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**Kellogg Environmental Centre, Derby, Connecticut
Meeting Summary • December 11 and 12, 2003**

Panellists in attendance: Jason Baker, MA Coastal Zone Management; Jim Carlton, Williams College - Mystic Seaport; Kevin Cute, RI Coastal Resources Management Council; Gretchen Fitzgerald, Ecology Action Centre; Willard Harman, NY State Federation of Lake Associations; ; Michael Hauser, VT Department of Environmental Conservation; William Hyatt, CT Department of Environmental Protection; John MacPhedran, ME Department of Environmental Protection; Leslie Mehrhoff, University of CT; Anne Monnelly, MA Department of Conservation and Recreation; Judith Pederson, MIT Sea Grant College Program; Michelle Robinson, MA Department of Conservation and Recreation; Timothy Sinnott, NY Department of Environmental Conservation; Jan Smith, MA Bays National Estuaries Program; Susan Snow-Cotter, MA Office of Coastal Zone Management; James Straub, MA Department of Conservation and Recreation; Donna Turgeon, National Oceans and Atmospheric Administration; Scott Weber, New England Aquarium; Shannon Weigle, Massachusetts Bays National Estuary Program; Lisa Windhausen, Lake Champlain Basin Program

Other participants and guests: Jennifer Dijkstra, University of NH; David Garbary, Atlantic Ecosystem Research Network and Saint Francis Xavier University; Paul Hargraves, University of RI; Larry Harris, University of NH; Don MacLean, US Fish and Wildlife Service; Jane MacLellan, Liaison to the Long Island Sound Study; Mark Malchoff, Lake Champlain Sea Grant Project, Darlene Smith, Department of Fisheries and Oceans; Heidi Weiskel, UC Davis

Contract Staff: Gretchen Fitzgerald (Ecology Action Centre); Jennifer Forman (S&T Committee Contract Intern); Michele Tremblay, ANS Program Manager (naturesource communications)

Thursday, December 11, 2003

Introductions and Updates

Diane Joy of the Kellogg Environmental Centre welcomed attendees on behalf of the Connecticut Department of Environmental Protection. She invited us to visit the Osborne Museum, hiking trails, and Osborne State Park.

Don MacLean informed the panel about an ANS Task Force meeting held in Arlington, Virginia, in November 2003. Three new state plans were approved (Hawaii, Arkansas, and Indiana). Control plans for Chinese mitten crab and European crab were announced. The Gulf of Mexico Panel is to become the Gulf of Mexico and Southern Atlantic Panel. The next meeting of the ANS Task Force will be in St. Louis, Missouri in May 2004.

Don also spoke about a meeting of the Regional Panels that happened the day after the ANS Task Force meeting. They plan to do this on a regular basis in the future. Unfortunately, the

ANS Task Force has lost its executive secretary, Sharon Gross. Everett Wilson is acting as executive secretary. The division chief is hoping to get the position of executive secretary split into two positions: Branch Chief, based in Washington, DC, and executive secretary for the Task Force. Don reviewed existing regional panels: Western, Great Lakes, Northeast, Mississippi River Basin, Gulf of Mexico and Southern Atlantic, and Mid-Atlantic. He pointed out that a Pacific Islands Panel is being discussed. Caribbean Islands are not included in geographical coverage of the Regional Panels. San Juan is active on invasive species.

Don went on to inform the Panel that the Invasive Species Task Teams are meeting, and producing documents. The Pathway Task Team has identified pathways, and now their task is to prioritize pathways. Don has developed tree diagrams to make the task more digestible. The tree diagram separates pathways into categories, namely Transportation Related, Living Industry, and Miscellaneous Pathways. Each category is further broken down into sub- and sub-sub-categories. To rank these pathways, since there really is no data, they plan to submit a questionnaire to four or five experts, asking them things like: does a particular pathway transport huge numbers of organisms, what is the diversity of organisms transported, what is the frequency of the vector, does the pathway provide a hospitable environment, is it known to bring in invasive species, are we doing anything about it, etc.

Document circulated: Final Draft of the Invasive Species Pathways Team Reports. The booklet on the web at <http://www.invasivespecies.gov/vectors/main.shtml#pathways>.

Action Items: Please look at the information provided by Don, which is also on the web (<http://www.invasivespecies.gov/vectors/main.shtml#pathways>). Let the Task Force know if this is a useful document. Use document to assist Shannon Weigle's survey work on pathways.

Dean Wilkinson was unable to attend the meeting, but a document was circulated on his behalf, giving attendees an update of Invasive Species Council activities. Nominations for the Invasive Species Advisory Committee will be open until January 15, 2004, and they are particularly interested in getting representation from states and tribal interests. The Invasive Species Management Plan will be updated in the beginning of 2004; a draft form has been prepared and circulated. The Council has submitted a more inclusive budget of invasive species management efforts to the Office of Management and Budget. The US EPA has given the Council draft regulations for aquaculture effluents for review, and there should be provisions for invasive species. On September 30, 2004 the Council met with US and Canadian agencies to discuss cooperation and coordination of invasive species work.

Document circulated: Summary of Dean's comments on National Invasive Species Council Activities.

Action Item: Provide Dean with nominations to the Invasive Species Advisory Committee.

Susan Snow-Cotter attended the fall meeting of the Regional Panels via conference call. They mostly worked on standard operating procedures, but they also discussed the need to recognize that the NEANS Panel must respect protocols of the ANS Task Force. For instance, the Ballast Water Committee of the NEANS Panel had submitted comments on the proposed ballast water legislation, but as the Panel is, in reality, a committee of the Task Force, NEANS can't comment on federal legislation. NEANS must submit comments to the Task Force, who will then consider the comments and decide whether or not to carry them forth. Alternatively, comments can come from individual agencies or possibly the Gulf of Maine Council. In this way, the comments would not come from the Panel, *per se*. Susan went on to describe the Panel Steering Committee retreat in Whitefield, New Hampshire, where bylaws for the Panel were drafted. The Steering Committee also decided on new mechanisms for budgeting and allocating funds for travel and Panel work.

Tim Sinnott distributed the draft of bylaws for the NEANS Panel, except for a three page Appendix, which contains the objectives of the Panel (these are available on the NEANS website: <http://www.northeastans.org>). This is the second draft, the first of which was circulated at the Panel retreat in October. He encouraged members of the Panel to read and digest these bylaws.

Document circulated: Draft bylaws of the NEANS Panel.

Action Item: At the next Panel meeting, please come with thoughts on bylaws.

NEANS Panel Business - Michele Tremblay, ANS Program Manager

The meeting summary for the May meeting of the Panel is now available on the Panel's website. Panelists were asked to confirm they were subscribed to the NEANS list serve, and given instructions as to how to subscribe should they not be on the list.

Michele also reviewed some changes in financial budgeting matters that were decided upon at the Steering Committee Retreat. Committees are now asked to make work plans and to submit proposals for funding to the Steering Committee for review. A travel policy for reimbursement was put in place; you now can apply to it for travel when representing the Panel. Dates have also been selected for the spring NEANS meeting.

Action Items: Please keep the following dates in mind for the May NEANS Panel meeting in Newport: May 10-11th and May 17-19th. Also, make sure you are on the NEANS list-serve.

New England Rapid Assessment Survey Summary - Jan Smith, MA Bays Program

This summer, the U.S. EPA funded a rapid assessment of invasive species distribution in New England. Fifteen scientists, grad students, and volunteers from local estuary groups participated in the survey. They looked at floating docks and scraped off sessile organisms for identification. A new idea has come to light about floating docks being a good place to spot new invaders because they are placed in water free of organisms and represent perfect, competitor-free "settling plates" for new species. New docks may be entry points for invasive species because nothing else is there to prevent settlement. In the first week of August, 20 sites (two sites in each estuary program) were sampled. Native species were also tracked, in order to see if non-native species are displacing native ones. They made an effort to be slightly quantitative, and commented as to whether each species was abundant, common, or rare. In some places, efforts were made to collect fish as well. All data from this and the 2000 rapid assessment survey will go into marine invasive species database.

In last summer's survey, about 450 species were found, approximately 10% of which were non-native. The 2000 Rapid Assessment Survey was in Massachusetts and Rhode Island only. They found 25-26 invaders out of 230 species. One new non-native species was identified in the 2003 survey at the South Street Seaport Museum site. Two or three other potential new species were collected; they have been sent to taxonomists in Europe. By the end of December, they hope they will have a breakdown of species distribution. The samples are kept at Harvard University. Publicity of the survey was really good: front page of a Portland newspaper, and the Boston Globe and New York Times had coverage. National Geographic also filmed the survey, and the program will be aired as part of their "Explorer Series" this September. The next survey should happen in the next three or four years. The report of the survey will be available (they hope) by February or March.

Scott Weber pointed out that aquaria conduct regular collections trips for fish; they should try and incorporate this into the survey next time. The New England aquarium found eight juvenile lionfish in their last survey of New York. Divers' associations are also hooked up to aquaria. Aquaria keep databases: records do exist of what they collect, which could be of use to the survey.

Donna Turgeon let the Panel know that NOAA has new lionfish risk assessment at the printers right now. She also said that juvenile lionfish have also been seen in Massachusetts Bay. NOAA's deep sea expedition found 24 lionfish.

Other comments: Terrestrial and aquatic "bioblitzes" (biodiversity days, volunteer driven) are happening in other places; this might be a potential source of information - is there a tie-in? Mass Bay is also releasing a biomap.

Highlights from the Connecticut Department of Environmental Protection

William Hyatt, Connecticut Department of Environmental Protection

Connecticut is behind their neighbors on invasive species work. New York and Massachusetts already have aquatic invasive species plans, but CT does not. Historically, very little has been in place other than requiring import and liberation permits for fish. The CT Zebra Mussel Task Force resulted in outreach, particularly notices to boaters and anglers: this was CT's first attempt to stop an aquatic invasive species. Surveys have shown that 80-90% of anglers are aware of the risk of spread of zebra mussels. This type of initiative would work with other species, not just zebra mussels. The Zebra Mussel Task Force wound down in mid-1990s. Recreational boaters, who were not as susceptible to outreach as anglers, were not as well-informed. They have continued outreach and postings targeting this group. There is escalating concern about aquatic plants such as milfoil, etc. In 2003, an invasive species act was passed by the state. As a result of this act: seven plant species were identified whose transport, purchase, and introduction are now outlawed; an invasive plant council was formed; boaters are required to inspect and remove all aquatic plants from vessels or face a \$100 fine; and officials are to increase efforts to look for invasive species in the course of their duties. David Left, CT Department of Environmental Protection Commissioner (DEP), is active on the issue. Sea Grant, in cooperation with the DEP has developed the invasive species plan, which is tied to a \$56,000 grant. The Institute of Water Resources will form workshops and committees as part of the plan. DEP and Sea Grant plan to refine the plan within the year. The new act places the authority to issue permits in the hands of the DEP. Hatcheries, import hatcheries, and aquaculture operators have been sent a registered letter by the DEP, informing them of the upcoming regulations. The DEP expects the invasive species act to be passed within a one-year time frame; it should be fast-tracked though to the governor. Unfortunately, DEP funding has been cut, but funds are being diverted to fill budget gaps in activities that are mandated by the law.

Tim Sinnott pointed out that CT is not as behind as Bill may have thought. Legislators started with identifying and addressing the problem in CT, rather than technical people trying to get legislators to address the problem.

Action Item: Connecticut's new act should be added to Shannon Weigle's summary of regulations in the Northeast.

Early Detection and Rapid Response Workshop Update - Jay Baker, MA Office of Coastal Zone Management

Jay summarized the Panel's progress on rapid response to invasive species in the Northeast, including outcomes from the NEANS workshop held in Bar Harbor last May and the production of proceedings from the workshop. He reminded people that the proceedings are available on the NEANS website. The proceedings include abstracts of presentations, summaries of breakdown group recommendations, case studies, elements of a rapid response plan (including detection), and next steps for the NEANS Panel (please see http://www.northeastans.org/rr_proceedings_9.2003.pdf). Next steps for the Panel identified at the rapid response workshop were to set up a web-based resource to assist with rapid response, offer control technique options, and to create lists of taxonomists who can assist in

early detection. Jay circulated a one-page draft NEANS Rapid Response Plan, and requested more comments from the Panel on this document. Jay informed the Panel that some states are acting alone to develop their own rapid response plans. He sees the role of the Panel as a body that could develop resources, but he needs more input on what resources should be and how they should be presented. A proposal has been submitted on behalf of the Panel for a two-year NOAA fellowship position to carry out work on rapid response. A sub-committee will be needed to guide this person.

Don MacLean informed the Panel that the ANS Task Force is working to produce a living document that is a list of contacts and information on invasive species. He strongly encouraged the Panel to contribute as much as possible, including funding and tax information.

Tim Sinnott commented that the Panel needs a more specific request for information regarding what documents and information are needed from each State.

John MacPhedran pointed out that federal money in Maine is being used already; a contractor is working on what resources (permits, etc.) are required for doing rapid response in Maine.

Jay Baker said that there is money left over from the Sea Grant \$10,000 given to the Panel for rapid response work to develop resources, etc.

The Ad Hoc Committee on Rapid Response, a sub-committee of the Science and Technology Committee, consists of: Mike Hauser, John MacPhedran, Amy Smagula, Jim Straub, Judith Pederson, Kevin Cute, and Les Mehrhof. Membership on the committee is open to Panel and non-Panel members.

Document circulated: One page draft of the Northeast Aquatic Nuisance Species Panel Rapid Response Action Plan.

Action Items: Please submit comments on the draft action plan, and tell Jay if are we heading in the right direction. Jay would also like comments from attendees and Panelists regarding what resources are needed that the Panel can provide to help states and provinces with rapid response. The rapid response sub-committee may send out a questionnaire with specific questions for people to answer. If you wish to participate in this process further, please join the Ad Hoc Rapid Response Sub-committee. Please submit information to add to the ANS Task Force (via Don MacLean) information on invasive species.

Roundtable – updates from provinces, states, and other organizations

Lisa Windhausen, Lake Champlain Basin Program

They have produced Lake Champlain ANS Management Plans. Next summer, a media campaign targeting anglers in Lake Champlain will be launched. If anyone has information or experience with such a program, please share it.

Action Item: Please share information with Lisa regarding outreach to anglers.

Tim Sinnott, NY Department of Environmental Conservation and Recreation

The good news from NY was that new legislation has created a state Invasive Species Task Force for the purpose of giving recommendations to the governor on what to do on invasive species. The Task Force has a deadline of December 2005 to complete its work. The bad news from NY is that because of current state fiscal problems, invasive species issues have slipped as one of the priorities for the Department of Environmental Conservation. Fiscal problems in the state resulted in a massive early retirement program, which cut 51 people in Tim's Division (Fish, Wildlife and Marine Resources) alone. The Division issued new policy guidance that programs should not pursue grants for less than \$100,000. Since Federal ANS Task Force funding is unlikely to reach levels of \$100,000 for each state, Tim's ANS program is precluded from seeking federal ANS funds. After auditing his Time and Activity report, Tim found that he was spending more time on ANS than any other task, including his

primary responsibilities which relates to ecotoxicology and fish and wildlife habitat protection. After completing a two year term as called for in the draft NEANS by-laws, Tim decided to step down as Panel Co-Chair in order to focus more effort on his primary responsibilities, and to devote the limited time and effort he can expend on ANS to work to build up New York's own program.

Willard Harman, NY State Federation of Lake Associations

Concerned people in inland lakes have set up a boat cleaning program in the state. Volunteers trained at Bill's facility inspect boats prior to a boat being launched. Boat cleaning stations are located away from lakes. If a boat looked like it was not clean enough to be launched, it was escorted away from the lake for cleaning. It worked really well because after a few weeks no one wanted to be inconvenienced, and boats were being cleaned before being launched.

John MacPhedran - ME Department of Environmental Protection

Hydrilla was found in one lake in Maine this summer. They treated it with fluridone and restricted access. By late August, there was no healthy *Hydrilla* left in the lake. There was some public outcry about the response methods. They need more agreement and cooperation with other agencies to respond properly to invasive species. The rapid response fellow hired by the rapid response sub-committee will look at permitting requirements. It takes 6-8 months for a Rotenone waste discharge license to be issued from the Department of Environmental Protection, which is clearly too long. John also told the Panel about an excellent intern who looked at aquatic plants being sold at 100-150 nurseries and pet stores in Maine. Fifty of these outlets had aquatic plants for sale, four sold *Egeria densa*, and *Hydrilla* was spotted as a hitchhiker on Cabomba. Letters were written to suppliers about invasive aquatic plants they might be selling and a database was started. There are opportunities for regional approaches to furthering the work done in this area.

Shannon Weigle - Massachusetts Bays National Estuary Program

Flyers asking pet owners not to release aquatic species into the wild are complete and available for distribution. They plan to set up a web-site as a companion piece to the flyer. Shannon suggested that a focus on the pet industry might be good for the next meeting. She mentioned that Paul Gregory of Maine's DEP wrote an excellent article which appeared in the Aquatic Gardeners Association magazine in October (please see: <http://www.aquatic-gardeners.org/tag.html>). Shannon also welcomed the new co-chair for the Policy Committee: Anne Monnelly of the Massachusetts Department of Conservation and Recreation.

Action Item: Look into the idea of focusing on the pet trade at the next Panel meeting and identify industry reps to participate in a panel discussion.

Anne Monnelly, Massachusetts Department of Conservation and Recreation

Legislation was introduced in MA to stop the spread of aquatic invasive species. Standard operating procedures on rapid response are being looked at. A new infestation of milfoil was found in the state. There are moves afoot to remove initial infestations of *Phragmites* from State park lands.

Susan Snow-Cotter, MA Office of Coastal Zone Management

Susan (and the rest of the Panel) thanked Tim Sinnott for being an excellent and dedicated co-chair and welcomed nominations for a new co-chair.

Don MacLean, US FWS

Thanked Tim and asked him not to lose touch with the Panel.

James Straub, MA Department of Conservation and Recreation

Massachusetts has a new commissioner, secretary, and governor, and at this point they don't know what the new government will do. Having a regional Panel is helping, and they should be following the goals of the federal government. The Department of Environmental Protection follows standard operation procedures on invasive species, and it would be good to bring these up to the regional level. DCR initiated a \$150,000 regional (Massachusetts-side) invasive species rapid response study for state parks: the project is unframed, but they will probably use standard operating procedures on terrestrial and maybe fresh water and marine species.

Donna Turgeon, NOAA

Donna circuited two handouts on NOAA's early detection, warning, and information project for aquatic nuisance species. She also circulated an order form for a book and CD-ROM on Cnidaria and Ctenophora in the US and Canada. NOAA is trying to list all macrobiotic aquatic species for the US and Canada. So far, all Crustacea are done, tunicates are almost ready, The US national budgets for invasive species, continuing resolutions, omnibus bill, and earmarks for funding for 2005 have been worked out and will come out in early spring. For 2004, there is about \$1 million for database and \$1 million for monitoring. The Smithsonian Environmental Research Centre, USGS, and NOAA/NOS have reached a cooperative agreement to merge databases. The 2006 budget for invasive species is supposed to be wonderful; a matrix budget has been passed granting \$3 million for a project on reporting, verification, and monitoring for invasive species. There are also plans for work on ballast water, support for NAISA, and monitoring and response. They are expecting to do five monitoring pilot projects for invasive species, and the Northeast stayed on the table as one of the five. They are also proceeding with a protocols manual for fieldwork on invasive species. A cooperative agreement with Marina Operators' Association of America (MOAA) has been reached. An early warning system for boaters has been established in Texas where they will also to identify plant species in partnership with NOAA and the Nature Conservancy. The Bass Anglers Sportsman Society (B.A.S.S.) has also expressed some interest in getting a system in place for invasive species.

A Statement of Work has been forged by the National Data Centre, looking at 4 months of work on systematics. They are working on developing a list of taxonomic experts to identify invasive species. Donna circulated the list and asked that the Panel comment and add names of expert taxonomists. The Hawaiian Inventory Pilot Project should have been completed by December 1, 2003. The project was meant to identify all species; the draft list of crustacea, cnidarians, polychaetes, and sponges are available.

Documents circulated: Handout describing NOAA / NOS plans for an early detection, warning, and information project for invasive species. Order form for a book and CD-ROM on Cnidaria and Ctenophora in the US and Canada. Preliminary list of taxonomic experts for invasive species early detection network.

Action Item: Donna needs the NEANS Panel and meeting attendees to give her the names and contact information of taxonomic experts who can be part of the early detection network for invasive species.

Jane MacLellan - Long Island Sound, US FWS

It is recognized that it is past time for more focus on biological research in Long Island on invasive species. They are currently trying to expand biological research and have been tasked with providing a list of invasive species in Long Island Sound.

Gretchen Fitzgerald, Ecology Action Centre

The Ecology Action Centre has received funding for a recreational boaters project in Halifax Harbour, aimed at educating boaters on best practices and surveying them about boating practices. The EAC also participated in the ballast water workshop organized by Judith Pederson of MIT Sea Grant in Halifax. The outcomes were good and media attention was excellent. Currently, policy on invasive species is in a state of limbo in Canada. The Canada Shipping Act is being modified to include regulations for ballast water for ships travelling to the Great Lakes. Public consultations on changes to the Canada Shipping Act resulted in stakeholders from both Pacific and Atlantic calling for ballast water regulations.

Jan Smith, MA Bays National Estuaries Program

The Salem Sound Coast Watch volunteer monitoring for tide pools has expanded to looking for invasive species and they hope to have long-term monitoring via this program.

Michael Hauser, VT Department of Environmental Conservation

No new Eurasian milfoil was discovered in Vermont this summer. New populations of water chestnut, which had never been seen in the northeast corner of the state before, were identified. Because of early detection, education, and outreach, the population was identified when it was small and they were able to hand-pull it to control it. One water chestnut infestation in Lake Champlain has thousands of plants. They started pulling it in the north and progressed southward every year, and they have gotten as far as north of Springfield. Purple loosestrife biocontrol with beetles continued with more beetles being reared and released. The control has been successful; there has been a significant decrease in purple loosestrife.

Committee Meetings

Panellists and others broke into Committee meetings for the remainder of the day.

Friday, December 12, 2003

Canadian National Invasive Species Plan - *Darlene Smith*, Department of Fisheries and Oceans (DFO)

Environment Canada is taking the lead on the Canadian plan on invasive species. There are four thematic working groups: terrestrial plants, terrestrial animals, aquatic invaders, and leadership and coordination. These working groups have presented a framework of the plan to the Canadian Council of Fisheries and Aquaculture Ministers (a federal/provincial/territorial body, which is currently co-chaired by the province of Ontario and the federal government). The final plan will be presented next September.

The Canadian government has taken a "pathway" approach to the invasive species issue, breaking down the problem in terms of vectors such as shipping, live bait, unauthorized fish stocking, fishing boats, etc. The pathway analysis for Canada is fairly complete. A draft of the national plan will be ready for a pre-consultation with federal and provincial agencies, university researchers, and NGOs this February. June 2004 is the deadline to have the draft plan ready to present to the Deputy Minister's pre-meeting. No funding has been identified for implementing the plan. The target date for implementation is 2005.

The Department of Fisheries and Oceans has also adopted a Code of Best Practices to address the threat of intentional introductions (such as aquaculture stocking). DFO has also created a Research Chair on Invasive Species at the University of Windsor, which is occupied by Dr. Hugh MacIsaac. This research chair will form a network of researchers for NSERC (the Canadian research granting body). Funding for the research network is \$1.5 - 2 million per year. The idea is to have three nodes for the network: Pacific, Atlantic, and Great Lakes. Hugh

MacIsaac is in the process of identifying primary researchers working on invasive species issues across Canada. NSERC is interested in getting top-notch researchers on the list, so if anyone knows of researchers please let Darlene or Hugh MacIsaac know. A letter of intent from Hugh to NSERC is due in May. Following this, the full proposal for the network will be submitted to NSERC, after which there will be a year-long process, including site visits to research centers, etc.

Right now, there is no federal funding program on invasive species. If they are lucky, they will get \$1 million to devote to the US-Canada shared costs of the sea lamprey retention program. However, invasive species are receiving a higher profile than in the past.

The response to the Standing Committee on Fisheries and Oceans *Uninvited Guests* has been released and is available on the web. Please see http://www.dfo-mpo.gc.ca/communic/reports/aquaspec-espagua/index_e.htm. One of the recommendations of the Standing Committee report was to ban the import of live Asian carp. DFO is working on a risk assessment for Asian carp. *David Garbary* pointed out that there is a lot going on at a research level in Canada. For instance, there is research in the Gulf of St. Lawrence because of aquaculture is intense in this region, and the impacts of ANS could be very costly for growers there.

Action Item: If you know of researchers who would like to be part of the Canadian research network on invasive species, please notify Darlene Smith at DFO or Hugh MacIsaac at the University of Windsor.

Committee Updates

Science and Technology Committee: The committee continues to work on developing a list of priority ANS species in Canada and the US. They want to develop a webpage listing species by state, or of species that are on the watch list of various states. This list would include an explicit list of criteria used to place species on priority lists. It would have definite links to where the species was listed, who placed species on list (researchers), etc. The Marine Invasive Species Database was discussed in further detail later in the meeting.

The S&T committee also continues to work on regional rapid response. They are considering developing general protocols for ecological groups like fish, plants, marine tunicates, etc. These protocols will be given to state agencies. Jennifer Forman, the S&T Contract Intern, has been looking at resources listing best management practices for preventing the introduction and spread of invasive species by various vectors. A rapid response expert list will be compiled, and a web-site created where a person can post a sighting and have a taxonomist reply to review the sighting.

The Science and Technology Committee has received approval from the NEANS Steering Committee to continue to upgrade the MarineIDatabase and to continue to fund Jennifer Forman's work on the best management practices, webpage updates, and the list of priority invasive species.

Donna Turgeon: There are three roles for outstanding taxonomists: 1. to review state lists; 2. help identify species; and 3. publish inventories of species. New England needs to develop a cadre of taxonomic specialists.

Action Items: Continue to upgrade the MarineIDatabase and research best management practices for rapid response. Develop response protocols for various ecological groups. Continue with improvements to webpage. Finalize lists of priority invasive species. Create a list of taxonomic experts that can help in identifying invasive species.

Community, Education, and Outreach Committee

Brochures on the pet trade / aquaria are available for distribution to Panel members. If you would like some, please give your name to Michelle Robinson, who can be contacted via the

Massachusetts Bay website or at michelle.robinson@state.ma.us. The NEANS Panel display is undergoing some revisions. A wallet card for *Hydrilla* is available: please see your state representatives if you would like some. If anyone wants any of the various watch cards for other species, please contact Kathe Glassner-Shwayder of the Great Lakes Panel or the Ontario Federation of Anglers and Hunters. The Western Panel also has a card for the mud snail.

The issue of doing press releases for the Panel continues to be something that needs to be addressed; information may need to be cleared by each individual state office, yet the information must be released quickly. Multiple solutions to this problem were considered, including: having a press announcement on a website, and then notifying state representatives to let them know that the information is available, making media information available and then states and provinces can release it as they wish, or post releases on the Protect Your Waters, Fish and Wildlife Service, or Environmental News Network web-sites.

As Jay Baker mentioned, there have also been a number of items posted on the web regarding rapid response and they will continue to work with the Science and Technology Committee to make such items available to the public.

There were also two additional items which require funding support of the Panel: 1. the creation of a water chestnut hand-pulling brochure which would aid managers and other lake resource people in carrying out control. A draft of the brochure has been made up by Michael Hauser's department; and 2. make a floating key ring with a message from the Panel and contact information printed on it. Prototypes will be distributed to the Panel for their comments.

Scott Weber commented that aquaria are a good outreach venues for press and other materials and aquaria tend to a huge number of links with animal hospitals, departments of agriculture, and state fish and wildlife departments.

Donna Turgeon pointed out that the New York Sea Grant Clearinghouse might also be a good forum for outreach materials.

Action Items: Explore options for releasing information to the media. Complete production of hand-pulling brochure on water chestnut. Produce prototypes for a floating key ring for circulation to the Panel. If anyone would like copies of the pet trade brochure or the Hydrilla watch card, please contact the Michele Robinson or their state representative, respectively.

Policy and Legislation Committee

Two of the three action items set out by the committee have been fulfilled, including an expansion of the membership of the committee and compiling a list of laws and regulations regarding the control of aquatic invasive species (available on the NEANS website).

The third action item which has yet to be completed is to hire a legal intern who would take a list of laws in the various states and perform a gap analysis to figure out if state laws are adequate, which laws are working, and which are not. They hope to bring results of the gap analysis to the May meeting of the Panel.

The committee has also been tracking the progress of the National Aquatic Invasive Species Act, which is currently stalled.

The committee also wants to establish Memoranda Of Understanding (MOU) between states sharing common water bodies. This could be performed by a Panel contract intern.

Action Items: Contract intern to perform gap analysis on policies on invasive species in the Northeast. Continue to track the progress of NAISA. Work to forward MOUs amongst states and provinces with common water bodies.

ANS Criteria and List Update and Discussion - Jennifer Forman, S&T Contract Intern

Jenn looked at 36 lists of invasive or potentially invasive species in the Northeast: seventeen official governmental lists, three draft government lists, seven official NGO lists, and nine

draft NGO lists. Of these 36 lists, 20% had performed some form of risk assessment to formulate their lists, and 58% had some criteria for creating a list. For 20% of the lists, the formulation criteria were unknown. Connecticut has a list of non-native, invasive, and potentially invasive species that is compiled in a very professional and formal way through a thirteen-step process whereby species are assigned a score. The Canadian Wildlife Service (CWS) also has a database of invasive species with 400 species on it, many of which are aquatic, giving the native range, time of introduction, and potential pathways of spread, amongst other things. But the CWS database does not give information on when the information is updated, invasive criteria, and contact information for experts. Jenn gave a summary of the most commonly listed invasive species on the lists she surveyed, all of which were plants. Then she listed the non-plant species that were the most commonly listed on the lists she had surveyed. Diseases of aquatic animals and humans and harmful algae were under-represented or absent from most lists. There were also species that were excluded when the official state lists were compiled. Work needs to be done to get some of these species on official lists. States had a lot of differences when it came to listing invasive species. For instance, Connecticut and Rhode Island listed nineteen plant species in common, but 29 species were listed in Connecticut but not in Rhode Island, and three species were only listed in Rhode Island. Since invasive species ignore political boundaries, it is important that states keep the number of present and potential invasive species that they are on the look out for consistent. The map showing differences in species listings will be posted on the web. Jenn recommended that less commonly listed species should be closely looked at by the Panel, that there be increased communication between members of the Panel (especially between states and provinces), and that education and outreach be enhanced through easy links from the NEANS web-site.

Action Item: Jenn will continue to work with the Science and Technology Committee to hone invasive species list information and make information, including a map showing differences in the number of invasive species listed per state, available on the web.

Marine Invader Database - Jay Baker, MA Coastal Zone Management

Two years ago, Marine Invertebrate Diversity Initiative (MIDI) was given \$15,000 from Sea Grant and \$10,000 from NEANS to work on the MarineIDatabase within the MIDI. The database has information on locations, biology, etc. and is web-accessible. There is also an interactive mapping function whereby you can query the dataset for maps of distributions at various geographical resolutions. The database is a relational one, built in Microsoft Access. You can search for information by species, survey, study, location, etc. A few datasets have been incorporated in the database, including all of the data gathered in the Rapid Assessment Survey of 2000. The information on the database is vetted through an elaborate system created by MIDI, including a step whereby information on the database is reviewed by their Science Review Committee. To contribute data to the database, you can download a template. The completed form is then submitted for peer review. Please contact marineid@northeastans.org for more information. The database should be posted by February / March. MIDI has been contracted to maintain and update the web-page. There needs to be more data incorporated into the database, as it is only valuable if people are contributing.

Action Item: Jay asked that people who have data or know of data that should be incorporated in the database to please contact marineid@northeastans.org for more information and a data template.

Establishing Research Priorities for Invasive Species in the Northeast - Tim Sinnott

Last year, Tim acted as a Sea Grant reviewer, and sat on a Panel that determined which Sea Grant proposals would receive funding. One of the things that became apparent in reviewing

the proposal was that there was a need for greater communication amongst researchers about their research goals. Many of the proposals he looked had overlapping or conflicting research goals, and sometime lots of money was requested to do uncoordinated research. Dorn Carlson of the invasive species program for NOAA Sea Grant suggested the creation of a regional entity to set research priorities and to link researchers with resource managers to leverage funding. As it was, Tim's group was asked to give out \$8, but received \$40 million in funding proposals.

Tim queried those in attendance as to how they thought a regional entity could do this. He thought that the NEANS Panel might want to identify priorities to encourage researchers to focus on certain areas. Of course, reviewers of proposals could still dismiss Panel's priorities.

Jim Carlton prefaced his comments by pointing out that \$8 million is not a lot of money to combat invasive species, although, of course, this is not Sea Grant's fault. The research and management community needs to get this message back to funders. The scale of this environmental issue is huge and yet it is not given the same funding as other environmental issues in North America. In fact, the research and education community should have refused the \$2 million dollars offered them two years ago in order to indicate how inadequate this amount was relative to the problem.

Jim's PhD and Masters students are studying the expansion of the range of the Asian shore crab, which has spread in the past 10 years. The Asian shore crab is now the only common crab found north and south of Cape Cod. His students are studying this remarkable invasion as an ecological and invasion biology phenomenon and as a model for ecological theories. However, research performed for the public will have different goals, such as:

1. Publicly-funded research should be about prevention. Every time a new invasion is identified, we are still caught unaware. We need to know how to predict invasions, identify vectors (beyond the present tendency to only say "probably" introduced by a particular vector);
2. Research on education. Jim pointed out that "larval imprinting" of young people is extremely important, and research is needed to provide information on how to reach people about invasive species and, in particular, about the vectors of invasive species;
3. A list of micro-invasive and disease agents and parasites should also be a priority. Right now, if you are small, you are considered native or, in some cases, cryptogenic; and
4. Research into how North Americans are exporters of invasive species. Our lack of knowledge of this aspect of the invasion problem is not a good neighbor policy. For instance, there is no awareness of how many zebra mussels are being taken up in the Great Lakes and transferred elsewhere or how many Asian shore crabs are being exported to Europe.

Les Mehrhoff stated that three foci need to be addressed:

1. Taxonomy. Taxonomists need to communicate with the public, resource managers, and conservationists;
 2. Biology of invasions. The biological understanding of invasive species is rudimentary. We know very little about species on the watch lists, and little about potential invaders. This data needs to be made available to the public and to industry;
 3. Management / Prevention. A component of research should be required for practical aspects;
- [The last two foci were cross-cutting in scope]
4. Rapid response and early detection. This focus requires research into taxonomy to verify invasions, knowledge of the biology of an organism, and economic issues; and

5. Communication. We need more biologists doing research to speaking in public fora; this might be done by economists, sociologists, teachers, communicators, and by giving academic credit for faculty who are speaking outside of academia.

Bill Harman was in favor of increasing interaction between researchers and agencies, but he pointed out that the public is part of the triangle as well. Bill described the instance of the zebra mussel that is heading downstream in New York Rivers. The ballast water focus ignores this possible source of zebra mussels. In addition, aquatic nuisance species like alewives are sometimes dumped in lakes and rivers by anglers who perceive that salmonids like lake trout are starving. Alewives initially cause an increase in trout, but zooplankton populations are decimated by their predation and algae flourish. There are resulting changes in food webs and phosphorous cycles. As a result of the sinking-out of the over-abundant algae, the oxygenated hyperlimnion which the lake trout depend on as habitat disappears, resulting in a decline on the oxygen available for salmonids. This problem is conveyed to the general public as a eutrophication problem rather than an invasive species problem, demonstrating a real problem in reaching the public on this issue. It also demonstrates a problem with management, which focuses on fish. Fish managers have background in managing ecosystems as top-down systems, rather than examining whole lake systems. This type of agency problem could be brought to the attention of managers through the Panel.

Mark Malchoff underscored the importance of economics and sociological studies. Searching the literature for references to the economic costs of ANS and vectors of invasive species reveals that there is precious little information on the impact of invasive species. More economic data is needed. Also, it is important not to assume that all impacts of invasive species are negative, so if we start to fund economic studies, we might not get the answers we expect.

Lake Champlain Sea Grant has given \$150,000 in research, funding four projects, all of which had an exotic species component. The projects funded included basic biological studies, practical considerations, etc. The Northeast Regional Aquaculture Center funded research to look at bait wholesalers and retailers in New England with a focus on fresh water bait to get information on how much bait is imported and the economics of this industry. Eighty- to ninety-percent of the bait sold in New England was from places like Arkansas and Missouri. Why not use local bait? Why not look at the ecological viability of local bait industries? Arkansas flyways are changed now because bait species are gone. There are an increased number of cases where you need to deal with threatened and endangered species and aquatic nuisance species. There is a need for research and sociological studies.

Tim Sinnott gave an example of a proposal that was submitted to the US EPA for a marina to be built. They looked at the economic feasibility of building this marina close to two other marinas. It turned out the development wasn't going to bring a net benefit to the area. Or, in the case of marketing Asian carp, an assessment of the economic costs to a sustained fisheries resource might rule this out.

Heidi Weiskel, as a graduate student, felt there was a need to contribute to ecological theory, but also to be practical. Perhaps each state could have a top five research priorities?

Donna Turgeon suggested that four very important tracks that are possible:

1. List NEANS research priority projects;
2. Create a review structure whereby the entire Panel could review ideas and put their weight behind particular proposals. NSF and Sea Grant have a long time for reviewing

proposals. If the NEANS Panel aggressively supported certain proposals, it could be valuable in getting that extra push because of a local focus or interest;

3. Find out the economics of ANS impacts. The Florida Keys National Marine Sanctuary had money flow to it because they were able to show how much this sanctuary was worth, or
4. Local universities could have a list of priorities to influence student research.

Mark Malchoff said it is also important to research ecosystem effects of ANS. With the “poster child” of ANS work, the zebra mussel, there are still only statements regarding “probable” ecological effects. For instance, there are increased incidences of harmful algal blooms (one of which caused a human fatality in Wisconsin) due to the effects of the zebra mussel. It would be good to be able to predict ecosystem effects. The NEANS Panel could look at the research priorities listed in Sea Grant’s Requests for Proposals.

Susan Snow-Cotter said there are three possible directions the Panel could move forward on:

1. Develop research criteria about ANS internally;
2. Give criteria to state granting agencies; or
3. Volunteer to offer a review panel that we would make available to researchers. This panel could review proposals and then give strong endorsement to ones that are superior. It needs to be an effective filter, not an automatic nod of approval. Is this something the Science and Technology Committee could do? The Western Panel did try something like this and failed. Perhaps it would be good to communicate with them.

Conflict of interest issues could be dealt with by people recusing themselves when proposals to which they are linked are evaluated. However, it is vital not to have an appearance of a conflict of interest, even if you have people recusing themselves.

Scott Weber said that in veterinary medicine, some important areas of research are on the impacts of aquatic diseases. The Aldo Leopold Society has a summer MBA program to get people to teach scientists how to give information to the public and to enhance their understanding of economic aspect of the problems they work on.

Jay Baker stated it would be good to have all committees involved in the assessment of proposals in order to address points relating to Jim’s and others’ points about cross-disciplinary / non-scientific research work. The stumbling block might be narrowing down research priorities.

Judith Pederson suggested one-, five-, and ten-year priorities. Prevention is the research we need, plus rapid response and ballast water work.

Susan Snow-Cotter suggested that at the next meeting we develop thematic priorities and project-oriented priorities. Perhaps, each voting member could have three votes and these votes would be placed at the priority or theme they believe is the most important.

Donna Turgeon seconded Susan's idea.

Jim Straub was concerned that we do not have the membership to give an authoritative list of priorities. This discussion reinforces that we need to work on the membership of the Panel. New membership is needed, especially from the realm of sociologists, educators, and economists.

Don MacLean said another approach would be for Panelists to go back to their organizations and states and sit with their superiors, get state lists approved by governors, and then submit these lists to be voted on by the Panel.

Jim Carlton listed ten topics of invasive species work:

1. systematic or taxonomy of invasive and native species
2. surveys and monitoring
3. early detection and rapid response
4. ecological / biological research
5. vectors and prevention
6. education
7. ecological theory
8. economics of management
9. regulatory framework
10. post-invasion management

These were not listed in order of priority, the list is “horizontal” rather than vertical in terms of priority.

Judith Pederson agreed that she would help move forward this initiative at some level. There will be communication amongst the Panel and others to get this set-up. Others who were interested in being included in this process: Donna Turgeon, Larry Harris, and Bill Harman. Michele Tremblay will help to facilitate this group.

Action Items: Work toward developing a list of priorities for invasive species research in the Northeast. Make time available at the next meeting to develop such a list. Consult with the Western Panel to discuss their experience on a similar initiative.

Review of Outcomes of the Ballast Water Workshop and Update on Invasive Tunicate found on Georges Bank - *Judith Pederson*, MIT Sea Grant College Program

The goal of last November's workshop, held in Halifax, Nova Scotia, was to identify a ballast water exchange zone within the Exclusive Economic Zone (EEZ) that was biologically- and oceanographically-sensible as well as being commercially viable. The issue of offshore exchange is particularly vexing on the eastern seaboard because most of the ballast being carried is by North-South traffic—ships that do not necessarily move offshore. The workshop was a success overall and there are now five or six recommendations being reviewed by shipping and regulators, with the hope of developing a policy for Canada and the US. The Laurentian Channel alternate exchange zone continues to be an area of contention. Hopefully, through deliberations, a good option was found where ballast water would be moved offshore in currents. The exchange zone must exclude the area where *Didemnum* sp., the tunicate, is found.

Judith Pederson also updated the group on the invasive tunicate, *Didemnum vexillum* that was found on Georges Bank this fall by the NOAA research vessel the *Delaware II*. There is some dispute as to whether or not the species found was *D. vexillum*. This was the first unintentional introduction observed this close to the continental shelf. The area covered by the tunicate is approximately six square miles, but the cobble area where it is found is huge. Scallop fishers are allowed to fish the area now and fishing activities may be aiding the spread of the species. The tunicate was recorded in the 2000 Rapid Assessment Survey of Massachusetts and Rhode Island. Taxonomists have determined that this species is taxonomically the same as the one found in New Zealand, but there is some disagreement if

this is a native New Zealand species or one from Japan. If this is a new species for New Zealand, local state governments there will be responsible for mitigation.

Multilingual Invasive Species Outreach Project - *Shannon Weigle*, Massachusetts Bays National Estuary Program

Shannon Weigle and Michelle Robinson have been acting as leads on a project to translate information on invasive species into different languages. Partners in the project include the Boston Harbor Association and a student from Brown University. It is funded by National Sea Grant. They intend to meet in January - February 2004 to decide on a plan and develop a message to convey by May 2004. By June - September 2004, they will develop focus groups to test the materials they develop and by October materials should be ready for distribution.

Action Item: Shannon requested assistance from the Panel to identify focus groups, perhaps through colleges and multi-cultural associations.

Spotlight on Species: *Codium*

Panelists:

- **Jay Baker**, MA Coastal Zone Management
- **David Garbary**, Atlantic Ecosystem Research Network and Saint Francis Xavier University
- **Larry Harris**, University of New Hampshire

Jim Carlton circulated a fact sheet on *Codium* sp.

Jay Baker, MA Coastal Zone Management
Last spring, a huge *Codium* die-off happened in Harwich Harbor, MA. The *Codium* that drifted to the beach tended to be attached to shells of the non-native slipper limpet *Crepidula fornicata*. When the local landfill refused to take any more of the *Codium*, the harbor master consulted with Jay's agency about what to do with the weed. They wanted to float huge masses of the seaweed out to sea on a barge—a technique that was discouraged by state agencies. The town had previously disposed of the *Codium* in a "dune restoration project," which entailed burying the *Codium* in sand. Analysis by the University of Massachusetts showed that *Codium* would not be an acceptable composting material because of its high salt content. Jay decided to look at the distribution of *Codium* to see where the die-off was coming from. Ground-truthing of data on the distribution of eelgrass beds showed that many areas were actually *Codium*.

Judith Pederson pointed out that seaweed die-offs are not too unusual. West Falmouth's harbor master did not see any *Codium* die-offs this year, but they have in the past.

David Garbary, Atlantic Ecosystem Research Network and Saint Francis Xavier University
Codium was discovered in the Gulf of St. Lawrence in 1996. The dates of spread for *Codium* sp. are: Long Island, 1957; Maine, 1970; South of Halifax, 1988; Gulf of St. Lawrence, 1996. The spread of *Codium* has not been incremental, and is perhaps linked to transfers by aquaculture or boats. This is perhaps why the presence of *Codium* is patchy in Atlantic Canada and not continuous—for instance, it is abundant in southern Nova Scotia not in Cape Breton and limited to some areas in the Gulf of St. Lawrence and Prince Edward Island. There also may be two subspecies of *Codium* present in Atlantic Canada: *tomentosoides* and *atlanticum*, also implying multiple sources of the weed (Hubbard and Garbary, 2002). *Codium* ssp. *atlanticum* is the strain found in the Gulf of St. Lawrence.

Why is *Codium* a problem?

- Ecological adaptations of *Codium* make it a good invader
 - o High dispersal capacity (asexual reproduction -> thallus budding and adult fragmentation; sexual reproduction is rare in *Codium*)
 - o Tolerant of environmental conditions (subtidal, inhabits traditional kelp habitats, estuarine conditions)
- Primary ecological or economic impacts
 - o On the Atlantic Coast of Nova Scotia, *Codium* takes up the same habitat as kelp. Chapman and Scheibling's work has been on how the bryozoan *Membranipora* has caused kelp blades to crack off, creating an opening for *Codium* to take over
 - o Oyster thief – *Codium* is filled with gas bubbles, and it can cause shellfish to be lifted off of substrate / ropes / cages / socks
 - o *Codium* can be a fouling problem for aquaculture

Problems specific to the Gulf of St. Lawrence

- o Here, the primary problem is the “oyster thief” capacity of *Codium*. In Prince Edward Island, they estimate that 20-30% of oysters can be removed from leases by the oyster thief
- o Fouling of aquaculture – costs time and gear

Potential impacts in the Gulf of St. Lawrence

- Irish moss (*Chondrus crispus*) harvesting industry may be affected if *Codium* takes over
- Nutrient competition with eel grass
- *Codium* may also be an "eelgrass thief" because *Codium* has new growth forms that allows it to attach to eelgrass

The objective of David's work has been to explore interactions between *Codium* and eelgrass. He has discovered a novel “prostrate” growth form of *Codium* which grows on a horizontal axis on the substrate with many, many lateral branches. Twenty centimeter fragments of *Codium* grew to 32 cm within 125 days. On average, the fragments grew 30 laterals during this time, although this number was highly variable. Even though plants do not over-winter intact, in the lab they were shown to have the capacity to reattach from fragments.

David looked at how much *Codium* is using eelgrass as a substrate in sandy areas. Fifty-seven-to one-hundred-percent of the time at different sampling times and locations, *Codium* was attached to eelgrass. The physiology of the prostrate branches was analyzed using pulse amplitude modulation fluorometry. They found that the photosynthetic capacity of the lateral axis may have been less than that found on the erect axis, but not significantly so. The relative electron transport rate (indicative of photosynthetic rate) shows that prostrate as well as erect thalli of *Codium* are performing photosynthesis.

Right now, *Codium* is a minimal nuisance to eelgrass, and is generally not a problem in the southern Gulf, except for costs to aquaculture. Should it move offshore into *Chondrus* beds, impact could be significant.

David is also exploring how the digging of green crabs may be impacting eelgrass beds and increasing nutrient levels.

Larry Harris, University of New Hampshire

The first location *Codium* was seen in the Gulf of Maine was Boothbay Harbor in 1964. It reached the Isle of Shoals in 1983. In 1990, *Codium* broke out into exposed areas. In the past, areas around the Isle of Shoals had kelp and urchin dynamics similar to that off Nova Scotia with outbreaks of urchins creating kelp barrens periodically. There is now no urchin fishery off the Isle of Shoals, in part because of *Codium* displacing kelp beds. In some areas, *Codium* populations are declining while in others it is increasing and has a huge impact on

community structure. *Codium* in coastal areas seems to have a cyclical turnover every three years or so. Off the Isle of Shoals, the population is stable, whereas in near-shore areas, which are much more variable in temperature, it doesn't do as well. A nudibranch called *Placida* sp. preys on *Codium*. The nudibranch is cosmopolitan in distribution. *Placida* sp. will choose large plants over small plants 81% of the time in feeding experiments. There may have been outbreaks in predators of nudibranchs because of their increased presence on *Codium*. *Cancer borealis* outbreaks, reaching densities of 91 animals / meter, have occurred of the last few years in the area. Other crabs such as *P. acadianus* and green crab prey on the nudibranch as well. Cunner (*Tautoglabrus adspersus*), a coastal fish species, does not consume *Placida* sp. Other invasive species are also impacting the area: *Membonipora*, and the tunicates *Diplosoma listerianum* and *Botrylloides* are also present. Conclusions: *Codium* is expanding its range in the Gulf of Maine, thermal instability from coastal upwelling is slowing its spread, herbivores are restricting the success of the species in less turbulent areas, the number epibionts found on *Codium* is higher than found on *Laminaria* spp. (is biodiversity increasing because of *Codium's* complex form?), and herbivory will not control the plants in exposed areas.

Other Business

Michele Tremblay reminded the Panel that the next meeting was slated for May 10-11 or 17-19 in Newport, Rhode Island. People were asked to clear those dates on their calendars.

Susan Snow-Cotter asked members to suggest ideas for the next Panel meeting. Possible topics for discussions were: fresh water focus (salmon diseases, alewife, Asian carp), or a pet industry focus, with *Laura Reed* of Fish Mart possibly doing a talk. A field trip was suggested, which might be possible with *Kevin Cote's* assistance.

John MacPhedran was welcomed as the new co-chair of the Panel.

Meeting summary prepared by Gretchen Fitzgerald