the current regulatory regime for ballast water as well as some implications raised by the Great Lakes Environmental Research Lab's NOBOB report.

To assist with ANS prevention in the Great Lakes region, the USCG created and published a policy specifically for NOBOBs. Since the last ANSTF meeting, a public meeting in Cleveland, OH, and a technical workshop were held. At the end of August, the USCG published a policy outlining best management practices for NOBOB vessels. These practices include conducting mid-ocean exchanges or, at the very least, a saltwater flushing of their ballast tanks to remove ANS through discharge while sufficiently changing the salinity of any residual water to kill organisms that may present a risk to the Great Lakes. A policy, rather than a regulation, was introduced since effectiveness of such practices in reducing ANS transfer risks has not been evaluated. Over 99.5% of all ballast water coming into the Great Lakes is on ships that are already managed through exchange, and up to 30% of the empty tanks have residual water salinities at least equal to those of ships conducting an exchange. However, it is unknown whether salinity changes alone will prevent introductions.

When drafting the policy, results from the NOAA Great Lakes Environmental Research Laboratory NOBOB study were taken into consideration. This study identified three subvectors: active organisms in residual water, active organisms in residual sediments, and resting egg cysts in residual sediments. Results showed that almost half (43%) of the tanks sampled had freshwater residuals, the average water residual was 47 tons, and the average sediment residual was 15 tons.

To use treatment technology as an option for BWM, a BW discharge standard that is scientifically meaningful and enforceable must be approved. The regulatory program is hard at work on this standard and will publish supporting documents along with regulations. The USCG is evaluating three different standards, including the standard developed at the Ballast Water Management Convention at the IMO, with the respective environmental and regulatory analyses underway.

The USCG funds the National Ballast Information Clearinghouse (NBIC), which is under the Smithsonian Environmental Research Center. The NBIC receives and processes commercial vessel BW reports submitted as part of the USCG's mandatory reporting requirements. Through data obtained by NBIC, the USCG can monitor vessel compliance as well as observe BWM practices and patterns of BW movement and discharge. These valuable data also allow the USCG to evaluate the efficacy of its BW policy and regulations.

BWM regulation is shared by multiple agencies. Efficacy in reducing the number of discharged organisms will be managed by the USCG (pursuant to NANPCA); registration of chemicals for use in treating ballast water will be managed by the USEPA (Federal Insecticide, Fungicide, and Rodenticide Act); approval of hazardous materials stored on ships will be regulated by the USCG (49 CFR); and acceptability of discharge water quality will be regulated by the states (Federal Water Pollution Control Act).

The USCG established a compliance program to support the mandatory BWM and reporting program promulgated in 2004. As of the first anniversary of assessment of penalties for nonreporting and mandatory BWM, reporting is up from less than 30% to over 75%, with the majority of deficiencies related to plans, reporting, or recordkeeping.

The BW technology test facility at the Naval Research Lab (NRL) in Key West is almost fully operational. The USCG is now engaged in validation testing of the BW testing protocols and the facility. For this validation effort, five applications for a candidate BW treatment technology were reviewed, and a candidate technology selected.

Development of the Ballast Exchange Assurance Meter (BEAM) continues. This device will assist field personnel in determining whether BW exchange has taken place. It measures the amount of dissolved organic matter in a given water sample, since it is an indication of coastal or oceanic source waters. Dissolved organic matter is measured by fluorescence.

Accomplishments at the BW technology test facility include selection and testing of surrogate zooplankton, identification of organism injection methods, slurry injection of total suspended solids and dissolved organic carbon, identification of discharge and in-tank sampling methods, and development and testing of automated methods for assessing concentration of viable organisms. Recent accomplishments at the NRL treatment testing facility include finalizing the injection method for organisms so that they are not killed by being injected into the flowing stream; ensuring adequate process control; and monitoring flow rate, tank volume, temperature, pressure, pH, and other water quality values.

The Key West facility is also working with camera developers for automation of organism enumeration and assistance with live/dead determinations. A series of photographs is taken and algorithms are used to "see" movement. If an organism doesn't move, it is considered dead. Analysis can be completed in six hours. Advanced techniques include counting phytoplankton with an automated system and counting bacteria with an in-house camera and determining whether they are alive or dead with metabolic dyes.

Moore had little to report on the Shipboard Technology and Evaluation Program. One application will continue through the process.

Trends in BWM system development include greater corporate investment, greater flow rate capabilities, investigation of process control, safety and fail-safe measures, and participation by ship owners. Areas still needing to be addressed include validation and peer review, efficacy investigations, biocide issues, and waste stream management.

Other technical issues include testing and environmental impacts of BWM systems, coordination of biocide use and approval, and sampling and verification of the BW discharge standard. In addition, the

USCG will coordinate with other stakeholders to develop and implement ANS prevention and control strategies and conduct research to evaluate NOBOB management methods.

100th Meridian Initiative Update

Bob Pitman (USFWS) presented on the 100th Meridian Initiative. The initiative has a long history and constitutes a large collaborative partnership. In 1993, Harold Tyus, William Dwyer, and Sharon Whitmore released a report titled *Feasibility of Preventing Further Invasion of the Zebra Mussel into the Western United States*. Then, in 1996, NISA required the WRP to make recommendations to the ANSTF, which led to creation of the 100th Meridian Initiative.

In 1998, the 100th Meridian Initiative was created as a strategic approach to 1) prevent the westward spread of zebra mussels and other ANS in the 100th Meridian jurisdictions and the West and 2) monitor and control zebra mussels and other ANS if detected in these areas. The seven components of the initiative are information and education, boat inspections and surveys, commercially hauled boats, monitoring sites, rapid response for new detections, pathway identification and risk assessment, and evaluation of effectiveness.

In the beginning, inspectors concentrated on highway counts along major corridors of travel from east to west and boater and angler interviews up and down states along the 100th Meridian. Boater surveys involved standard questions such as where they had been and where they were going. Inspectors also asked boaters what they knew about ANS and examined boats with voluntary assistance.

Data from the surveys and inspections were managed at the University of Texas, Arlington. The website was created by David Britton (USFWS) who was working on his graduate degree and had the ability to build a database. The purpose of the database was to provide easy access to the records, but it has evolved into the central coordination tool for 100th Meridian Initiative actions. Pitman displayed several pages from the website. The website is updated periodically and provides easy access to brochures, survey forms and instructions, monitoring efforts, pictures, presentations, and meeting minutes.

As part of the initiative, traveler information systems (TIS) have been implemented on highways. These signs advise anyone trailing a boat to tune in for an important message, which is broadcast on short-wave radio. Currently, nine TISs lie along northern corridors, providing a fairly extensive network. The program seems effective but is still being evaluated.

The recent discovery of zebra mussels in El Dorado Reservoir near Wichita, KS, prompted the establishment of the El Dorado Action Team. This team meets regularly to figure out how to address the invasion.

The Lewis and Clark Bicentennial Commemoration introduced new challenges. Targeted actions for the bicentennial include partnerships with Missouri River basin marinas, increased boat ramp signage, press releases, television spots, newsletters, development of a Columbia River rapid response plan, and travels by Bill Zook (a retired fish chief from Washington state who is instrumental in raising awareness).

But boats were still getting through. Seven detections were made in the Lake Mead area. Wen Baldwin, a concerned stakeholder and President of the Lake Mead Boat Owners Association, is afraid of possible spread to Lake Mead. He contacted Las Vegas, NV, news stations and was interviewed during the Colorado River 2004 100th Meridian meeting at Lake Mead.

Another motivated stakeholder, the Prefix Corporation from Detroit, is interested in addressing AIS on boats traveling between water bodies. Their engineers designed a self-contained wash station that can

be moved from site to site using the same garbage disposal trucks found all over the country. They also developed a permanent system for large boats.

Britton analyzed boater surveys at the University of Texas, Arlington. Using a GIS analysis, he developed a top 10 high-risk reservoirs list. Six are now confirmed for zebra mussels. This confirmation indicates that, with the minimal information collected through boater surveys, high-risk reservoirs can be identified fairly effectively. He recently adapted the paper survey forms for digital, computer-based uses. Now data can be collected in the field using handheld computers better known as PDAs or personal data assistants. This capability allows field data to be added to large databases for quick computer analysis and complex modeling. Handwriting legibility issues and input errors are minimized. The bottom line is that this improvement allows resource managers faster access to data to make better decisions.

Most boating anglers have gotten the message. They are aware of zebra mussels. Sail-boaters are a different audience and may not be as well informed as anglers. A focused distribution of trailer stickers helps surveyors understand who has been interviewed and, more importantly, where they were contacted. This information give us more information on boater movement, helping to highlight higher-risk pathways. Surveyors had also heard about anglers finding zebra mussels on fishing lines but found this hard to believe, they conducted a simple experiment using 20-lb monofilament fishing line. The next morning, zebra mussels were attached to the line, suggesting that shoreline and catfish anglers might be a pathway for spread that is not being addressed.

Different concern levels are seen wherever Pitman and others associated with the 100th Meridian Initiative go. Washington state has salmon issues in the Columbia River so is concerned about the zebra mussel, but they are having trouble getting the attention of those in the Colorado River water delivery system. Indeed, some anglers think that zebra mussels are beneficial because they “clean the water.”

Detection and prevention problems include low awareness by fish and game agents and law enforcement agents. It is easier to focus on people who are poaching or overfishing. Their authority to stop, detain, or prevent launch is often unclear. The Pacific States Marine Fisheries Commission is developing ANS training for agents likely to encounter boats with attached zebra mussels. Pitman concluded his presentation with a picture of a very weathered sign, advertising a 100th Meridian museum, that is located in Eric, OK, on Interstate 40. He jokingly remarked that there is no 100th Meridian Museum yet but they are working on it.

Following the presentation, ANSTF members noted that, although the United States has historically expanded westward, AIS have moved in all directions. Most of the discussions surrounding AIS have focused on preventing them from moving west, but AIS should be prevented from crossing the 100th Meridian in either direction.

ANSTF Input to NISC National Management Plan

Lori Williams (NISC) reported on NISC activities and revision of the NISC management plan, including ways to organize and market the revised plan. She commented that NISC publishes a newsletter providing updates on NISC invasive species meetings, activities, and events. The newsletter is available by e-mail twice a month. Williams invited everyone to submit items for inclusion or subscribe to the newsletter by providing her with a business card.

On May 13, NISC held a full council meeting where members approved the first version of the guidelines for ranking control actions in natural areas. Other NISC activities include development of a draft version of the *Fiscal Year 2007 Performance-Based Invasive Species Crosscut Budget*; finalization of the five-year review of EO 13112 for the Office of Management and Budget, which is

now being proofed and will be printed for distribution soon; formation of invasive species councils and similar coordinating bodies in Idaho, Pennsylvania, New York, Washington, and Texas; development of a NISC awards program; planning of a conference on early detection and rapid response with the DOI, USDA, and Department of Commerce; and increase in work on zoonotic diseases, such as bird flu.

In November, NISC plans on issuing a call for nominations for ISAC, which will be beginning its fourth term in October 2006. Because of the considerable turnover, Williams encouraged interested people to contact Dean Wilkinson (NOAA).

The roadmap for management plan revision was approved and discussed at the last ANSTF meeting. NISC decided to wait until the five-year EO review was finished before updating the plan since the review examined the question of whether EO 13112 itself should be revised. Goals of the plan revision include keeping the current plan as a baseline and overall blueprint, making the revision more strategic and focusing of big-picture items, revising for three rather than two years, and indicating priorities and identifying performance goals and targets to the extent feasible.

The process began in September 2005. In the next four months, NISC will assess, analyze, and determine priorities regarding items in the current plan, actions that are being completed by working groups and NISC committees. The Plan Revision Steering Committee is charged with outlining the organization and structure of the revised plan. The structure and organization should set the stage for a more strategic approach and demonstrate how different parts and elements of the plan are tied together. The plan and its goals should be easier to communicate to stakeholders and the public. Overall, goals will be formulated in four or five areas of direct action regarding invasive species. Areas identified in the draft document include prevention, early detection and rapid response, control, restoration, and improved coordination and enhanced collaborations.

The goal was to develop a revision based on input from committees by spring 2005, with the public comment period and clearance beginning in late spring and summer. The ANSTF already has representatives on the Steering Committee.

Following the presentation, Williams noted that NISC was aiming for April or May for the early detection and rapid response workshop. If regional panel members are interested in participating, they need to contact Wilkinson. Executive Secretary Newsham will consult with ANSTF members on the process for providing input to NISC by November 4.

Multiagency Work on Economic Perspective

Marilyn Katz (USEPA) talked about a workshop held in July 2005 on the economic impacts of AIS. The USEPA, who sponsored the workshop, is still evaluating workshop activities and materials. The agency is interested in estimating economic impacts of AIS because its 2003 to 2008 strategic plan includes the target of reducing the rate of invasions in coastal waters. This is a challenging target that may change during revision of the strategic plan. AIS alter the composition of ecosystem goods and services, putting the nation at ecological and economic risk. The USEPA recognizes that effective risk management includes accounting for the value of goods and services affected by AIS. Alterations have led to increased demand for public-sector prevention and control policies and programs to manage risks. Therefore, USEPA policymakers want economic data to inform policy choices for efficiently and effectively addressing AIS. A literature review found a limited number of studies documenting prevention, control, and management costs for specific species and no comprehensive estimates of AIS economic impacts.

Research did reveal David Pimentel's inventory of all AIS impacts, but his estimate wasn't based on any economic method of data collection and couldn't be replicated. The USEPA chose to approach the

problem in a different, more rigorous way since the estimates could be very useful. The agency plans to document magnitude of AIS economic impacts at ecosystem, regional, and national levels; identify the most cost-effective actions, whether they are prevention, control, or management; and compare costs and benefits of targeting AIS with costs and benefits of addressing other environmental priorities.

Several challenges arise during development of an economic estimate:

- Pre-invasion baseline data on existing ecosystem services may not exist.
- Ecosystem data collection is technically challenging, time consuming, and expensive.
- Disaggregating disturbances and determining the proportion of the ecosystem that has changed due to AIS is difficult.
- AIS impacts can vary significantly over short distances and time periods, making extrapolation of measured impacts at one location over a give time challenging.

A steering committee of 11 people was set up within Katz's office. These employees planned a workshop between nonfederal expert economists and ecologists and 43 federal agency representatives. For the workshop, a goal, agenda, white paper, and participant guidelines were developed. The workshop goal was to obtain participants' views on potential conceptual frameworks and bioeconomic tools for use in subsequent development of national and regional market and nonmarket economic estimates of AIS.

The steering committee is still evaluating the results of the workshop. Once completed, results will be posted on the USEPA website. Information from the workshop includes reports prepared by 12 experts, a summary of the workshop that reflects discussions during the breakout sessions, and preliminary conclusions.

The workshop offered a unique cross-disciplinary opportunity for discussion, collaboration, and tool development. Two preliminary conclusions include using current data to develop estimates and developing and evaluating regional estimates before attempting to develop a national estimate. Although these conclusions may not be popular among policymakers, they may represent the best approach for moving forward at an ecosystem or regional level.

Cross-agency efforts to develop estimates will be pursued. A cross-agency group has been formed and held two conference calls. Members of the group will collaborate on goals, strategy, timelines, desired outputs, funding mechanisms, criteria for pilot selection, and cross-agency resource contributions. The USEPA has tentatively identified some funding for the effort but hopes that other agencies contribute as well. Other follow-up includes recommending approaches for developing estimates, providing parameters to senior management and policymakers, and beginning economic development efforts.

The group is looking for support from the ANSTF by identifying agency resources and commitment, considering and integrating panel resources into the design of a pilot, and reporting to agency policymakers on the outcome of estimate development efforts. For example, MARAD may be able to provide estimates at a regional level, based on its economic data, in about 18 months.

Overall, the workshop was a success in that it brought together economists and ecologists who hadn't had the opportunity to interact before. Everyone looked forward to additional opportunities to work together.

Following the presentation, ANSTF members asked why a regional approach had been chosen. Katz replied that some nonmarket costs will be incorporated, an approach that hasn't been used in previous models. However, the focus of pilot studies has not yet been decided. Perhaps when a list of criteria has been developed, the focus may be narrowed, but participants decided to go beyond specific species

estimates and not focus on a single issue. Katz also noted that developing a national estimate will be a challenge since some species can be a tremendous problem in some areas and a benefit in others.

Website Status

Scott Newsham updated participants on the status of the ANSTF website (www.anstaskforce.gov) which is being revamped. The briefing book contained an outline of the basic structure of the new website. To access the beta test site, Newsham provided all attendees with the required username and password and invited them to visit and explore the site. The new site contains a number of buttons on the left-hand side that link to additional information and regional panel websites. The webmaster is very receptive to making modifications, especially to correct any egregious errors that are found. While reviews so far have been complimentary, additional comments are sought and should be sent to Newsham by October 27. Newsham will consolidate the input and forward it to the webmaster who hopes to have the site available to the public by November 1, 2005.

Strategic Plan Revision

Bill Wallace (APHIS) updated the ANSTF on the status of the ANSTF strategic plan revision. Members of the work group are Dean Wilkinson (NOAA), Kari Duncan (USFWS), Everett Wilson (USFWS), Sharon Gross (USGS), Kathy Moore (USCG), and Wallace himself. The work group met for the first time last summer and discussed the context of the plan as well as preliminary ideas for content and structure. The group will start with the previous plan and make revisions tied to components of the ANS program. The timing of the strategic plan revision will be coordinated with that for revision of the NISC management plan.

The work group will also review performance measures. To maintain consistency with the NISC plan, research and education will be strengthened within the current structure. Ballast water, dispersal barriers, and economic analysis are new issues that will be added.

Work group input has been consolidated into a very rough outline. The proposed timeline is that the draft will be refined and released for comments from the entire work group. In March 2006, a draft will be presented to the ANSTF for a six-week review and comment period. Wallace will work with Executive Secretary Newsham to turn over leadership of the strategic plan revision to him.

Meeting Wrap-Up

Before adjourning, the ANSTF requested public comment (none was made), thanked those who helped organize and run the meeting, and evaluated meeting productivity. Members also reviewed and approved the following action items and suggestions for the spring 2006 ANSTF meeting (see pp. 1 and 2).

ACRONYMS USED

ACOE	U.S. Army Corps of Engineers	IAFWA	International Association of Fish and Wildlife Agencies
ACWG	Asian Carp Working Group	IAS	invasive aquatic species
AIS	aquatic invasive species	IMO	International Maritime Organization
ANS	aquatic nuisance species	ISAC	Invasive Species Advisory Committee
ANSTF	Aquatic Nuisance Species Task Force	MARAD	U.S. Maritime Administration
APEC	Asia–Pacific Economic Cooperation	MARP	Mid-Atlantic Regional Aquatic Nuisance Species Panel
APHIS	Animal and Plant Health Inspection Service	MEPC	Marine Environment Protection Committee
BASF	a leading chemical company	MICRA	Mississippi Interstate Cooperative Resource Association
BEAM	Ballast Exchange Assurance Meter	MRBP	Mississippi River Basin Panel
BW	ballast water	NAISA	National Aquatic Invasive Species Act
BWM	ballast water management	NANPCA	Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990
CFR	Code of Federal Regulation	NAS	nonindigenous aquatic species
CWA	Clean Water Act	NASA	National Aeronautics and Space Administration
CWG	<i>Caulerpa</i> Working Group	NBIC	National Ballast Information Clearinghouse
DNA	deoxyribonucleic acid	NBII	National Biological Information Infrastructure
DOI	U.S. Department of the Interior	NEANS	Northeast Aquatic Nuisance Species Panel
DOS	U.S. Department of State	NIS	nonindigenous species
EO	Executive Order	NISA	National Invasive Species Act of 1996
FACA	Federal Advisory Committee Act	NISS	
FR	Federal Register	NISC	National Invasive Species Council
FY	fiscal year	NMP	national management plan
GARP	Genetic Algorithm for Rule Set Production	NOAA	National Oceanic and Atmospheric Administration
GIS	geographic information systems	NOBOB	vessel with “no ballast on board”
GLC	Great Lakes Commission	NPS	National Park Service
GLP	Great Lakes Panel	NRL	Naval Research Lab
GLRC	Great Lakes Regional Collaboration	S	Senate bill
GODM	Global Organism Detection and Monitoring		
GSARP	Gulf and South Atlantic Regional Panel		
GSMFC	Gulf States Marine Fisheries Commission		
HACCP	Hazard Analysis Critical Control Points		
HR	House of Representative bill		

SCCAT	Southern California <i>Caulerpa</i> Action Team	USEPA	U.S. Environmental Protection Agency
TIS	traveler information systems	USFWS	U.S. Fish and Wildlife Service
USCG	U.S. Coast Guard	USGS	U.S. Geological Survey
USDA	U.S. Department of Agriculture	WRP	Western Regional Panel
USDOT	U.S. Department of Transportation		

SPECIES LIST

banded watersnake	<i>Nerodia fasciata</i>
bighead carp	<i>Aristichthys nobilis</i>
black carp	<i>Mylopharyngodon piceus</i>
Brahminy blind snake	<i>Ramphotyphlops braminus</i>
brown tree snake	<i>Boiga irregularis</i>
brown trout	<i>Salmo trutta trutta</i>
Burmese python	<i>Python molurus bivittatus</i>
California red-legged frog	<i>Rana aurora draytonii</i>
common carp	<i>Cyprinus carpio</i>
diamondback watersnake	<i>Nerodia rhombifer</i>
eastern watersnakes	<i>Nerodia</i> spp.
European green crab	<i>Carcinus maenas</i>
garter snakes	<i>Thamnophis</i> spp.
giant garter snake	<i>Thamnophis gigas</i>
grass carp	<i>Ctenopharyngodon idella</i>
hydrilla	<i>Hydrilla verticillata</i>
lionfish	<i>Pterois volitans</i>
mosquitofish	<i>Gambusia</i> spp.
New Zealand mudsnail	<i>Potamopyrgus antipodarum</i>
nutria	<i>Myocastor coypus</i>
saltcedar	<i>Tamarix</i> spp.
silver carp	<i>Hypophthalmichthys molitrix</i>
northern snakeheads	<i>Channa argus</i>
steelhead	<i>Oncorhynchus mykiss</i>
zebra mussel	<i>Dreissena polymorpha</i>