

Meeting Summary
Aquatic Nuisance Species Task Force Meeting
November 13 - 15, 2002

November 13, 2002 - Wednesday

Welcome, Introductions, and Approval of February Meeting Summary - Cathleen Short, USFWS, ANS Task Force Co-Chair

Cathy Short welcomed the Task Force members and guests to the meeting. The Task Force members then introduced themselves and Cathy Short reviewed the logistics of the meeting and reviewed the agenda. She also made a couple of important announcements:

- Dr. Timothy Keeney, from NOAA, will replace Dave Evans as co-chair of the Task Force. Dave Evans left NOAA to become the undersecretary for the Smithsonian.
- Norm Stuckey, from the Mississippi Cooperative Resources Association (MICRA) is replacing Bill Reeves as the MICRA representative to the Task Force.

The minutes from the previous meeting (Feb., 2002) in Alexandria Virginia were reviewed, and approved by the Task Force as written.

Coast Guard Activities and Report on International Maritime Organization (IMO)

Activities – CDR Scott Newsham, U.S. Coast Guard

Scott Newsham started his presentation by reminding the audience that more detailed notes were available in the briefing materials and that he would be focusing his presentation on events that have occurred since the last report to Congress.

- **Penalties for failing to submit reports.** The report to Congress concluded that the consistently low rate of vessel reporting made it impossible to accurately assess compliance. Without good information from reports, it is very difficult to regulate ballast water, and lessen the impact of the regulations based on good info (economic and environmental assessments). They are looking at ways to get better reporting.
- **Developing a process for experimental approval** (perhaps with grandfather provisions to encourage people to experiment with technologies). They are working on draft regulations for this now and may have proposed regulations in the next few months. They will need to go through a Section 7 consultation and consult with State coastal zone management programs.
- **Expanding ballast water management, including exchange, to the whole US including Guam.** Proposed regulations may be out this summer.
- **Establishing a ballast water treatment standard by which treatments will be evaluated.** The International Maritime Organization is pushing for standards that are scientifically defensible, biologically meaningful, and enforceable. The current idea is to use something along the lines of “no detectible quantities of organisms of X size,” however, the 50-100 microns that are currently being discussed won’t capture bacteria, dinoflagellates, or viruses. A full EIS will be conducted and they are shooting to have a standard in the Federal Register by late 2004.

As mentioned above, the International Maritime Organization is pushing for standards that are scientifically defensible, biologically meaningful, and enforceable and they want any ship coming into U.S. to be subject to boarding for biological testing for a standard. Challenges to this include deciding what the standard should be when implemented and how they should phase in the process. There will be an intersessional meeting of the IMO ballast water workgroup in July, 2003. There will be an international diplomatic conference on developing a ballast water treaty in early 2004. Hopefully, a document coming out of the workgroup will be the language to form the basis of a treaty for the diplomatic conference.

Questions from the Task Force and audience - Someone asked about expanding the ballast water guidelines to the whole U.S. and whether the definition of "vessels entering U.S. from out of the EEZ" would include the Gulf of Mexico. CMDR Newsham answered that ballast water management includes all vessels in U.S. waters including those outside EEZ and Coastal voyages (Gulf of Mexico). However, there are problems in that the definition for ballast water exchange requires mid ocean 200 miles from shore and 2000 m deep which is problematic for the Gulf of Mexico coastal voyages. Discussions on this are on-going domestically and internationally and can be solved when other treatment processes are available.

Another member asked about the Report to Congress and why it did not have much scientific data. CMDR Newsham indicated that they didn't really get enough information to measure whether we've slowed the rate of invasion, etc. and that they need about 10 years to determine that.

For more information, please see the handouts provided in the briefing materials for the November 13 - 15, 2002 ANSTF Meeting in Hawaii.

NOBOB (No ballast on board) Project – Dave Reid, NOAA/GLERL

Dave Reid reported on Task 1 of the No Ballast On Board (NOBOB) project to determine the risk of invasion from NOBOB ships. Those tasks include: 1) characterization of biota in NOBOB ships; 2) hatching experiments; 3) assessing the sediment accumulation; and 4) developing a traffic database of NOBOB ships. Dave reported that the objectives for Task 1 are approximately 50% complete and that NOBOB ships do pose a significant risk of invasion, but that the degree of risk is still to be determined.

- Under Task 1, they have interviewed 94 ships and sampled the tanks of 38 different vessels. Initial results indicate that the ships do not appear to be microbial incubators. Some of the things they did find include:
 - Cryptosporidium, in relatively low amounts and about 30 % pfisteria.
 - Sixteen of 25 types of cholera were also found, but which ones have not yet been determined.
 - For invertebrates, 98% of the invertebrates pulled out were copepods (15 of the 29 species identified were not native to the Great Lakes).
- Under Task 2, they are conducting time-series biological experiments in NOBOB ballast tanks on the Great Lakes and monitoring conditions and biota in the tanks during

voyages. They also sample discharge at final loading port just prior to exiting the Great Lakes. Dave mentioned the difficulty of accessing the tanks and how they had to modify their experiments to fit the unusual situations. They added incubator emergence traps and measured water column parameters. Two more experiments are planned for 2003.

- Under Task 3, they are assessing the efficiency and effectiveness of mid-ocean exchange in flushing out coastal waters and reducing the populations of fresh- or brackish-water organisms in the tanks. They are doing assessments on both physical and biological exchange and are focusing on fresh/brackish water from Europe.

Ballast Water Demonstration Program – *Dorn Carlson, NOAA/Sea Grant*

Dorn reported on the annual NOAA-FWS grants competition to develop, and demonstrate, ballast water treatment technology. In 2002, the program offered 2.4 million dollars with no limit on individual project request amounts. The Marine Administration (MARAD) joined the program and offered the use of its ships as testing platforms for ballast water treatment experiments. The emphasis on Great Lakes and the Chesapeake Bay remained.

In 2002, 10 projects were recommended - 4 shipboard, 2 pilot scale studies, and 4 lab scale studies. Of the proposals recommended, 5 were from academia, 3 from government labs, and 2 were from industries. The program is trying to encourage shipboard experiments, but still funding the lab scale studies. Technologies studied in the 2002 projects include: exchange, heat, hypoxia, acoustic energy, chemical biocides, and filtration/UV. A new category this year is field tests of commercial prototypes - this is what NOAA/FWS feel is the next stage of development. We have not yet funded any projects in this category, but the technologies are getting close to this stage.

In 2003, Dorn expects that MARAD will open its ships again and that the funding level will stay about the same as this year. This year the emphasis will also be on facilitating commercialization. With this emphasis, “prototype field test” becomes a separate program area in the RFP. Business viability becomes an evaluation factor and a long-term development plan is required with a proposal submission. This came about via some commercialization advice from the NIST Advanced Technology Program.

ANSTF Committees and Working Groups – *Moderator, Sharon Gross, ANS Task Force Prevention Committee* – *Richard Orr, APHIS*

Richard Orr started off his presentation by reminding the Task Force of the strategic plan and new structure that the Task Force adopted at the Winter 2002 meeting. The prevention Committee is one of the committees under this new structure and has three working groups: a pathways working group, a screening working group, and risk analysis working group. Richard also reported that there were discussions on where to house ballast water issues within the new structure and Richard said that, for now, he thought it should go under the Research Committee.

Richard then quickly reviewed the roles of the Committee and its working groups and reviewed where the Prevention Committee fits within the action items identified in the National Invasive Species Management Plan.

The Role of the Prevention Committee is to:

- Oversee the activities of the Pathways, Screening, and Risk Analysis Working Groups;
- Coordinate the three prevention working groups' activities and products with other ANSTF committees; and
- Provide a communication and decision-making link between the prevention working committees and the ANSTF proper.

The Role of the Pathways Working Group is to:

- Identify of high risk pathways;
- Develop a process for identification of high risk pathways; and
- Identify what actions must be taken to mitigate or reduce the risk associated with each of the identified high risk pathways.

The Role of the Screening Working Group is to:

- Develop screening concepts and policies on non-native intentional introductions; and
- Coordinate with the various Federal, Regional and State management entities that are developing screening processes to limit the spread of aquatic nuisance species.

The Role of the Risk Analysis Working Group is to:

- Facilitate the development and use of science-based risk assessments to determine the level of risk associated with intentional and unintentional introduction of invasive aquatic species;
- Coordinate and review input from Regional Panels concerning priority aquatic invasive species potentially requiring risk assessments;
- Coordinate, initiating, and overseeing new risk assessments identified as high priority by the ANSTF; and
- Maintain a library of existing aquatic risk assessments that 1) used the ANSTF risk process, or 2) has relevance because of the aquatic organism covered, and/or 3) has relevance because of the unique risk process or methodology used.

Representation on the Prevention Committee will likely includes: APHIS, FWS, Coast Guard, Corp of Engineers, EPA, State Department, NOAA, USGS-BRD, State & Tribal Representatives, Regional Panels, PIJAC, National Aquaculture Association, American Nursery & Landscape Association, and others.

Someone asked about the potential overlap between screening and risk analysis. Richard responded that yes, it does seem like there is overlap, but the screening working group is more about process, while science is the focus of the risk analysis group. The screening group will take into account policy issues, speed in getting answers, etc.

Action Item: Task Force members will provide names of representatives to serve on the Prevention Committee. Executive Secretary of the Task Force will complete membership analysis and send to Task Force members for approval by end of December 2002.

Research Committee – Dorn Carlson, NOAA/Sea Grant

Dorn started off his presentation by indicating that the Research Committee is not as far along as the Prevention Committee is. He reviewed the structure, membership, purpose, roles and responsibilities and membership of the old research Committee

The purpose of the Research Committee is to advise and support the ANS Task Force in fulfilling its responsibilities under NANPCA 1990, as amended, on issues related to aquatic invasive species (AIS) research.

The Task and Responsibilities of the Research Committee are as follows:

- Insure AIS research does not contribute to the spread of AIS
 - Maintain and disseminate the research protocol required by 16_USC_4722(f)(2).
 - Promote the use of the protocol by governmental and non-governmental research institutions.
 - Upon request, evaluate research proposals involving aquatic species to ensure compliance with the protocol.

- Identify AIS research needs and priorities
 - Facilitate the coordination of efforts by the regional panels, committees, and member agencies of the Task Force to identify AIS research needs and priorities.
 - Identify national AIS research needs and priorities.

- Facilitate coordination of AIS research efforts
 - Facilitate information sharing and coordination of AIS research conducted by governmental and non-governmental entities.
 - Contribute to the research parts of the Task Force Annual Report or other Task Force reports.

- Promote meaningful AIS research
 - Advise the Task Force on the planning, execution and documentation of Task Force-initiated research projects.
 - Identify to the Task Force resource or capacity gaps that hinder necessary AIS research efforts.

Research Committee membership will be drawn from: Task Force members (or designees), representatives from other Committees, Regional panels (members and panel research committee members, “producers” of research (academia), “consumers” of research, resource managers, industry, and other stakeholders.

Next steps for the Committee include obtaining Task Force endorsement of responsibilities, initiating the member selection process (incl. FACA), getting charged by the Task Force, and developing an agenda.

Someone asked if the Task Force would want to expand the Research Committee

to include aquaculture species. The Task Force responded that they thought this was an excellent question, and that it was something they would consider.

Action Item: *Task Force members will provide names of representatives to serve on the Research Committee. Executive Secretary of the Task Force will complete membership analysis and send to Task Force members for approval by end of December 2002.*

ANSTF Committees and Working Groups – Sharon Gross, ANS Task Force

Sharon reported that two more committees - the Monitoring and Control committees - are still in the discussion phase and should hopefully be fleshed out in the next couple of months. A Task Force member then asked what the Task Force thought should be done with ballast water. Which committee it will fall under? Sharon answered that the former committee completed most of the tasks it was given. The Task Force needs to look and see if that Committee needs to continue in some form under the new ANSTF structure. The questions to consider are whether ballast water needs to have its own committee, or should all the pathways go under the Research or Pathways Committee, until some issue arises that would necessitate moving a working group to another Committee or making it its own separate committee. The Task Force agreed that ballast water did not need to have its own committee and could be a working group.

Action Item: *Executive Secretary will initiate process to establish Monitoring and Control Committees by March, 2003.*

Communication, Education and Outreach Committee – Michael Hauser, VT Department of Environmental Conservation – Current and Future activities

Mike Hauser, a member of the Communication, Education and Outreach Committee (CEOC) and an ex-officio member of the Task Force representing the Lake Champlain Basin Program presented an update on the Committee's activities on behalf of the chair, Joe Starinchak. Mike first reviewed the history of the CEOC and then discussed several project of the CEOC.

The background described by Mike led to the conclusion that the CEOC decided to target the water recreational community and those that could leveraging the necessary policy and legislative changes. As the Committee pursued these audiences however, linkages became apparent and the CEOC has been able to raise awareness on many different levels. The Committee has also been focusing its activities on the States. To gain a better understanding of the States, the FWS acting on behalf of the Task Force, partnered with the International Association of Fish & Wildlife Agencies (IAFWA) to appraise state fish and wildlife agencies regarding their perspective about aquatic invasives, their programmatic efforts, their funding, perceived obstacles and opportunities. Inquiries were made to the Fish & Wildlife Director in each state and forty-seven of the fifty states were contacted.

As a result, this effort has provided us with a tremendous amount of valuable information that has continued to guide other Task Force activities for doing things on a national level. Some of

the results include:

- 100% indicated that this issue was somewhat or very important.
- 100% indicated that they had some or many strategies to address the issue.
- 80% indicated that limited funding and constraints on existing funding are their primary obstacles.
- 66% indicated that limited authorities were the next most significant obstacle.
- 95% indicated that they would be interested in a national marketing & public awareness campaign
- ~ 70% of the states use Federal Aid funding to address this issue.

Another project of the CEOC is the Stop Aquatic Hitchhikers! public awareness campaign. This is a nationally branded campaign that targets recreational users, unifies the conservation community and allows it to speak with one voice regarding aquatic invasive species. It was developed as collaborative partnership effort and partner efforts are supported with Internet marketing strategies and campaign materials to empower recreational users to own the issue and advocate for support to address it. The key point is that the campaign combines awareness with action. It doesn't just tell people that ANS are a problem, it gives them something they can do about it.

An additional activity involves a new proposal with the IAFWA. The proposal focused on three different, but related activities:

- Helping States to develop public awareness strategies (i.e. Stepping Down Stop Aquatic Hitchhikers! campaign to the state level)
- Helping States to Develop Strategies that Elevate Issue in State Policy Arena
- Holding Regional Law Enforcement Coordination Workshops

Because ecological and human health impacts are still hard to quantify and relate to, the CEOC has chosen to focus on economic impacts as a way to make aquatic invasive species relevant to a broader audience. A project was funded through the FWS to conduct an economic analysis to translate impacts to recreational activities into something that is relevant and tangible to State Fish and Wildlife agencies and the recreational industry. The objective is to continue to mobilize support via these groups to get support to increase funding to states.

To summarize the CEO's results to date, Mike reported that significant national coverage has been generated for the aquatic invasive species issue. While other things have added to this coverage (i.e. snakeheads in MD), a lot of it has been generated by the Stop Aquatic Hitchhikers! campaign. As of mid-July, approximately 35 links have been created by state, regional, national and international organizations, including the Ramsar Convention on Wetlands. Currently, 20 organizations have formally signed up as partner organizations. Formal evaluation of the campaign's effectiveness in raising awareness will occur as part of the IAFWA grant. The bottom line is that the campaign has unified the conservation community and has provided the Task Force with increased ownership of the issue and access to additional funding.

So, where does the CEO plan to go from here? It will continue to expand the campaign and

make it's information available to all partner organizations including expanding the web site. It plans to initiate a new partner campaign soon with the aquarium industry that targets aquarium hobbyists and seeks to elevate environmentally responsible aquarium use.

One Task Force member was concerned that if 70% of the states responded that they are using Federal Aid funding for ANS activities instead of dedicating funds specifically, then they were concerned that funds that are usually used for more traditional fisheries work is now going to ANS. The member would like to see more money specifically dedicated to ANS activities.

A member of the audience asked Mike whether the territories were included in the State survey. Mike responded that he did not think so, but that maybe the CEO could follow up with a survey for the territories since the information gathered from the survey is important.

Green Crab Control Working Group - Fred Kern, NOAA

Fred Kern reviewed the changes in the Green Crab Management plan since the last Task Force Meeting. The plan was presented to the Task Force at the Fall, 2002 meeting and was included in the briefing materials for that meeting. Changes to the plan included incorporating east coast issues into the management plan and mentioning the Maine Coast green crab fishery. A lot of the information for the Plan comes from the northeast because the crab has been there a lot longer. One issue Fred mentioned was the potential for juvenile green crabs to be transported via numerous human-mediated pathways (including with shipments of shellfish, live bait, movement of traps, escape from research/education facilities., etc.). Fred then outlined prevention options for each pathway. Fred also mentioned that he reviewed the Maine plan and reported that the Working group's plan fit in well with Maine's plan.

For more information, please see Management Plan for the European Green Crab provided in the briefing materials for the November 13 - 15, 2002 ANSTF Meeting in Hawaii.

A Task Force member asked whether conditions were favorable for the green crab to thrive in the Gulf of Mexico. Fred answered that although anything is possible, he felt it was not likely due to the crab's temperature tolerances. On the west coast, the crab's expansion may be associated with El Nino and that it could theoretically reach Alaska.

An audience member asked the floor who was responsible for the overall coordination of the green crab activities. Fred answered that all members of the Working group are part of the coordination process and Sharon added that usually what happens is that once a plan is approved, the working group meets once a year to oversee the implementation and coordination of the plan and check on the completion of the goals in the plan.

Action Item: *The Task Force approved the Green Crab Management Plan for public review. The Executive Secretary will work with the Chair to get the plan published in the Federal Register by December 2002.*

Asian Swamp Eel Working Group - Pat Carter, USFWS

Pat Carter presented the final draft of the Asian Swamp Eel (ASE) management plan to the Task Force for public review. A copy of the plan was included in the briefing materials for this Task Force meeting. Pat started her presentation by reviewing the locations of the ASE populations (FL, HI, and GA) and giving a brief history of the working group.

Experts think that the ASE was introduced as an aquarium release and/or a fish farm release/escape. Its potential impacts are largely unknown, but potentially significant as the southeast provides ideal climatic and habitat conditions for survival and population expansion. The eel may threaten native fish, frogs, and aquatic invertebrates. Florida Everglades/Chattahoochee River ecosystems are of particular concern.

The goals of the Asian Swamp Eel Management Plan are to:

- Minimize impacts caused by the ASE;
- Control spread of ASE populations;
- Prevent new infestations of ASE; and
- Facilitate ASE research.

Objectives specific to Florida include:

- Slowing spread of ASE into Everglades National Park and other natural habitats;
- Gaining a better understanding of ASE biology, life history, and population dynamics;
- Determining ecological risks of ASE; and
- Monitoring the status of the known ASE populations.

Objectives specific to Georgia include:

- Preventing spread beyond CNC ponds and into Chattahoochee River & Wetlands
- Eradicating populations in ponds at Chattahoochee Nature Center
- Gaining a better understanding of ASE biology, life history, and population dynamics
- Determining if population dispersal has occurred

Specific Action Items of the Plan include:

- Mitigating high risk pathways
- Completing risk assessment
- Funding priority research
- Conducting monitoring surveys
- Establishing rapid response teams
- Implementing controls – baited trapping devices, piscicides, electro-fishing
- Developing and disseminating educational materials for specific audiences
- Developing a web-based ASE data repository

Significant changes to the management plan include omitting electric barriers and vegetation control as possible means of control. The working group decided to omit electric barriers as a control option because the barriers are expensive to operate, are unreliable and require back-up generators, and have public safety concerns. The working group decided to omit vegetation control as a control option because vegetation control may only affect the distribution of

ASE and may cause decline in native fish populations.

Another significant change to the plan includes a recommendation to minimize electrofishing for physical removal. A four-person crew operated for six months using standard shocking protocols and only caught 1,400 eels. Based on the \$100,000 cost to run the crew, the working group thinks that although it may be a viable technique, they are uncertain that the approach can achieve a significant decline to the ASE populations in relation to the cost of performing the shocking. The working group decided that additional research is necessary for accurate appraisal.

If adopted, Pat reported that benefits of the ASE Management Plan would include:

- Reduced risk of spread in Florida/Georgia
- Early detection of population expansion
- Decreased costs associated with restoration and maintenance of native fish and wildlife

A Task Force member asked that, given the lack of emphasis on the control tools (barriers, vegetation control, and electro-fishing) are the tools that are left sufficient? Pat answered that the keys to managing the populations would be education and outreach, baited traps, and the development of biocontrols. Another asked whether reporting would be part of the education and outreach. Pat answered affirmatively that reporting and verification would be part of education and outreach.

Another Task Force member referenced the working group's concerns over the costs of ASE control and asked whether any sort of cost-benefit analysis had been done. Pat answered that a cost-benefit analysis had not been considered but mentioned that the working group does want to eradicate the GA population if possible.

Another Task Force member asked that if electro-fishing was to be minimized, then how would the ASE populations be monitored? Pat answered that baited traps will be used and that possibly electro-fishing will be used more intensively in that particular area.

An audience member thought that the working group was recommending that control not be attempted in the area closest to the Everglades but Pat reported that is the area where control will be intensified. Another audience member voiced their concern that if the ASE gets into the Everglades we will never be able to control it. He questioned the management plan's goal of "slowing spread" and wondered why it was not "preventing spread." Pat answered that she saw his point and that she would look into modifying that goal.

Another Task Force member asked if there had been any efforts to work with Florida's Water Management Districts to see if they could get them to focus on that area of canals near the everglades. Pat responded that had not been done but that they could specifically ask the WMD's if there are water management options that could be used to help control the ASE. Another Task Force member motioned that the working group should explore management/control options with the WMD's to keep the ASE out of the Everglades. This idea was generally

accepted by the Task Force members.

Another Task Force member spoke up and said that he did not want the Task Force to be giving a wrong impression that electro-fishing, in general, is a bad technique. He wanted electro-fishing to be kept as a viable option, especially if its effectiveness is a manpower or monetary issue rather than an effectiveness issue. The Task Force agreed. Richard Orr from the RAM Committee spoke up and stated that recommendations/problems related to electro-fishing from the RAM committee were specific to this situation and the ASE and were based on manpower and logistics. They were not based on the fact that electro-fishing was not effective. Someone else in the audience expressed an interest in doing a study on the effectiveness of trapping.

When there were no more questions or comments, Cathy Short spoke up and said that based on discussion, the ASE Working Group should incorporate the Task Force's recommendations for revisions to the management plan without limiting the plan to what is currently fundable and perhaps the Task Force could help find some funding. If revisions are done quickly, the Task Force can decide via e-mail on whether to approve the revised plan for public review.

Action Item: *The Task Force asked Asian Swamp Eel Working Group to address several important issues related to control and provide the Task Force with a revised plan if appropriate by January/February 2003.*

For more information, please see the Final Draft Asian Swamp Eel Management Plan provided in the briefing materials for the November 13 - 15, 2002 ANSTF Meeting in Hawaii.

Establishment of New Working Groups - Sharon Gross, ANS Task Force

Sharon Gross reported that two new working groups need to be formed under the Control Committee. The first new working group is the New Zealand Mud Snail Management and Control Working Group. This working group is being formed in response to the snail's extensive expansion/dispersal last year and will be chaired by Tina Proctor, the Fish and Wildlife Service's Aquatic Nuisance Species Coordinator in Region 6 (the mountain-prairie region). Tina will start work on the working group's charge, solicit membership, and work to coordinate management actions by state and region.

The second new working group will be the Asian Carp Working Group. This came about as a recommendation from a Service workshop two years ago. The Task Force particularly wants to work with states in the Midwest to set up and solicit membership in the working group.

Cathy Short then suggested the formation of a Nutria Working Group and wondered if the Task Force supported the idea. Task Force members from both Louisiana and Maryland strongly approved of this motion and offered to help in any way that they could. Cathy motioned that the Task Force work towards developing this working group and there was no opposition.

Action Item: *The Task Force will establish two new working groups for Asian Carp and New Zealand mudsnail control. The Task Force will also work with ex officio*

members Ron Lukens and Edie Thompson to explore the need for a Nutria Control Working Group.

A west coast audience member then suggested that since *Spartina* is already one of the worst invasive species on the west coast that a *Spartina* Working Group was needed. Someone then asked whether the goals of the group would be to develop a management plan and the answer was yes in addition to greater coordination along the west coast. Cathy Short then suggested that the member requesting the new working group should request an opportunity on the agenda for a future Task Force Meeting so that the Task Force can be better informed before being asked to approve another working group.

Caulerpa Activities - Results of Science Advisory Meeting - Susan Ellis, CADFG

Susan Ellis reported that the *Caulerpa taxifolia* Scientific Review Panel met to answer the question: "if a new *Caulerpa taxifolia* infestation occurs, is the eradication response being used in California suitable and does it have an appropriate probability of succeeding in the eradication on a new infestation?" The international panel of scientists was commissioned by California Department of Fish and Game and convened on February 2, 2002 to provide managers with a peer review of the eradication efforts using this questions as a guide.

Four main results emerged from the panel and the discussion it generated:

- There is a consensus of the Scientific Review Panel that eradication is a potentially achievable outcome for the current known *C. taxifolia* infestations in California;
- There is not a consensus scientific opinion about the likelihood of total eradication of *C. taxifolia* in California using the current eradication approach;
- None of the scientists rated the current eradication effort as having a maximum chance of totally eradicating existing *C. taxifolia* infestations; and
- Scientific input to the eradication process has been deficient up to this point.

From these results, the Scientific Review Panel concluded that:

- Eradication, not control or management, is the appropriate objective in California.
- If the same eradication approach continues eradication is not probable (i.e., maintaining the status quo is not the best policy);
- Substantial program changes are warranted if total eradication is to be achieved (see recommendations);
- The objective of science-based management has not been met.

The Panelists made seventeen recommendations in the report. Ranked in importance, the most important recommendations for program change appeared toward the top of the list. The top ten are presented here.

- Commission an independent scientific evaluation of the treatment efforts in the two current infestation locations using new, independent field data as well as existing data to evaluate eradication effectiveness and cost versus benefit efficiencies.
- Develop a protocol for immediately including biological and physical (e.g., hydrodynamic) scientists if a new *Caulerpa* sp. infestation is found (i.e., establish this as

part of the surveillance, containment, and eradication efforts) and guarantee access to infestation sites and specimens for legitimate scientific study.

- Alter the current California legislation to ban the entire genus *Caulerpa* from the state.
- Increase the use of quarantines (i.e., institute complete area closures to all activities that would disperse *Caulerpa taxifolia* outside each infested area).
- Increase education efforts that focus on the press, the public, and elected officials as separate audiences. Extend this education to reflect the broader issues of other invasive species and problems.
- Institute mandatory reporting of *Caulerpa* sp. sightings and mandatory genetic identification of all new infestations.
- Initiate three types of biological research on *Caulerpa taxifolia*: (1) induction of sexual reproduction; (2) dormancy periods of stolons and rhizoids; and (3) physiological tolerance limits.
- Maintain surveillance and rapid response capability. Consider as a standard the institutional capacity to mount new eradication efforts within a month of new infestation discoveries.
- Establish ongoing detection and survey work outside the current infestation sites.
- Establish a lead agency with a management charter and supported with a formal, multi-agency implementation committee (i.e., create program focus, authorities, and accountability).

One Task Force member asked that since the various species of *Caulerpa* are so hard to tell apart, are there tests that can be used to tell the species apart if the invasive ones got into the Gulf of Mexico. Susan replied that there are DNA tests that can be used to tell the difference.

National Invasive Species Council and Advisory Committee Activities - Sharon Gross, ANSTF

Sharon Gross reported on some of the latest activities of the National Invasive Species Council and Invasive Species Advisory Committee.

- Task teams have been formed and are meeting to provide guidance on and start implementing the National Invasive Species Management Plan.
- Draft guidance is being developed on NEPA and invasive species
- In April, the co-chairs of the Invasive Species Council, decided to put together a cross-cut budget for 2004 focus on 3 areas: prevention, early detection/rapid response, control.
- The ISAC meeting will occur in Washington D.C. next week where they will get to provide input on the cross-cut budget information.

A summary of the recent activities of NISC and the ISAC was included in the briefing materials provided for the November 13 - 15, 2002 ANSTF Meeting in Hawaii.

Overview of Hawaii Regional Issues - Session Moderator, Earl Campbell, USFWS

Island Ecosystems and Conservation - Celia Smith, University of Hawaii

Celia Smith started off the Regional Issue Session with a presentation on the conservation of

island ecosystems. Threats to native aquatic species in Hawaii include: ballast water and other non-indigenous introductions, both intentional and unintentional, mechanical impacts (shipwrecks on reefs), changes in land use practices, loss of ecosystem quality (deterioration and poor water), targeted species collections. Even in the ocean, some Hawaiian species are found no where else. This includes 24% of the corals, 25% of the algae, 40% of the shallow water fish, and 32% of the shallow water invertebrates. Some reefs have changed dramatically due to invasive algae, poor adjacent land practices, etc.

Celia ended her presentation with a gallery of native Hawaiian species and some native Hawaiian expressions.

Inventory and Monitoring Efforts - Lu Eldredge, Bishop Museum, and Donna Turgeon, NOAA.

Donna Turgeon gave an overview on NOAA's Warning System for Coastal Marine Alien Species (WSCMAS). To reverse the current invasion trends, Donna stated that we need better early detection, verification, and warning of species introduced to U.S. coastal marine ecosystems.

The WSCMAS is a new program being developed by NOAA with the following elements:

- Early detection and monitoring of coastal marine alien species
- Warning system for verified coastal alien species
- Risk assessment and predictions for invasive species
- Federal-State rapid response and mitigation plan
- National information dissemination system

It will link the data in the NOAA Data Centers and in other disparate monitoring databases, all of which are virtually unavailable to most of the nation's coastal managers. Managers would be able to query the database, have help identifying specimens, and all users would be automatically notified of verified new aliens. The data would be accessible via a national website with easy-to-use querying and sorting capability that serves as a one-stop portal to access the early warning system and the other components of the national program. Managers should be able to download alien species information and associated environmental data.

NOAA will building the warning system by:

- Creating regional and national coastal species and environmental databases;
- Designate regional nodes;
- Developing a system and data agreements to access and link species inventory names to monitoring data;
- Building a public reporting and species verification system for alien identifications;
- Assuring quality control in species identification and data management;
- Developing protocols and model risk assessments; and
- Creating a system to alert coastal managers and a mechanism to evaluate effectiveness of actions.

Benefits of this system to Coastal Managers include:

- An up-to-date inventory of all coastal marine organisms that identifies native, alien, endangered and threatened species by coastal location (e.g., state, island, bay, estuary; GIS location for aliens);
- Routinely updated species and environmental data from existing coastal marine monitoring programs;
- A web page where new monitoring data can be checked expeditiously against inventoried species with automatic alerts for confirmed new aliens; and
- Risk assessments and evaluation of mitigation and control options.

The proposed national invasive species program and its sophisticated computerized systems will be implemented and tested through a Hawaiian Pilot Warning System for Coastal Alien Species. The web site is under construction and will have a strong “Hawaiian focus” during its initial year. Donna and NCDCC met with many of their Hawaiian partners in 2002 and are establishing a contractual agreement with Bishop Museum who has committed to developing the initial list of coastal marine species and will maintain the Pacific Island node. Hawaii was selected for the pilot early warning system due to its 300+ coastal alien species in an atmosphere of so many endangered species and because of NOAA’s coral reef initiative and existing partnerships. The Bishop Museum and the Hawaiian Biological Survey could provide a credible inventory of Hawaiian species.

FY03 Pilot Products include:

- Inventory of US coastal species
- Alien reporting mechanism
- Automatic alerts for new alien species
- Information to identify and control coastal marine invasive species
- Species search and GIS mapping capability
- Ecological forecasts from risk assessments

Bishop Museum has volunteered to help expand their Hawaiian species inventory to a Pacific Island Data Node. Their offer includes maintaining the Pacific Island Data Node, keeping the information up-to-date, and archiving new alien species.

Dr. Lu Eldredge then took over to quickly discuss some of his inventory efforts in Hawaii and other Pacific islands. Dr. Eldredge has completed marine non-indigenous surveys on Hawaii (including Midway Atoll, French Frigate Shoals and Johnston Atoll), American Samoa, Guam, and 6 tropical ports in Australia. In Hawaii, most of the work has been done on Oahu. Of 26,683 species, 5,000 have been found to be nonindigenous (not including bacteria and viruses).

The Bishop Museum is now attempting some rapid assessments to determine what has gotten out of the harbors and onto the reef areas. On Oahu, shipping surveys have indicated that a lot of species arrived via hull fouling.

Dr. Eldredge then showed several slides that gave the audience an idea of what the Bishop Museum web site looked like that contained the survey data.

After Dr. Eldredge's presentation, a member of the audience asked that if hull fouling is such a significant issue in Hawaii, should we be paying more attention to hull fouling overall on the mainland. Dr. Eldredge answered affirmatively and this was echoed by other members of the audience.

Freshwater: General Highlights and Stream Surveys - Mike Yamamoto/Bob Nishimoto, Hawaii Division of Aquatic Resources

Mike Yamamoto presented the Task Force with a graphically intensive general highlight of freshwater invasive species in Hawaii. Hawaii has short stream cycles as there is not a lot of distance from the headwaters to the estuary. Mike then showed a long series of slides of native and nonnative species. Hawaii has 5 species of gobies, 2 native shrimp species, and 3 species of freshwater snails (2 are closer to brackish). The mountain gobies are very unique in that they have fused pectoral fins which allow them to climb up the waterfalls.

In the 1800's the whaling economy changed to a sugar economy. Sugar is very labor intensive and in the 1850's, the first Chinese contract labor immigrated to Hawaii, followed by Japanese immigrants and then Phillipine immigrants. The first invasions followed this wave of immigrants from Asia and included goldfish (food), the rice paddy eel, snakeheads, carps, Chinese live-bearing snails, and the Chinese softshell turtle (wattle neck and another species). In the late 1800's and early 1900's, large mouth bass and rainbow trout were brought to the islands for recreation, mosquito fish and swordtail for mosquito control, blue gill for food and platy fish from Mexico.

Later, crayfish were introduced as a forage species and for human consumption and started causing problems by burrowing into the banks. Small mouth bass were introduced and began to impact the native gobies. Shad were also introduced as a forage species and as a bait fish for the tuna industry. Tunisian prawns were brought in for food and bait and spread between islands on their own. Peacock bass were introduced into reservoirs for recreation, and oscars were introduced as a sport fish.

Other aquarium species introduced include the highly predatory needlefish, the red devil from Nicaragua, the jewel cichlid from Africa (with parasitic copepods), a Nicaraguan cichlid, a mangrove goby, and several species of feeder shrimp/grass shrimp. Aquatic invasive plants released over the years have included elodia, valisnaria, salvinia, and water hyacinth.

State Management with Novel Challenges – Domingo Cravahlo, Hawaii Dept. of Agriculture

The three goals of the Plant Quarantine Branch of Hawaii's Department of Agriculture are to:

- Prevent the introduction of invasive plant species, harmful insects and other invertebrate species, animal and plant diseases, illegal non-domestic animals, and other pests into the State of Hawaii;
- Prevent the further spread of pest species (animal or plant) from one island to another, or from an infested area to an uninfested area on the same island; and
- Facilitate the export of allowable agricultural materials to other states, territories, or

foreign areas.

Their authority to do this comes from Chapter 150 A, the Plant and Non-Domestic animal Quarantine Rules, and from Chapters 4-70 through 4-71, the plant, animal and microorganism rules and the plant interstate and export rules. Chapter 4-71 includes lists of:

- Prohibited animals - prohibit from entry
- Restricted animals - requiring a permit for import and possession
- Conditionally approved animals - requiring a permit for import.

Any organisms not listed is prohibited until determined for future placement.

Permitted introductions allow for:

- Animals on the conditionally-approved list to be possessed by individuals, businesses, or institutions. Uses may include pet/resale trade, retail sales, and food consumption.
- Animals on Part A of the restricted list to be possessed for research by universities or government agencies, exhibition in municipal zoos or government-affiliated aquariums, for other institutions for medical or scientific purposes, or for other purposes as specified by the Board.
- Animals on Part B of the restricted list, for private and commercial use, including research, zoological parks, or aquaculture production.

To import organisms into Hawaii, one must have a permit issued by the Plant Quarantine Branch. Requests are reviewed to determine the entry status as well as any permit requirements or conditions that must be met.

To get an unlisted organism listed for entry into Hawaii, a request must be submitted to the Board of Agriculture. Prior to the Board's action, the request will go through a multi-tiered review process. The process is as follows:

- Step 1 - The application and information provided is reviewed for accuracy and completeness. The request is prepared and submitted to the Advisory Subcommittee on Invertebrate and Aquatic Biota.
- Step 2 - The recommendation and comments from the subcommittee are sent to the advisory Committee on Plants and Animals for its review at a public meeting. The Advisory Committee focuses on environmental issues and public testimony is welcomed.
- Step 3 - The recommendation and comments from the advisory committees are forwarded to the Board of Agriculture. The Board will review the comments from the advisory committees, weigh the environmental and economic benefits, and make a decision on the request.
- Additional Steps - If an organism is proposed for listing, then HAR Chapter 4-71 will need to be amended to include the new addition by following the rulemaking process under HRS Chapter 91. In addition, permit requirements and conditions must be addressed by the Board prior to entry of the organism into Hawaii.

In conclusion, the submission process for the import of aquatic species affords ample review and input by the general public as well as affected parties, so that a responsible decision can be

made. As such, it strikes a delicate balance between protecting Hawaii's agriculture, its natural resources and environment, and at the same time providing for economic development. The biggest challenge with the system is compliance. Although things can only come in by plane or boat, things are often not manifested properly, or things are shipped via Federal Express, UPS, or via the mail (First class mail is not subject to inspection without a warrant). Additionally, Domingo indicated that Hawaii needs to do a better job of educating the public not to release exotic species and to promote general awareness.

Marine Alien Algae – overview and problems – Jen Smith, University of Hawaii

Jen Smith started her presentation with an overview of Hawaii's coral reefs. They have a high rate of endemism (25%) and represent approximately 70% of the coral reefs that are under U.S. jurisdiction. They generate approximately \$800 million a year in revenues from marine tourism, provide sustenance to many important species, and also have an aesthetic value. The two most critical threats to coral reefs are overfishing and eutrophication; these threats can lead to a phase shift from a coral dominated system to a system dominated by invasive marine algae.

Biologists in Hawaii are now trying to determine the distribution of the various invasive algae species and what factors may be contributing to their success. They are also trying to determine their reproductive characteristics, grazing pressure, nutrient response, and other negative impacts.

Acanthophora spicifera was introduced in 1950 from Guam through hull fouling. It has become established on the main Hawaiian islands and is very abundant in some areas. It reproduces both sexually and asexually and is out-competing and displacing native species. Fish do eat it however, and that may limit its distribution to some degree. It grows quickly in response to nitrogen and fouls boat hulls which facilitates transport between islands. Biologists think it may be too late for eradication of this species but control may still be possible.

Hypnea musciformis was introduced in 1974 from Florida as a potential species for aquaculture. It is found on all main islands except Hawaii. Fish may eat it but it is not a preferred food item. It reproduces vegetatively and by spores but cannot grow without elevated levels of nitrogen (most likely associated with land use practices). It forms blooms on Maui that smother benthic communities and out-compete native species. The species is having some economic impacts to tourism. Management may be possible using the Beachmaster 2000, nutrient inputs, or biocontrol with native species (sea slugs).

Gracilaria salicornia is native to other parts of the Pacific and was introduced as a potential species for aquaculture in 1971. It is only found on 3 islands so far. It reproduces vegetatively and fish don't seem to prefer to eat it. *Gracilaria* responds moderately to nitrogen, but once established, becomes very competitive. It exhibits 3-D growth form and is not limited by space. It is very abundant in some areas and is the most dominant species in Waikiki and south Kaneohe Bay. This species out-competes native species, overgrows coral, and may be a serious threat to pristine reefs. It is unknown whether or not this species could be eradicated.

The various *Kappaphycus* species are native to the Phillipine and were introduced in 1974 as potential species for aquaculture. They are primarily found in Kaneohe Bay, but there are at

least two reports from outside the bay recently. It reproduces vegetatively and there is also recent evidence of sexual reproduction. Fish don't prefer to eat it. Like *Gracilaria*, *Kappaphycus* responds moderately to nitrogen, but becomes very competitive once established and is not limited by space due to its 3-D growth form. This species also out-competes native species, overgrows coral, and may be a serious threat to pristine reefs. It is unknown whether or not this species could be eradicated.

Avrainvillea amadelpha is native to the NW and SW Pacific through an unknown pathway. It is only found on Oahu and Kauai. Little is known about this species in Hawaii. It grows in soft-bottomed habitats and, once established, becomes very competitive. Fish don't eat it and it may be competing with native species and endemic seagrass. Eradication methods are currently unknown and more research is needed on this species.

These species are already having quantifiable impacts on Hawaii including economic impacts, ecological impacts (changes in diversity and species composition), and long-term effects on coral survivability. On Kihei's beaches, 20,000 lbs of *Hypnea musciformis* wash up on the beach each week and the state spends approximately \$100,000 a year cleaning the beaches. An economic study found that algae in north Kihei cost the state more than \$20 million per year. These costs include losses in rental income, decreased property values and clean-up costs. The ecological impacts include smothering and overgrowth of coral and displacement of native species and were not included in the study.

On one beach in Waikiki, over 30,000 pounds of *Gracilaria* literally prevented the beach's use and although no economic costs were determined, there clearly is an economic cost. Significant negative impacts have occurred to reef diversity and community structure. An older study showed that the area had over 60 species with no single dominating species. Now, there are less than 20 species with two species dominating - all since *Gracilaria* was introduced in the 1970's. In Kaneohe Bay, *Kappaphycus* abundance correlated with lower diversity and coral cover. The algae overgrows and kills coral at a rate of 10% increase per month.

In summary, Hawaii's reefs currently have 5 known species of aquatic invasive algae, and all cause significant impacts (economy - tourism, native species - ecological diversity, long-term persistence of corals, etc). In areas outside Hawaii, impacts of aquatic invasive algae have not been documented. Jen suggests that similar impacts are there, but that no one is looking for them or documenting the impacts to reef communities. Aquatic invasive seaweeds should be considered a threat to native coral reef introductions.

Management Options For Controlling Aquatic Nuisance Seaweeds in Hawaii - Eric Concklin, University of Hawaii.

Eric Concklin started off his presentation with a statement that the only outbreaks similar to the magnitude of the problem in Hawaii is the outbreak of *Caulerpa taxifolia* in the Mediterranean. *Caulerpa* also totally covers habitats and creates monotypic communities. We cannot simply copy their management protocols, as we have a fundamentally different situation here.

The differences between the *Caulerpa* invasion and Hawaii is that in the Mediterranean the *Caulerpa* is covering mostly flat bottom areas while in Hawaii, the algal invasions are on complex, 3-dimensional habitats that limit access, contain hidden biomass, and slows down the removal processes. The Hawaiian invasive algae are occurring on living coral reefs, where the impact of the removal technique on the substrate (corals, corallines) and associated fauna (fish and invertebrates) has to be considered. Chemicals (herbicides) and environmental manipulations (temperature and salinity) are used with *Caulerpa*, but may have untenable collateral impacts. So the important question becomes how effective are *Caulerpa* treatment methods at controlling the Hawaiian invasive algae?

Eric and his colleagues looked at the various treatment methods for *Kappaphycus* (salinity, temperature, herbicides, and algicide) and conducted tolerance experiments and found that most of these treatment methods don't seem to be viable options because some of the invasive algal species in Hawaii are quite resistant to these techniques. In order to kill the algae, they would have to subject the reef to extreme conditions (super high or low temperatures, super saline water) that would be too damaging to the other organisms.

As far as physical removal techniques, they looked at manual removal as an option in coral dominated habitats and that was not too successful. They looked at suction as a removal method but found that *Kappaphycus* also grows back quickly and cleaned off rubble starts regrowth of the algae within two months. So even if removal by suction did work, one needs to come up with some way of keeping it off reef afterwards. This technique is still in the experimental stages.

They are also looking at native urchins as an algal herbivore. Collector urchin (*Tripneustes gratilla*) appears to eat *Kappaphycus* at a good rate. They performed some experiments with the urchins in fenced plots and monitored grazing. In a couple of months a single urchin in 1/4 square plot cleared *Kappaphycus* and they are now exploring the potential of using the urchin as a biocontrol methods, including looking at combining biocontrol with clearing. Research funded by HCRI for 2003 will further investigate the use of these urchins as potential biocontrol agents.

Alien Algae Cleanup – Cindy Hunter, Waikiki Aquarium

Cindy Hunter gave a quick presentation on the Alien Algae Cleanup, an excellent example of community outreach and building public awareness. Working together with the State agencies, universities, NGO's, and local clubs and volunteers, two alien algae cleanup events have occurred so far with a third one coming just after the Task Force meeting. The events have included over 10 scuba divers from the University of Hawaii, over 20 snorkelers from Reef Check, and over 40 volunteers on the beach.

Since the events are on the beach, it is an easy place to work with high visibility and they have tee-shirts, free coffee and lunch to help get volunteers. They are also using flyers to help get word out. A total of 70 to 80 volunteers have showed up for each event. The Divers stuff bags with algae and pass them to snorkelers who put the bags on boogie boards and paddle them to shore where the algae is identified and weighed. The invasive algae are kept out and the native

algae are returned to the water. On the first event, the team cleared approximately 5,500 pounds of algae off the reef in 4-5 hours; on the second event they cleared 6,600 pounds.

The purpose of project is decrease the biomass and raise public awareness. The second goal has been assisted by the local press. The dumpster full of alien algae was turned into compost and they are now testing that compost for use in taro fields. A company in Maine (FMC BioPolymer) has expressed an interest in purchasing the algae for carrageenan extraction.

This event also raises public awareness of coastal communities and native species. The next step is to try mechanized removal.

Fouling and Ballast Water – *Scott Godwin, Bishop Museum*

Scott Godwin's initiated his presentation about hull fouling and ballast water in Hawaii with a bit of background on Hawaii. The ports are very busy, with vessels coming from a variety of locations including east central pacific (container vessels), northwest pacific (Japan, Asia), west central (Phillippine, Indonesia) southeastern Pacific (Central America fishing ships, Tahiti), and the northeastern Pacific (Alaska, west coast). The kinds of vessels coming in are similar to other ports except that there are more fishing boats.

Scott reported that ballast water is a huge importer of organisms. Most ships are dropping off goods, so you would think that we would be sheltered from ballast water. However this is not true. Scott surveyed 5 different types of vessels and found that tankers show the most ballast water discharge. Other vessels (containers and RORO's - roll on roll off vessels) have hardly any. Some vessels come in with small amounts of ballast water, but discharge almost all they have.

A survey of ballast water found numerous taxa. Scott also looked at hull fouling and how it is acting as vector in Hawaii. He looked closely at towed vessel traffic (platforms, dry docks, etc.) and surveyed 8 towed vessels. Among his results, he found 16 plants (macroalgae), one sponge, 5 polychaetes, and many other species.

Looking at traffic patterns, Hawaii receives regular shipping traffic from CA, WA and OR as well as from the Marshall Islands. Hawaii also receives periodic traffic from Guam, but only irregular traffic from the Phillipine and South America.

Scott found that hull fouling is acting as pathway for the introduction of marine alien species to the main Hawaiian Islands through direct introduction of mobile organisms as well as introduction through reproduction activities. He also found hull fouling to be a dispersal mechanism of established marine alien species between the Hawaiian Islands.

Scott also described a new partnership effort concerning ballast water, ballast sediments, and hull fouling in Hawaii. The partners include the Bishop Museum, Hawaii Coral Reef Initiative, State of Hawaii, and the Nature Conservancy. The partnership will conduct in-depth surveys of overseas traffic and determine the role of different types of vessels as transport mechanisms. The

partnership will then use a collaborative process to develop a management strategy.

Grassroots Efforts for Alien Species Control – Earl Campbell, USFWS

In Hawaii, the key to dealing with invasive species issues is voluntary coordination and cooperation on the County, State, Federal, Non-governmental, and private level. Coordination on a state level is done through the Coordinating Group For Alien Pest Species (CGAPS). Coordination on a county level is done through the Island Invasive Species Committees (ISC). Participation is open to all and efforts are driven by the membership.

CGAPS is a multi-agency partnership with a goal of more effective protection for Hawaii's economy, environment, health, and way of life from harmful alien pests. CGAPS partners include: Hawaiian agencies (Depts. of Agriculture, Health, Land and Natural Resources, and Transportation; Farm Bureau Federation; Visitors Bureau), Federal Agencies (NPS, USDA, FWS, USGS, U.S. Navy, USFIS and USPS) and the Nature Conservancy of Hawaii. CGAPS provides loose coordination of the ISCs, develops positions that support the ISCs, and takes policy level action on invasive species issues. CGAPS developed the "Silent Invasion" Campaign, which helped bring national attention to Hawaii and its invasive species problem.

Each Invasive Species Committee is unique because each island is unique, with its own history and culture and its own invasive species problems. Each island also has its own way of getting things done based on local skills, relationships and leadership. The Invasive Species Committees do have common elements in that they act as a forum for invasive species issues, help set priorities, assist agencies with action, provide information, education and public awareness, increase local capacity, acquire additional funds, and provide local personnel and leadership.

The Big Island Invasive Species Committee (BIISC) is a voluntary partnership concerned with all non-native invasive pests threatening agriculture, native ecosystems, industry, human health and the quality of life on the island of Hawaii. The goals of the BIISC are:

- **Education:** All elements of island community should be informed and participate in invasive species issues, actions and decisions for Hawaii county
- **Prevention:** Prevent movement of invasive species into Hawaii that threaten vulnerable natural and agro-ecosystems.
- **Detection:** Detect and initiate action on newly established invasive species before they exceed limits of reasonable control.
- **Control:** Work with appropriate agencies and landowners to eradicate newly introduced invasive species and contain/control/mitigate established populations to minimize ecological, social and economic impacts.
- **Monitoring:** Provide accurate, timely and accessible information on distribution, detection, control, and restoration.
- **Restoration:** Encourage and facilitate restoration of vegetation, ecosystem processes and components as appropriate for continued management of the land.

Membership in the BIISC is broad-based and any individual or organization interested in

protecting Hawaii from invasive species is welcome. The BIISC conducts its business with a minimal formal structure in which consensus decisions are desired. Accomplishments of the BIISC include: containment/control of *Miconia*; maintenance of a continuing forum for Big Island invasive species issues; development of a strategic plan, priority species list and ID cards; acquisition of education assistance funding to put on noxious weed training; establishment of an invasive species telephone hotline; and California poppy control on Mauna Kea.

The other Invasive Species Committees are similar:

- The Maui Invasive Species Committee (MISC) has nearly 25 member agencies and organizations and has a full-time staff of 12 with a budget of \$800,000. Accomplishments of the MISC include: surveys of priority species compiled in GIS database, development of an effective public awareness campaign, and initiation of control actions on *Miconia*, pampas grass, fountain grass, Caribbean frogs, ivy gourd, and giant reed.
- The Oahu Invasive Species Committee has a full time staff of three with a budget of \$226,000. It has nearly 40 member organizations and is targeting *Miconia*, Caribbean frogs, fountain grass, and *Rubus discolor*.
- The Kauai Invasive Species Committee has a full-time staff of two and a budget of \$193,000. It is currently targeting *Miconia*, Caribbean and greenhouse frogs, and fireweed.

For more Information visit two web sites:

Hawaii Ecosystems at Risk (HEAR) - <http://www.hear.org/>

Pacific Island Ecosystems at Risk (PIER) - <http://www.hear.org/pier>

Current Overview and Steps for the Future – Dave Gulko, Division of Aquatic Resources

Dave Gulko wrapped up the Hawaii regional session with a presentation that gave an overview of the entire situation and briefly discussed steps for the future. The important issues include:

- U. S. Pacific Islands are very different from the mainland and face a range of ANS threats far beyond what currently threatens U.S. mainland areas by virtue of their laterally-compressed ecosystem structure, relative size and biodiversity. Characteristics of Hawaiian aquatic ecosystems include high endemism (25% of coral reef species are endemic across Phyla), a wide range of reef types and habitat types, and many protected and rare species.
 - Potential threats of invasive species in Hawaii include:
 - Competition with native flora and fauna.
 - Direct destruction of some species (corals).
 - Altered ecosystem structure & function
 - Reduction in biodiversity
 - Reduction in the aesthetic value of ecosystem
 - Economic losses from tourism, fishing, aquarium/ornamental industry
 - Possible irreversible damage (Extinctions)

- The vector ecologies involved are often novel by mainland standards, but may hold relevance for management of non-island ANS.
 - On the horizon, there are concerns about tourist SCUBA divers, an explosion in cruise ship visits, and an intense interest to expand traditionally terrestrial activities into aquatic environments (energy platforms, aquaculture, etc.)
- While many areas on the mainland are dealing with two or three serious ANS issues, in Hawaii they are overwhelmed by a suite of ANS attacking all the different aquatic ecosystems, often in different ways.
 - Chemical and physical treatment methods used to control invasives elsewhere are difficult to implement in island aquatic ecosystems due to: high biodiversity, endemism, presence of protected species, living 3D substrate, high levels of symbiosis, complex trophic structures, high human use and high economic/cultural value.

Future needs in Hawaii include:

- More state and Federal participation and support
- Stronger guidelines for using Federal funds as they relate to the spread of invasives.
- Public education, specifically to aquatic user groups, volunteer monitoring and final consumers.
- Stronger incorporation of ecosystem concerns into permitting and certification by all agencies
- More interaction between possible vector sources (user groups, industry, research) and aquatic resource managers with a focus on how both direct and indirect activities influence alien species impacts on aquatic ecosystems
- More representation of island ANS issues at a national level.

In Hawaii, dealing with ANS issues involves management and coordination among islands which raises logistical difficulties. Other islands in the Pacific are often faced with fewer resource management resources and similar problems. For the local federal partners, regional duties often involve independent island areas separated by thousands of miles, numerous time zones and the International Date Line.

Hawaii has initiated the process to develop a State ANS management plan. A multi-agency advisory group made-up of recognized experts on island aquatic ecosystems will help form the plan and partner with the other island alien species groups (CGAPS, ISCs) and a newly created ballast water biologist position.

November 14, 2002 - Thursday

New Mississippi River Basin Panel – Overview of New Panel – Norm Stuckey, MICRA

The Mississippi Interstate Cooperative Resource Association (MICRA) is an interstate organization of 28 state departments of conservation and natural resources in the Mississippi

River Basin, four federal agencies (FWS, TVA, U.S. BOR and USGS/BRD), and two Indian tribes. Its mission is to improve the conservation, development, management and utilization of interjurisdictional fishery resources in the Mississippi River Basin through improved coordination and communication among the responsible entities.

The Mississippi River Basin (MRB) includes more than 90 major rivers, including the Mississippi, Missouri, Ohio, Tennessee, Arkansas, and Red rivers. The basin includes parts of 32 states and Canada. Within the basin, MICRA members have identified more than 80 fish species of great concern. One of MICRA's primary goals is to develop protocols, policies and regulations for disease control, introduction of exotics, maintenance of genetic integrity, and maintenance and enhancement of indigenous species.

Pathways of invasion in the MRB include: escape from aquaculture facilities, aquarium and live bait releases, horticultural and water garden plant sales, watershed and waterway connections, ballast water and attachment to vessels (barges, fishing boats) and recreational watercraft. The MRB has 149 aquatic nuisance species including: 56 plants, 16 invertebrates, 1 amphibian, 75 fish, and 1 mammal.

A Mississippi River Basin Aquatic Nuisance Species Panel is needed to:

- Focus attention on the ANS problem,
- Educate stakeholders and the public to prevent unintentional introductions and invasions,
- Set priorities, coordinate non-federal programs within the MRB, and make recommendations to the National ANS Task Force,
- Assist the ANS Task Force in coordinating federal programs,
- Support research focused on preventative and control methods,
- Develop and implement reliable control methods,
- Develop an emergency response strategy for use by Federal, State, and local entities in stemming invasions of ANS,
- Coordinate cooperative actions on a watershed basis involving all stakeholders,
- Develop recommendations for stronger regulations and controls for those who fail to comply with coordinated, voluntary actions, and
- Inform the ANS Task Force and Congress of needs for legislative actions.

Norm pointed out that the MRB ANS panel would work to maximize participation of diverse interests and stakeholders and work to avoid duplication of efforts by other panels. The panel would serve as coordinator, catalyst and convener, relying upon MRB ANS Panel members and cooperators to conduct most program activities (e.g., research, public information, outreach, etc.) The MRB Panel would also provide a basin-wide clearinghouse and referral service and serve as the principal basin-wide conduit to ANS Task Force.

Membership in the MRB ANS Panel would focus on balancing broad representation with manageability of panel size and would draw members from key agencies and organizations pursuant to "categories" of interest identified in Section 1203. The panel would encourage participation of Panel observers who can contribute to panel operations, but not vote on panel

decisions and would request that, where available, associations or other "umbrella" groups designate a single individual to represent all members within the group's association (i.e., aquaculture association, towing industry, etc.). Suggested membership can be viewed in MICRA's proposal for the Mississippi River Basin Panel which was included in the briefing materials for the November 13 - 15, 2002, ANSTF Meeting in Hawaii.

Funding for MB ANS Panel will be allow MICRA to:

- Dedicate a portion of its existing staff to establishment and development of the MRB ANS Panel.
- Pursue "creative financing" arrangements for the Panel and its special projects with the support and assistance of MRB ANS Panel members
- Support existing MICRA staff in developing and operating the Panel (MICRA anticipates a need of at least \$30,000 to fund an ANS MRB Coordinator position).
- Funding will be the primary limiting factor which controls the speed and effectiveness of MRB ANS Panel implementation and operation.

Anticipated Milestones:

- November 2002: National ANS Task Force approval of MICRA's proposed Organizational Strategy
- December 2003: Development of initial MRB ANS Panel membership and mailing list.
- January 2003: Mail invitations to organizational meeting
- February/March 2003: Organizational meeting of the MRB ANS Panel (information exchange and initial direction by group).
- June/July 2003: First MRB ANS Panel meeting (initial assignments and committee appointments).
- October/November 2003: Second MRB ANS Panel meeting (information updates and additional actions).
- January 2004: First Annual Report of MRB ANS Panel.

Due to the large and overlapping nature of the MRB, the MRB ANS Panel will share membership and jurisdiction with at least three other panels (i.e., Great Lakes, Gulf, and Western Regional panels). The MRB ANS Panel will work to avoid duplication of effort and establish good working relationships with the other panels. Shared panel membership of border states is considered advantageous and will enhance the exchange of information and communication between panels. Communication between panels is essential since they share pathways (i.e., ballast water, waterway connections, aquaculture, overland transport, commercial sales, etc.). MICRA is already involved in such interbasin information exchanges involving species such as Asian carp, round gobies and zebra mussels.

Upon Task Force approval, an MRB ANS Panel Chairperson and Vice Chairperson will be initially appointed by MICRA to serve one-year terms. Future Chairpersons will be elected from among the MRB ANS Panel state members and the Vice Chairperson from among the membership-at-large. Committees, working groups, and task forces will be established as needed and meetings will be scheduled 2-4 times per year. MICRA will administer all funds

received for MRB Panel operations, and Panel activity will be limited by availability of funds. MICRA will provide staff support and anticipates the eventual need to hire 1 FTE for Panel support from funds provided to the Panel.

One Task Force member made the statement that they were not against establishment of the MRB ANS Panel, but that they wanted to make sure that as the Task Force moves forward with additional Regional Panels, that they make every effort to discuss inter-panel coordination. Some states are on more than one panel and this is important given the current tightening of State's resources. Texas, for example, is on three panels, and if they decided to only be involved in one panel then the others would suffer. It could be advantageous for a state to be on more than one panel, but it would also be challenging.

Another Task Force member seconded this thought and said that the Task Force should try to articulate to the members and public the specific things we will do to avoid overlap beyond just saying. Another member disagreed and responded that we should just let the States decide where their priorities fall and in which panels those that overlap will get the biggest bang for their buck.

Action Item: The Task Force approved the establishment of a Mississippi River Basin Panel. The Executive Secretary will work with Norm Stuckey, MICRA, to send letters to representatives inviting them to join the panel by January 2003.

Update on Mid-Atlantic Regional Panel – Edith Thompson, MD DNR

Edith Thompson started her presentation with some background on the Chesapeake Bay Program (CBP) and the Chesapeake Bay Agreement. The program's invasive species working group has already been working regionally, they have identified 6 priority species (nutria, zebra mussel, purple loosestrife, Phragmites, and the mute swan) and are developing work plans for each of these species. They also have a screening process for intentional introductions and have recognized a need for rapid response protocols.

Under the current situation, the CBP's invasive species working group will cease functioning at the end of 2003 unless there is a movement to continue to maintain it or if a Mid-Atlantic Panel is formed. States need to decide if they would become members and if the Chesapeake Bay Program would be the host organization for the panel. The invasive species working group has developed a white paper and will submit it to the Living Resource Committee of the CBP in 2003. If they get commitment, they will then come to the Task Force for approval.

At this point, Cathy Short asked Lu Eldredge and Dave Gulko and the other Hawaiian audience members if they would ponder the formation of a Pacific Islands Regional Panel. She asked the Pacific Islands audience members and presenters who had originally made the suggestion if they would prepare a proposal for the Task Force to consider. There was agreement that they would pursue the development of a proposal.

Action Item: The Task Force encourages the regional people to develop a proposal for the establishment of a Pacific Island Regional Panel.

Regional Panel Reports

Great Lakes Regional Panel – *Kathe Glassner-Shwayder, GLC*

Kathe Glassner-Shwayder started her presentation with an update on some of the regional panel's projects. The Great Lakes Regional Panel has released its final report entitled "Preparing for the Next Decade in ANS Prevention and Control". This report is an evaluation of the National Invasive Species Act to support its reauthorization and was based on a symposium held in May, 2002.

The report looked at NISA's origins, its strengths and weaknesses, and where we need to go with reauthorization. Progress reports were provided on the current provisions of NISA, categorized under the following elements: institutional framework/implementation, research and monitoring, ballast water and standards, information and education, and non-ballast prevention and control. These elements provided focal points for generating recommendations on viable amendments to NISA during breakout sessions. Finally, the report made recommendations on: the institutional framework and implementation of the Act, research and monitoring, ballast water/NOBOB standards, information/education/outreach, and non-ballast prevention and control.

Another project is the panel's development of a model rapid response plan for Great Lakes aquatic invasions. The goals of the project are to develop a model plan to facilitate timely implementation of appropriate eradication/control measures upon discovery of ANS and to anticipate, detect, prevent and respond to new invasions on a state/regional basis. Tasks for the project include: a literature review and analysis, development of a model rapid response plan, mid- and end-of-project workshops, and outreach and dissemination.

The Great Lakes Panel is also developing a pilot project for early detection and monitoring for the Lake Michigan basin. The goal of the project is to develop a set of guidelines and recommendations for a coordinated system to detect new invasions of nonindigenous aquatic species in the Lake Michigan basin. The project has monitoring and education/outreach components and will develop guidelines and recommendations for early detection and monitoring of ANS in the Lake Michigan basin. Funding for the project comes from the EPA Great Lakes National Program Office.

The Great Lake ANS Panel is also developing a model GIS assessment of aquatic nuisance species in Michigan waters. The project goal is to develop and implement an internet-based spatial database of NIS invasions within the state of Michigan. The project has a large number of partners, and funding for the project comes from Michigan's Great Lakes Protection Fund.

Another issue that the Great Lakes panel is dealing with is a new aquatic invader that is posing a threat to the Great Lakes/St. Lawrence region. Asian carp, imported from China, are poised to invade Lake Michigan from the Mississippi/Illinois river system. This species fits the profile of a successful Great Lakes invader because of its vast mobility, high reproductive capacity and voracious consumption habits.

Kathe also reported that the International Joint Commission's 11th Biennial Report (2002) had an ANS focus and made several recommendations on ballast water management. They include:

- Making existing voluntary guidelines for ballast water management practices mandatory and provide measures for enforcement and compliance.
- Developing uniform protocols for performance testing of ballast water.
- Ensuring all ships built after a certain date utilize treatment technology incorporated in their construction.
- Implementing economic incentives to encourage shippers to improve ballast management practices.
- Funding research recommended by expert regional, national and binational entities.
- Advancing coordination to harmonize binational efforts to take action on ANS invasions and ecological and economic impacts.

Western Regional Panel – *Scott Smith, WA DFW*

Scott Smith reported that the Western Regional Panel developed an FY 2003 work plan at their 2003 annual meeting in Salt Lake City, Utah on September 11 and 12. The plan contained a lot of good ideas from both the Inland and Coastal Committees that the Panel would like to support. The Panel tries to act as a broker by trying to put good ideas together with those who can make things happen. They are also working harder to identify research priorities and pass those priorities on to the agencies who can fund some of them.

The WRP's Rapid Response Plan has been completed and is being used as a template to develop a state specific plan. The panel encourages other panels to use the model rapid response plan if it suits their needs. Rapid Response plans are called for in NISA and could get Federal funding if a Regional Panel or state has a plan. For more information on the WRP Rapid Response Plan, please see the briefing materials for the November 13 - 15, 2002 ANSTF Meeting in Hawaii.

Scott also asked the question, "how can we help the States build capacity to deal with ANS issues" and gave a list of points that the States could do to help gain that capacity (develop State ANS plans, form ANS committees, etc.). The panel wants to guide and empower the States to be able to do as much as they want/can.

Scott also discussed the results of their Screening Workshop in which they invited Hawaii, Australia and other states with screening procedures to come and discuss them with the WRP. The proceedings of the workshop are available upon request. The State of Washington is currently developing a screening process similar to the Hawaiian screening processes.

Scott also discussed a letter from the WRP endorsing the reauthorization of NAISA. The panel also developed a list early on of recommendations on what should be included in NAISA.

Gulf of Mexico Panel – *Ron Lukens, Gulf States Marine Fisheries Commission*

The Gulf of Mexico Panel (GOMP) of the ANS Task Force was originally established in early 2000 under the administration of the EPA's Gulf of Mexico Program. Ron Lukens explained that

in late 2001 they started considering transferring the Panel to the Gulf States Marine Fisheries Commission (GSMFC). In early 2002, the GOMP and the GSMFC entered into an agreement to provide a transition period for transfer of the administrative responsibilities. In late 2002, the transition was completed and the GSMFC assumed full responsibility of the Panel.

In July/August, the Panel reformed its membership and completed and submitted a proposal to the Fish and wildlife Service for funding. Panel membership includes: 11 Federal agencies, seven states, one regional member, two environmental groups, two seats for commercial interests, two seats for academic interests, one sea grant office, appropriate National estuary programs, and three at-large seats. There are also two seats for tribes, two for local community members, and 1 for international interests, but they are all still vacant as the panel has been unable to get someone to take those spots. The Panel also has seven workgroups: pathways/prevention, control/eradication/restoration, vessel-mediated transport, research and development, education and outreach, early detection and rapid response, and information management.

The panel had a meeting in Tampa, Florida in October and 23 of the 30 members of the panel were in attendance. Most of the meeting consisted of orientation presentations on the various ANS issues in the Gulf. The panel also discussed collaboration with partners (GCRL and MBNEP) to coordinate rapid assessment for the Mobile Bay area. They have agreed to document all phases of this effort to be used as a model for other areas of the Gulf of Mexico to follow.

The panel will convene twice a year, and the next meeting of the panel will be in late February.

Northeast Panel – *Susan Snow-Cotter, MA Coastal Zone Mgt. Program*

Susan Snow-Cotter started off her presentation with a map of the geographic scope of the Northeast ANS (NEANS) Regional panel. The panel was established in July, 2001 and its geographic scope consists of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, New Brunswick, Nova Scotia, and Quebec. The panel is hosted by the Gulf of Maine Council on the Marine Environment and its co-chairs are Susan Snow-Cotter of the Massachusetts Office of Coastal Zone Management and Tim Sinnott from the NY Department of Environmental Conservation. Michele Tremblay, from Naturesource Communications, is the panel's one staff person.

Membership in the panel includes the government (federal, state, regional, tribal, provincial), the military, researchers and universities, nonprofit and non-governmental organizations and private industry representatives.

The NEANS panel has three Committees. The first is the Policy and Legislation committee chaired by Kevin Cute of the RI Coastal Resources Management Council. The second is the Communication, Education, and Outreach Committee chaired by Nancy Balcom (CT Sea Grant) and Chuck O'Neil (NY Sea Grant). The third is the Science and Technology Committee chaired by Judith Pederson (MA Institute of Technology Sea Grant) and Jim Straub (MA Department of Environmental Protection).

The NEANS panel's mission statement is "to protect the marine and freshwater resources of the Northeast from aquatic nuisance species through commitment and coordinated action." Its goals are to:

- Prevent introduction, establishment, and dispersal of aquatic nuisance species in the Northeast.
- Control the spread of aquatic nuisance species already introduced into the Northeast.
- Mitigate the harmful ecological, economic, social, and public health impacts associated with the introduction, establishment, or spread of aquatic nuisance species in the Northeast.

Since July 2001, the Panel held two semi-annual meetings, one in Portsmouth, NH, and one in Brattleboro, VT. It has developed a panel web site (www.northeastans.org), established a listserv (NEANSPanel-subscribe@topica.com) and developed a NEANS Panel fact sheet. The panel has also established peer-to-peer coordination on state plan development/revision (MA, NY, ME, VT, & RI), held an "Eyes on the Estuaries" conference, developed an ANS legislative matrix, and initiated database development.

New projects for the panel include a December 2002 meeting which will include a media training session, early or rapid response planning, and the development of a regional ballast water initiative. Additional projects that are being pursued include communication with non-English speaking communities about ANS, adding new features to the panel web site (including links to ANS images and the NEANS Resource Digest published via the Panel listserv) and the acquisition of committee interns. Challenges to the operation of the panel include increasing the panel's membership (especially Canadian participation), gaining sufficient funding, obtaining dedicated staffing, and dealing with transboundary issues.

November 15, 2002 - Friday

Reauthorization of NANPCA (NAISA) – Dorn Carlson, NOAA

Dorn Carlson reviewed the various components of the National Aquatic Invasive Species Act (NAISA). A copy of the latest version of NAISA at the time of the meeting was provided in the briefing materials for the November 13 - 15, 2002 ANSTF Meeting in Hawaii. Dorn provided an overview of the components of NAISA including the following main areas related to the ANS Task Force:

Program coordination:

- ANS Task Force membership is expanded to include the Directors of USGS, Secretary of the Department of State, and the Smithsonian;
- The Secretary of State shall initiate negotiations with Canada and Mexico to review policies to protect the Great Lakes and US-Mexican border region;
- State Aquatic Invasive Species Management Plans are expanded to include rapid response, aquatic plant control, and screening and early detection strategies;
- Federal funds are made available for the development and implementation of State plans; and

- Task Force shall publish guidelines to assist states in developing and implementing plans.

Prevention of introduction of aquatic invasive species in waters of the US by vessels:

- Voluntary national ballast water guidelines become mandatory;
- All vessels entering a U.S. port are required to have an aquatic invasive species management plan, conduct best management practices, and document ballast operations;
- Vessels entering service after January 1, 2006 must meet ballast water treatment standards;
- Interim Ballast Water standards:
 - Exchange: 95% volumetric exchange,
 - Treatment: 95% reduction in aquatic vertebrates, invertebrates, phytoplankton and macroalgae;
- Final standards will be based on biological performance and will take effect by 2011; and
- Experimental treatment approvals are allowed.

Prevention of introduction of aquatic invasive species in waters of the U.S. by other pathways:

- ANS Task Force will conduct a pathway analysis to identify the highest risk pathways for introduction of aquatic invasive species and implement management strategies to reduce these introductions;
- The Invasive Species Council will develop screening guidelines for planned importations of live organisms; and
- Grants to states to help establish their own screening processes in addition to the federal process.

Early Detection and Rapid Response:

- The Invasive Species Council, in consultation with other agencies, will develop sampling protocols, identify pathways, establish clear lines of communication, create a geographic early detection plan, and draft a budget to support a national system of ecological surveys;
- the Invasive Species Council will establish a Federal rapid response team to implement eradication and control responses on federal land, assist rapid response measures on non-federal land, and train state, tribal, and regional rapid responders; and
- Emergency funding will be available for states and regions to develop and implement rapid response strategies.

Containment and Control:

- Army Corps of Engineers will complete and operate the Chicago Ship and Sanitary Canal Dispersal Barrier, and conduct a feasibility study on options to prevent the spread of species through the canal;
- U.S. Fish and Wildlife Service will establish a monitoring program to track invasive species moving through waterways, assess the efficacy of dispersal barriers and other prevention measures, and identify waterways suitable for dispersal barrier projects;
- EPA will evaluate and approve control methods, by promulgating regulations to evaluate environmental soundness of treatment methods, and publishing a list of approved

- treatment methods, and accompanying research and guidelines of the use of each method;
- A National Nutria Control Program will be established; and
- The Brown Tree Snake Control Program will be renewed and strengthened.

Information, education, and outreach:

- Programs to address the spread of aquatic invasive species by recreational boats will be developed;
- The Task Force will maintain a web site to inform the public on screening, monitoring and control, as well as information on how the public can assist these efforts; and
- The Task Force will carry out activities to inform and promote voluntary cooperation and regulatory compliance by targeted industries: maritime, horticultural, aquarium, aquaculture, and the pet trade.

Research priorities:

- Development and implementation of ecological surveys to assess the rates and patterns of introductions of nonnative species and to track their establishment;
- Execution of pathway surveys to monitor high-risk pathways by which nonnative species may be introduced (including ballast water) and to determine practices that contribute to those introductions;
- Development and maintenance of a central, national pathways and ecological survey database, coordinated with other relevant previously established databases;
- Research on the relationship between the introduction and the establishment of nonnative species;
- Research, development, and demonstration of methods and tools for detecting, preventing, controlling and eradicating, including dispersal barriers and ballast water treatment technologies;
- Encouragement of graduate studies in taxonomy and systematics; and
- Research support for vessel pathway standards.

Dorn ended his presentation by discussing a Congressional Hearing on NAISA that occurred on November 14. The witnesses gave their testimonies in two panels, one Federal and one non-Federal. There were some common themes to the testimony by the Federal agencies. All expressed concern that the legislation is heavily frontloaded. For the most part, they expressed concern about a 95 percent kill rate as an interim standard for ballast water. Much of the questioning and concern actually focused on this issue. On the non-government panel, Allegra Cangelosi defended the kill rate and Roger Mann suggested a size standard. Both NOAA and Fish and Wildlife Service indicated that the general direction of the legislation was good and addressed some gaps which currently exist. They also supported the increasing emphasis on partnerships with other entities.

An audience member asked a question about funding for taxonomic research. Someone answered that funding is going to the National Science Foundation for encouraging taxonomic studies.

State Plans – Status and Approval of Plans

Massachusetts – Susan Snow-Cotter, MA Coastal Zone Mgt. Program

Susan Snow-Cotter briefly explained that the State of Massachusetts started developing a draft State ANS Management Plan from scratch in September, 2000 led by Massachusetts's Coastal Zone Management program. In October, 2001, a draft was submitted to the Task Force, comments were incorporated and it was presented to the Task Force again during the State public comment. A final draft was completed this summer and it is now being presented to the Task Force for final approval.

Note: The Massachusetts State ANS Management Plan was included as a separate document in the same mailing packet as the Task Force Briefing Packet for the Hawaii meeting. It can also be downloaded from the Aquatic Nuisance Species Task Force's web site (www.anstaskforce.gov/).

Maine – Sandy Keppner, USFWS

In 2001, the Maine State legislation established a State Task Force on invasive aquatic species and required that the Task Force develop a state action plan to manage invasive aquatic species. The State Task Force also developed the plan according to federal guidance so that Maine is eligible for federal funding.

Thanks to a private foundation grant awarded to Maine's Volunteer Lake Monitoring Program, a contractor was hired to draft Maine's plan. The contractor worked closely with DEP (Department of Environmental Protection) staff, the State Task Force's Technical Subcommittee (members listed on inside cover of the plan), the State Task Force, and agency staff members to complete a draft of the plan by the end of July 2002. The public comment was open for 30 days and included four regional public meetings to solicit comment. Maine also received considerable comment via e-mail and letter. The plan received state approval in October and Maine is working on a funding proposal depending on Task Force action here at the Hawaii meeting.

Maine's Interagency Task Force on Invasive Aquatic Plants and Nuisance Species has seventeen members, including representatives from state agencies and from the public sector. The twelve public members are appointed by the Governor; state agencies are represented by the commissioner or his/her designee.

Five objectives from Maine's Plan include:

- Provide effective leadership and coordination;
- Raise awareness and educate the public;
- Strengthen programs to avoid introduction and transport;
- Be prepared to respond rapidly and control spread; and
- Effectively inventory, research, and manage information

Sandra then reviewed several tasks under each of the objectives above. Those tasks can be

reviewed in the plan itself.

Note: The Maine State ANS Management Plan was included as a separate document in the same mailing packet as the Task Force Briefing Packet for the Hawaii meeting. It can also be downloaded from the Aquatic Nuisance Species Task Force's web site (www.anstaskforce.gov/).

Alaska – *Bob Piorkowski, Alaska Dept. of Fish and Game*

Bob started his presentation with some background on Alaska and its relatively uninhabited state. Northern pike are one of the few ANS that the state has. Atlantic salmon and green crab are currently posing threats as well. When Alaska became a state, strict laws were put in place and now only oysters can be introduced. Alaska is geographically isolated with a northern climate and soil that is often poor in nutrients. It also has few humans and few disturbed areas. Most Alaskans are also more closely tied to the land than much of the rest of the U.S. and this has also helped.

By 1998, general news and the Task Force had heightened awareness with lawmakers and the State wanted to look at the statewide mariculture industry to see if it was a pathway. By 2001, funding was acquired to hire a coordinator who worked with staff and quickly had a draft plan developed which they put up on the internet for public comment. Comments from the Task Force and others were incorporated and in October, the plan was signed by the Governor.

A Task Force member asked if the plan included the Aleutian Islands and Bob indicated that it did. An audience member then asked if the State laws already in existence covered cruise ships as a vector? Bob replied that this is a weakness in the law and that the agency in charge has been involved only reluctantly, but that both sides of the legislature are involved and concerned about ballast water.

Note: The Alaska State ANS Management Plan was included as a separate document in the same mailing packet as the Task Force Briefing Packet for the Hawaii meeting. It can also be downloaded from the Aquatic Nuisance Species Task Force's web site (www.anstaskforce.gov/).

Montana – *Tim Gallagher, MT Dept of Fish, Wildlife and Parks*

Montana, having its own share of aquatic nuisance species, has been experiencing the same economic and ecological costs as other states. Many species are already in Montana such as carp, New Zealand mud snail and whirling disease and many more may be introduced. The State of Montana assembled a broad and diverse group of interested people (Federal, State, Tribal, and private) and developed an ANS management plan for Montana. The Governor of Montana approved the plan on October 15th, and now the State is seeking ANS Task Force approval.

The plan calls for regional and interstate involvement of such groups and programs as the Pacific States marine Fisheries Commission, the Western Regional Panel of the Task Force, the western Governor's association, and the Fish and Wildlife Service's 100th Meridian Initiative.

Tim then discussed some of the species that Montana is hoping to keep outside its borders as well as some of the invasive animals and plants that are already established in Montana and talked about some of Montana's ANS activities.

One Task Force Member asked if the Governor of Montana was now going to appoint a person from Montana to the Western Regional Panel. Tim replied that he hoped that would be the case.

Note: The Montana State ANS Management Plan was included as a separate document in the same mailing packet as the Task Force Briefing Packet for the Hawaii meeting. It can also be downloaded from the Aquatic Nuisance Species Task Force's web site (www.anstaskforce.gov/).

Action Item: The Task Force approved the State ANS Management Plans submitted by Maine, Massachusetts, Alaska and Montana.

Sharon Gross announced to the Task Force that before the Hawaii meeting there were nine approved State plans. Now there are a total of thirteen approved State and Interstate ANS Management Plans.

A Task Force member then asked if a territory had ever submitted a management plan and, if not, could they do so? Sharon answered that she was not sure and that we would need to check with a solicitor. If the answer is no, then the reauthorization makes this a good time to get try and get this changed.

Another Task Force member then asked how all the plans would get funded since new plans keep getting approved, but the funding level has not increased. Cathy Short answered that the appropriation is static and that the current funding level will continue to be divided among all the approved plans. The Task Force will work with the states to get realistic requests from the states as we want to spread the funding levels as best as possible. Another Task Force member commented that non-Federal members can contact their congressmen to encourage them to support increases to support State plans. Cathy Short added that NAISA also provides for additional authorizations for State ANS Management Plans.

Brown Tree Snake Panel – Ernie Kosaka, Brown Tree Snake Control Committee Chair

Overview of Brown Tree Snake Situation – Earl Campbell, USFWS

Earl Campbell started off his talk with some basics on brown treesnake ecology. They believe the first snakes were introduced in the 1950's from decommissioned ships. By 1968, they had reached the south part of Guam and by 1982, they had reached the north end.

Snakes occur in numbers of approximately 20 - 60 per hectare and spread rapidly. The snake's impacts have been significant in that 9 of 12 bird species became extinct by 1987 and of the three that are left, two are listed as endangered. The snakes have also impacted native lizards and affected the dispersal of seeds. The snakes also cause numerous power outages and have also impacted the agriculture and poultry industries.

Scientists believe that the snake thrived on Guam because it was supported by a high numbers of an introduced skink (13,000 per hectare). The lizards came from Australia and the three native lizard species now have very low numbers. The snake came from north and eastern Australia and New Guinea and have moved to many Pacific islands and have been found as far away as Spain, Alaska, and Texas. They take refuge in cargo leaving Guam by hiding during the day to save water.

Techniques for control of brown treesnakes include snake traps with live mice, detector dogs, hand capture, shade barriers, and acetaminophen.

Overview of USDA Wildlife Service efforts with BTS on Guam – Dan Vice, APHIS, Wildlife Services

The U.S. Department of Agriculture's Wildlife Services program on Guam seeks to prevent further dispersal of the brown tree snake, protect economic resources, and protect wildlife resources. The program conducts containment efforts at all military and commercial ports of exit on Guam and conducts conservation work in key native wildlife locations. The program currently has 41 FTE's, with 13 full time canine teams, providing cargo coverage 24 hours a day, seven days a week.

The program has 3,200 brown tree snake traps in use and removed 13,000 snakes in FY 2002. The traps are placed in locations where there is the greatest risk of snakes getting off the island. The main goal is to protect cargo resources from snakes. Unfortunately, the trapping/control is very labor intensive and involves a lot of human input. They often find 9-10 snakes in a trap at one time. Spotlighting (another technique used to capture snakes) can account for 30-40% of the snakes caught. The detector dogs don't find many snakes per year, but these are the ones that have slipped through the other detection measures.

The snakes were also causing lots of power outages for the Guam Power Authority (GPA), though most of the power outages are small and localized. They can get into substations which is a larger-scale problem that can lead to island-wide problems. In 1998, Wildlife Services was contracted to do control work by GPA. Control work is being done at 13 substations around the island involving 211 traps and spotlighting each site twice a week. In the past 48 months, 2880 snakes have been removed. Twenty-five percent of those were caught by hand (approximately 20% of effort). The hand caught snakes are usually larger than trap caught. Since project inception in November 1998, there has been only one snake caused outage at targeted substations.

Another part of the program is the Munitions Storage Area Project (MSA). The MSA is a 1,400-acre block of native forest located on Andersen Air Force Base. The goal is to create a snake-reduced core area in the central portion of the MSA. The program has 4 full time specialists operating 900 - 1000 traps at one time to provide continuous coverage of up to 1000 acres of fragmented limestone forest. They are also conducting field trials in support of acetaminophen registration.

Although the control programs can certainly be viewed as successful, they are not without their limitations. The capture methods are size-specific and they rarely catch small snakes (and small snakes are very hard to find in cargo). The control efforts are very labor intensive, being conducted on a small scale, and are perpetual in nature. The control activities are also not cost-effective at low snake/high prey densities.

The operational needs of the Wildlife Services program for brown tree snake include:

- Development of an inanimate lure;
- Registration of an oral toxicant;
- Optimization of control tool integration;
- Ability to effectively capture all size classes of snakes; and
- Risk analysis from recipient locations, including information transfer, preventive containment efforts and response protocols

In conclusion, brown treesnake control on Guam is expensive, labor-intensive, and of limited scope. Prevention efforts appear to be slowing the arrival of snakes in other locations. Although total eradication of brown tree snakes is not believed to be possible on Guam, some wildlife recovery projects focusing on area eradications are progressing. The cooperative nature of containment program is a significant limitation. Control techniques must continue to progress and the high costs of interdiction outweigh inability to control incipient populations.

An Introduction to the BTS Rapid Response Team – Haldre Rogers, USGS BRD

Haldre Rogers introduced herself as the Coordinator for the Rapid Response Team (RRT) of the Brown Treesnake Project. She asked the question: “why are other islands at risk to snakes dispersing from Guam?”

The brown treesnake is very tolerant of disturbed habitats, such as those found around ports and cargo storage areas. They tend to hide in small crevices and since they are only active at night, they can easily go unnoticed and become stowaways on cargo, boats and aircraft. They can also go months without eating, which enables them to endure long periods of time in sealed cargo. These biological attributes coupled with the high densities on Guam and the frequency of air and ship traffic leaving Guam, make the brown treesnake a threat to many islands and mainlands worldwide.

The spate of sightings beyond Guam began on Kwajalein in 1979. There were two spotted on Oahu in 1981 and the sightings have been increasing. There have also been BTS sightings or captures on Pohnpei, Saipan, Tinian, Rota, Okinawa, Spain, Texas, Alaska and Diego Garcia atoll. Using Saipan as an example, there have been 56 sightings on Saipan to date, 11 of which resulted in the capture of the snake. Of those 11 captured snakes, eight were at the ports, but three were not near any port. These sightings give us reason to believe there might be an incipient population on Saipan.

Currently, the most effective defense against the spread of the brown treesnake is a multi-faceted

approach. The first line of defense is the USDA-WS control program discussed by Dan Vice in the previous presentation which prevents snakes from leaving Guam. The second facet is an interdiction program such as the one in Saipan or Hawaii, which may include trapping around ports, K9 inspection of incoming aircraft and cargo from Guam and a snake barrier for quarantining incoming high-risk cargo from Guam. The interdiction program should be tailored to the level of threat. An expensive dog detection program and snake barrier would not be appropriate for an island receiving little to no cargo from Guam.

If a snake manages to elude capture and escapes from Guam, and also escapes from the inspection by the country/island receiving the cargo, a mechanism is needed for responding appropriately if that snake is sighted.

The RRT help prevent the spread of snakes by providing response capabilities and providing cooperation and education. One of the most important roles is to make local contacts and together develop a response protocol for every major US associated island in the Pacific receiving air or ship cargo from Guam. The RRT is in the process of developing a model program with effective protocols that can be used elsewhere. It is also preparing to visit other islands to start making contacts and establishing response protocols there. A snake sighting form is also being developed for use in all sightings worldwide that could possibly be BTS. The RRT also maintains a snakephone (671-777-HISS) for anyone to call to report a snake sighting, primarily used by local officials. The RRT Coordinator can be reached 24 hours a day at this number ready to organize a response instantly. The RRT is also a cooperative effort among agencies. It is housed under the US Geological Survey and currently, the searchers are all biologists with the USGS Brown Treesnake Project. The program is being expanded to include searchers from USFWS, DAWR, USDA, UOG, the Audubon Society and general volunteers. Snake searching training may also be provided on Guam for volunteers and scientists from Hawaii.

The first task of the RRT is to gauge the current awareness level of the threat of BTS on each island and then educate the island residents about BTS. One of the goals of the education efforts is to teach the residents to kill any snake they see and report all snake sightings immediately (whether the snake was killed or not). The RRT will focus on people in direct contact with the cargo or active at night, like dockworkers, quarantine officers and security guards, but will also include workshops for the general public and schoolchildren.

The RRT responds to snake sightings by sending trained snake searchers to the location of the sighting to work with local officials and volunteers to respond to the sighting. The RRT staff is highly trained at visual surveys and constantly reinforces that training. In the typical scenario, an observer sees a snake and calls a local wildlife official. The official calls the RRT coordinator, interviews the observer at the site and discusses the situation with the RRT coordinator and decides on an appropriate response. If they decide to deploy the RRT, a team is selected, gear assembled, and the team departs Guam within 24-48 hours of the sighting. The RRT then meets with local wildlife official and the observer, performing night surveys and setting traps and may remain on the island for up to two weeks.

In the future, the RRT needs to continue and expand RRT training and continue to form contacts and educate the people on other islands.

An Overview of USGS/BRD Research on Brown Tree Snakes – Haldre Rogers, USGS BRD

The USGS/BRD Brown Treesnake Research Program seeks to better define the problem, identify impacts and provide management with information and tools for effective control of the brown treesnake. The team consists of seven staff on Guam, four in Fort Collins, and 8 cooperators at Colorado universities.

The USGS research program's efforts to define the problem, assess the risks, and document changes to Guam's ecosystem have been instrumental in developing technologies for the control of snakes. USGS has documented the following three factors responsible for the effect this invasive species has had on a complete ecosystem. These factors are: lack of predators, lack of co-evolution, and high growth and survivorship.

Much of early research done by the USGS was in identifying the impact the BTS has had on Guam. Changes have also been documented in Guam's vertebrate communities. Not only has there been a huge loss of species, but they have also shown how the ecosystem, once dominated by numerous native species, is fueled by a few introduced vertebrates.

Trap design has evolved and improved over the past 15 years due to experimentation and testing of various trap housing, trap entrances (flaps) and trap placement. USGS continues to test designs to improve their efficacy. Current and future research will focus on optimal placement, configuration, and timing of trapping occasions. If they can determine the population structure of BTS, they can target those segments of the population that are responsible for the species growth.

A current population study planned on Guam will allow USGS to test the efficacy of control methods (i.e. trapping vs visual surveys vs toxicants) and will help determine if biological pathogens are feasible as control for BTS. Current and future research efforts include research on population dynamics, influence of prey availability on BTS capture, critical thermal extremes of BTS, and reproductive aspects of BTS.

What is the payoff of all this research? USGS hopes to see its research used to help:

- Create snake-free patches of forest, enclosed with a fence, where wildlife and habitat can be restored on Guam.
- Reduce Snake populations at critical areas on Guam such as seaports and airports
- Prevent snake dispersals to Hawaii and other Pacific islands

Rapid Response Preparation on the US Mainland – Scott Henke, Texas A&M University

The mission of the North American Brown Treesnake Control Team (NABTSCT) is to prevent the invasion of brown tree snakes into continental North America through education and awareness and through rapid response assessments of potential sightings via a partnership of stakeholders. The team consists of 44 members from a diverse audience of stakeholders

including Federal agencies, the military, State agencies, the Gulf States Marine Commission, and private groups (NGOs, Universities, Interstate Commissions). Membership is still needed, however, from the Gulf Coast and Western Regional ANS panels, zoos, TNC, the Audubon Society, the Wildlife Society, and commercial airlines.

The NABTSCT web site (www.NABTSCT.org) has more information on the team including: a directory of members, mission statement, a listing of partners, rapid response, potential pathways, an annotated bibliography, and educational presentations. The web site also has BTS identification notes including pictures, information on look-alike species, and a BTS flier.

Potential pathways for the BTS to get to the U.S. mainland include commercial air traffic, the pet trade industry, military and other cargo, and military personal belongings. No commercial flights come directly from Guam. They all stop in Honolulu and either end up in Houston, TX or Los Angeles, CA. It is important to keep the BTS out of the mainland due to the amount of effort it would take to prevent it from spreading if it did get here. As an example, there are 7 flights that leave Guam for Houston each week. However there are 958 flights that leave Houston for U.S. and Mexico every day and if the snake became established in Houston they would all have to be monitored.

Other activities of the team include:

- Maintaining an annotated bibliography on the brown treesnake that can be used to benefit researchers, legislators, etc.
- Creating 15 and 40 minute powerpoint presentations with photos and full text.

Scott also mentioned that the NABTSCT would also like to see the entire *Boiga* genus placed on the list of Injurious Wildlife as per the Lacey Act.

Another Task Force member mentioned the siting in Alaska and asked if they could survive there. Someone answered that the BTS does not do well in the cold but that it has been found close to the snow line in New Guinea and has a broader range than one might think. It is unlikely that they would survive in Alaska.

Another Task Force member asked about the problem of funding. Earl Campbell responded that there is no wiggle room. They get approximately \$3 million from DOI (Office of Insular Affairs) and that is split up among agencies, locations, and programs. Last year, USDA was forced to make some manpower cuts due to inflation, but was bailed out with some funding from DOD. Cathy Short then pointed out that the message here is that prevention is definitely the way to go instead of resorting to control.

Update on *Crassostea ariakensis* – Fred Kern, NOAA

On May 31, 2002, the latest Ad-Hoc Panel on the Industry Trials of Triploid Non-Indigenous Oyster Species in Waters of the Chesapeake Bay Basin met to review the Virginia Seafood Council (VSC) proposal: "2002 Industry Trials with Triploid *C. ariakensis*. The Virginia Seafood Council proposed to test one million chemically induced triploid *C. ariakensis* at 39

locations in the Virginia portion of the Chesapeake Bay basin and on the ocean side of Virginia's Eastern Shore. Based on the seven criteria identified in the Chesapeake Bay Program Policy, the presentations by a VMRC representative, presentations by invited specialists, and after extensive discussion, the panel unanimously recommended disapproval of the VSC proposal as presented.

Critical issues identified by the ad hoc panel include:

- **Use of chemically induced triploid** - Currently the use of chemicals to induce triploidy in oysters is undependable (i.e., the process yields batches of triploids mixed with diploids) and proportion of triploids produced is subject to large fluctuations. The VSC's suggested level at 1% diploid oyster presence may be highly optimistic.
- **Lack of specific enforceable biosecurity measures** - The plan does not clearly identify procedures to be used at each site to ensure non-introduction of diploid *C. ariakensis* and to assure that no study oysters would be inadvertently lost from holding containers and that all study oysters would be removed from the water by a designated date.
- **The number of sites and participants** - The high numbers of sites make monitoring and enforcement difficult and increases the risk of human error. The low number of oysters per site would also make an economic analysis less dependable. A number of proposal participants lack necessary experience with oyster aquaculture.
- **Lack of economic research component** - There is no standardized data collection method proposed to measure economic parameters. Study format lacks standardization of methods needed for valid economic analysis.
- The lack of specific biological information on *C. ariakensis* does not provide the panel with basis for approval. The introduction of a new species, whether in diploid or triploid form to the Atlantic Coast of North America should not be undertaken without thorough cost benefit analysis of societal, environmental, and economic factors. In addition, the findings and recommendations of the pending National Academy of Sciences study should be considered before further decisions are made regarding additional trials of *C. ariakensis*. Finally, the basic biological information requested by previous CBP ad hoc panels is still lacking. This information is a required element in conducting a dependable risk analysis.

At the end of his talk, Fred Kern stated that he had still not received a letter from the Task Force.

Two Task Force members expressed concern over this and stated that they felt it was the Task Force's responsibility to write a letter expressing its concern over the situation.

Action Item: *The Task Force will send a letter to Fred Kern indicating that the Task Force is concerned about the potential introduction of the non-native suminoe oyster.*

Ship and Sanitary Canal Activities – *Al Cofrancesco, Army Corp of Engineers*

The barrier demonstration project at the Chicago Ship and Sanitary canal is now getting substantial visibility. The Corps Chicago District in charge and very active in the project.

The Barrier was first put in as a demonstration project, but the results are looking so favorable that they have put in a funding request for a second barrier down stream from the existing one.

The maximum funds they can use is \$5 million but it will cost \$7 million, so they are looking for another \$2 million, but will go ahead with the project under 1135 authorities.

Observers have seen fish coming upstream, encountering the barrier, bubbling up, and not passing through, but the effectiveness of the barrier has still not really been tested. A new system designed this year could be up and running by 2004, depending on funds and other obstacles. The barrier is owned, maintained and operated by the Corps of Engineers. In addition, they will go back to the demonstration project and turn it into a real project. They want to put the second barrier on a different electrical grid if possible and on a different back-up system. This way there will always be one barrier operable if the other goes down.

A Task Force member asked if there was any public review of the new design. Al answered that they know the specifications for the area and space and once the preliminary designs are set, they will invite public review. . They have also added a TV camera to monitor the system 24 hours a day. They have also added an audio system with a recording to warn barges and prevent them from breaching the system.

Cathy Short stated that she was encouraged by the progress to date. A Task Force member then asked whether they were going to get more funding for the back-up generator for the first barrier before trying to build the second barrier. Al replied that he was not sure about that but that he would find out and get the information back to Sharon Gross.

Injurious Wildlife Update – Sharon Gross, USFWS

Sharon Gross reported that the Service's Branch of Invasive species was successful in getting all 28 species in the snakehead fish genus listed as Injurious and that we had also been petitioned by Congress to list silver, bighead and black carp as injurious as well.

Review Action Items and Discuss Next ANSTF Meeting

The Task Force then reviewed the Action Items (listed in bold after each item in this summary) and agreed on them.

The next meeting will be hosted by the Gulf of Mexico region in late winter/early spring, 2003, possibly in New Orleans.

Public Comment Period

No public comments were received during the public comment period.

Adjourned

The meeting adjourned at 12:30 PM on Friday afternoon.