



**Location:**

U.S. Fish and Wildlife Service  
Chesapeake Bay Field Office  
177 Admiral Cochrane Drive  
Annapolis, Maryland 21401  
410-573-4500

<http://www.fws.gov/chesapeakebay/>

Conference Room- 2nd Floor



**2010 MAPAIS Meeting Agenda: May 12-13, 2010**

**May 12, 2010 - Wednesday**

8:30 am Continental breakfast

9:00 am Call to Order (*Jonathan McKnight, Panel Chair*)

- Welcome/Housekeeping
- Introductions

9:10 am Review & Approve Agenda (*Jonathan McKnight, Panel Chair*)

9:15 am Fall 2009 MAPAIS Meeting Action Items (*Jonathan McKnight, Panel Chair, ALL*):

- Annual merit award
- MAPAIS “wish-list” funding request (*to be discussed in current, larger context during ANSTF discussion*)
- MAPAIS Invasive Species “Of Interest” List:
  - Cross-walk species list with NPS Invasive Plants Atlas of the U.S.
  - Review current species listing and discuss potential additions

10:00 am A Study of the Sale, Use, and Release of Live Bait in Maryland followed by Q & A (*Jay Kilian, Maryland Department of Natural Resources*)

- 10:30 am Break
- 10:45 am Results of a Pennsylvania Angler & Live Bait Use Survey (*Ashley Walter, Pennsylvania Department of Agriculture/PA Invasive Species Council*)
- 11:15 am AIS Mid-Atlantic Workshop, Vector Management: A Prevention Solution (*Fredrika Moser, Maryland Sea Grant*):
- Status of publication highlighting workshop findings & priority action framework
  - NOAA Sea Grant AIS 2010 RFP
- 12:00 pm Lunch - *provided on-site*
- 1:00 pm Aquatic Nuisance Species Taskforce (*Jonathan McKnight, Panel Chair, Susan Mangin, ANSTF & U.S. Fish & Wildlife Service, ALL*):
- ANSTF Spring Meeting, May 5-6, 2010 - Briefing
  - Rapid Response Planning Workshop, May 7, 2010 -highlights & outcomes
  - Regional Panel Budget Needs Report
  - MAPAIS Priorities for hypothetical increased funding
  - MAPAIS Role - who are we? where do we go from here?
- 2:30 pm Membership: brainstorming session for strategies to increase state engagement with MAPAIS (*Jonathan McKnight, Panel Chair, ALL*)
- 3:30 pm MAPAIS funded projects update (*Lisa Moss, Panel Coordinator*)
- 3:45 pm Members Forum:
- State updates
  - Species updates
  - Other
- 4:30 pm Adjourn – 1<sup>st</sup> day
- 6:00 pm Dinner Gathering at Cantler's Riverside Inn

## **May 13, 2010 - Thursday**

- 7:30 am Continental breakfast
- 8:00 am Call to Order (*Jonathan McKnight, Panel Chair*)
- 8:10 am MAPAIS Budget (*Jonathan McKnight, Panel Chair*)
- 8:20 am 2010 MAPAIS Small Grants Competition: presentation & discussion of proposals for award selection (*Lisa Moss, Panel Coordinator, ALL*)

10:00 am Break

10:15 am Resume discussion of Panel proposals

Panel Business

11:00 am

- Administrative items
- Action items
- Tentative date & location for 2010 Fall MAPAIS Meeting
- Closing remarks

12:00 pm Adjourn & Farewell



**Spring Meeting**  
**May 12-13, 2010**  
**U.S. Fish & Wildlife Service**  
**Chesapeake Bay Field Office**  
**Annapolis, MD**

**Attendance**

Name	Affiliation	Contact
Jonathan McKnight	Panel Chair, MD DNR	jmcknight@dnr.state.md.us
Lisa Moss	Panel Coordinator, USFWS	lisa_moss@fws.gov
Matt Shank	SRBC	mshank@srbc.net
Don MacLean	USFWS	don_maclean@fws.gov
Fredrika Moser	MD Sea Grant	moser@mdsg.umd.edu
Steve Minkkinen	USFWS	steve_minkkinen@fws.gov
Steve Kendrot	USDA-APHIS	stephen.r.kendrot@aphis.usda.gov
Ashley Walter	PA Department of Agriculture	aswalter@state.pa.us
Kerrie Kyde	MD DNR Ecosystem Advisory Services	kkyde@dnr.state.md.us
Dieter Busch	GMU	dieter.busch@eiaidvisoryservices.com
John Christmas	MD DNR	jchristm@gmu.edu
Jay Kilian	PA Sea Grant	jkilian@dnr.state.md.us
Sarah Whitney	VIMS	swhitney@psu.edu
Susan Park	NOAA	spark@vims.edu
Thomas Greig	VA DGIF	thomas.greig@noaa.gov
Ray Fernald	VIMS	ray.fernald@dgif.virginia.gov
Roger Mann	NC DENR	rmanne@vims.edu
Rob Emens	PA Sea Grant	rob.emens@ncdenr.gov
Sara Grise		sng121@psu.edu

## **Action Items**

- The Annual Merit Award Committee (Steve Kendrot, Sarah Whitney, Jonathan McKnight, and Dieter Busch) will obtain nominees and establish guidelines for recognition by the fall meeting.
- Panel members will vote on nominations for additions to the Invasive Species “Of Interest” List at the next meeting. Anyone who has information on these species please share it with the group.
- Jonathan will modify the initial text of the “Of Interest” list to make clear that we have included not only aquatic species, but also terrestrial species that can have effects on aquatic habitats.
- Sarah Whitney will share a briefing on the rapid response exercise in Pennsylvania with the Panel when it is completed.
- Ray Fernald will call Dan Cincotta and ask him for a West Virginia representative.
- Susan Park will look into involving NJ Coastal Zone programs.
- Jonathan will make arrangements for \$2,500 of 2009 carryover funds to pay an intern to perform website work.

**May 12, 2010**

### **Welcome and Announcements, Jonathan McKnight, Panel Chair**

### **Review of Fall 2009 MAPAIS Meeting Action Items**

#### Annual Merit Award

Jonathan initiated discussion concerning the Panel’s vision for an annual merit award. Ultimately, it would give recognition for efforts to combat AIS. Dieter commented criteria should be defined and the need for a focus area, i.e. ecosystem health, etc. Sarah recounted her experience with stormwater management in schools and how it is difficult to get nominations. She suggested keeping the pool broad to gain an education and region-wide perspective. The nomination process should be as easy as possible. Kerrie mentioned the exotic pest council as an example of a potential partnering group. Sarah viewed the award program as advertising for the Panel in the promotion of all the good work that is being done in the Mid-Atlantic region. Steve Minkkinen stated a workgroup was needed to establish award format and guidelines. Jonathan agreed to coordinate the Panel award initiative, but needed others to be involved. Steve Kendrot asked about partnering with a related group to determine peer group depending on the nature of the award. A four person committee was established to define the award

guidelines and process for nominations. Sarah Whitney, Steve Kendrot, Dieter, and Jonathan volunteered to be on the committee.

ACTION ITEM: The committee will work to obtain nominees and establish guidelines for recognizing them by the fall meeting.

#### Presentation of Wish List to ANSTF

The Panel did not have the opportunity to meet as a group to discuss needs so in response to the Taskforce's request, asked for very little; just travel and organizing funds. The Taskforce did not have funding to provide at that moment, but stated the desire to supply more money to the panels. MAP agreed to ask for \$400,000 to expand current activities. Don MacLean put together requests of \$1M for each Panel, emphasizing document identifies Regional Panel needs, but is not an actual request. Copies were provided to members in attendance. This topic was discussed further during the ANSTF update.

#### MAPAIS Invasive Species “Of Interest” List

The goal is to create a living list that we can come back to and update periodically. The current list, which includes 49 species and some basic mapping, is largely reflective of the people who created it. Jonathan asked for feedback on current species and potential additions from the group. There was consensus to update list to 50 species by adding Didymo. Dieter suggested adding an origin column to explain how the species got here. Original intent was to mesh with other lists the region though it is not universal among the Regional Panels. The list could be expanded to include vectors, maps, and environmental consequences. Idiosyncrasies of list include the fact that most people do not consider waterfowl to be aquatic species. Ashley and Sarah stated golden algae and red-eared slider should be added to the list, respectively. Steve offered Asian swamp eel in NJ. These species would be considered nominations to vote upon at the next meeting. There was some discussion over whether this list was strictly aquatic, and where the cut off line falls for aquatic species. Don expressed some discomfort with categorizing plant species such as hogweed and stiltgrass as AIS. They are invasive, but not necessarily aquatic. Jonathan viewed them as riparian invaders; wrestling with the division of land and water. Ray mentioned beach vitex. Kerrie suggested a footnote for listed species needing clarification. It was decided this list will include aquatic species and terrestrial species that are negatively impacting aquatic environments. Questions arose regarding the nomination process for species additions and removals. Lisa doubted list was on the Panel website, but knows there is a link available to the

December 2009 vector workshop website where it is currently housed. Kerrie inquired about the mapping process. Jonathan explained that mapping is created with polygons and Bailey's ecoregions layered over states, and then funneled out to individual states to be refined. The mapping is designed to give MAP a better view to what the region was "biologically." Rob stated the importance of making a review of the species of interest list a routine agenda item for our Panel meetings. Fredrika suggested hiring interns to get all of this information on the web. It would cost a few thousand dollars. Jonathan said that we have \$2500 carryover from past funds. The intern could be housed at Sea Grant.

**ACTION ITEM:** Panel members will vote on nominations for additions to the Invasive Species "Of Interest" List at the next meeting. Anyone who has information on these species please share it with the group.

**ACTION ITEM:** Modify the initial text of the list to make clear that we have included species that not only are aquatic but those that may be terrestrial also, but can have effects on aquatic habitats.

### **Study of the Sale, Use and Release of Live Bait in Maryland, Jay Kilian**

At the December vector workshop we learned from Pam Fuller of USGS that 47 freshwater species have been introduced through use as live bait. In Maryland, nine non-native earthworms and five fishes (goldfish, fathead minnow, rainbow, greenside, and banded darters) have been confirmed. Their effects have not been measured, but likely competing with native darters.

Use of bait in Maryland is unmonitored and unregulated. Virile crayfish were first documented in 1950-60 in the Patapsco River and are now one of the most common species in streams, and we are seeing reductions in the native spiny cheeked crayfish. Widespread distribution is due to bait movement by anglers. This will be a repetitive cycle if the state continues to take no action. Rusty crayfish were found in three streams and we realized populations were uncontrollable, but knew we could restrict movement and did so via emergency regulations.

We conducted a survey in 2008-09 survey of bait shops and mail survey of anglers. The focus was on true bait and tackle shops, not big box stores or 7-11 type stores, etc. We called 71 shops, visited 12, and polled 10,000 randomly selected anglers. Shops contained 5 species of worms, 9 fishes, and 4 crab/shrimp species. 9% of shops sold

crayfish they purchased from local collectors as commercial harvesting in non-tidal waters is prohibited. Shops are selling both native and non-native species. Fredrika commented some of the earthworm species have been here for a long time thus not recently introduced, but definitely spread farther. The results of the poll show that 64% of anglers use live bait. Anglers buy baitfish, collect their own crayfish, and purchase grubs online. The majority of anglers polled release fish and crayfish into water, and save worms and grubs for next trip. A very small percentage of anglers polled dispose of worms and grubs in the garbage, compost or gardens.

The bottom line is anything imported into Maryland and sold as bait will be released. We need to monitor over time and regulate the commerce. The report (copies made available at the meeting) provided recommendations of possible next steps. Many of these practices and policies, states, especially in the Great Lakes region, have already implemented successfully.

Register shops with DNR.

Require retail bait shops report their inventories to DNR.

Require wholesalers to specify which species they are selling.

Educate the public using social marketing techniques.

There was discussion regarding regulatory actions. Tom asked if DNR had considered regulating crayfish dead as bait. Jay informed the group that DNR had started regulating dead crayfish. Don suggested instituting very serious bait regulations which would stipulate that nothing from out of state could be sold. Thomas agreed with Don's suggestion, adding fiddler crabs make their way to SC from the Gulf Coast and that all bait species should come from the state only. Ray said that Virginia has banned the importation and sale of crayfish everywhere in the state, except for as food. There has not been a lot of pushback from bait dealers, but they do confiscate several crayfish each month from pet shops. Jonathan said pet shops were up in arms about bans, even though they do not have a large market for crayfish. Sarah asked when NRP are allowed to check bait buckets. Maryland and Virginia can check buckets at any time. Fredrika asked if DNR was looking at packing material. Jay said that they are not and that they need help identifying polychaetes, beetle larvae, etc. Steve Kendrot asked if there were any helgramites. They have found Dobson fly larvae.

Power Point presentation is available [here](#).

### **Results of a Pennsylvania Angler and Live Bait Use Survey, Ashley Walter**

The Pennsylvania Fish and Boat Commission are considering implementing an education campaign for anglers. This survey aimed to find out more about angler attitude and behavior. They conducted phone interviews with 1,000 randomly selected anglers from licensee database asking about fishing habits, AIS awareness, information sources, and demographics. Survey respondents were mostly male, aged 35-64 years. Approximately 50% had a high school education. Most respondents fished an average of 12 days each year and 75% fished from shore. The more active anglers were more likely to fish more than one body of water. Survey respondents purchased worms, minnows, baitfish, and grubs to use as bait. They also collect crayfish for bait. Most take their bait home, give it to others, or throw it in the garbage; few are dumping. Roughly 50% of respondents dry or clean their waders. Many dry their boats and empty their bilges, but more complicated processes are less adhered to if it puts the burden on the angler.

77% of respondents have heard of AIS, and knowledge increases with age and level of education. 94% think it is reasonable for anglers to take anti-AIS measures. Anglers with more AIS awareness were more likely to think that it is reasonable for anglers to take anti-AIS steps. The most effective motivating statements appeal to the readers self interests (i.e. AIS crowd out natives, AIS hurt your gear, imposed fines, etc.). Peer pressure is less effective. The best location for AIS information is at boat launches, in bait and tackle shops, sporting goods stores, and in fishing regulation booklets. The least effective location for information is on websites and in magazines. The frequency of website visits is correlated with age and education. The highest ranked site is the Pa FBC website. Awareness of AIS has penetrated the community with 34% claiming they give much thought to AIS. Motivating messages appealing to the angler's self interest-reaching them immediately on site are likely to be most effective.

Thomas asked if people were being desensitized to the overall message. If one increases the specificity of the message one will increase the impact. He suggested signs that target a specific individual water body will have more impact. Lisa added on-site facilities to promote anti-AIS behavior will increase compliance. John asked about adding an AIS education component to the licensing requirements. Jonathan said the tackle and boat industry will see that as a bar to the public which may affect sales. Dieter commented long-term, consistent education bears fruit eventually. Fredrika pointed out that there is resistance to doing the more difficult measures and we do not know how effective implementation of such measures actually is. She suggested supporting research that shows such actions pay off. Jonathan stated MD DNR sponsors (30) wader stations yet there has been no evaluation of their effectiveness. He further raised the issue of bait disposal in the garbage begs the question of

humaneness and resource conservation from another perspective. Once live bait is used, there is a good chance those fish have been introduced the water body anyway. The focus needs to be on keeping non-native bait out of buckets in the first place. Thomas followed with bait regulations that do not allow for out-of-state species. John inquired about consequences of violations in VA and Ray responded they are pretty minimal; probably a bait shop owner could be convicted, but not an angler who moves a species to another drainage. Crayfish species are the most problematic AIS in VA. Rob shared that North Carolina has trained boat inspectors at township boat ramps to tag boats that have been inspected to show off participation. Coast Guard auxiliary has been a partner and the Gulf Regional Panel has provided funding for brochures. The boat tags carry no legal authority, but it is an on-site action catching peoples' attention and the program has been well received.

Power Point presentation is available [here](#).

### **Mid-Atlantic Workshop, Vector Management: A Prevention Solution, Fredrika Moser**

The Vector Management Workshop was successful and had a great turnout despite travel restrictions. Ballast water was discussed as an involuntary vector of national and international scale. Other topics included ship fouling and live trade vectors. Live bait, a subsector of the live trade vector, is a good place to start to develop some regionally consistent regulations. The workshop final report draft is available for review. Fredrika is awaiting commentary from workshop speakers.

The National Sea Grant office has offered a federal funding opportunity to support research and outreach on AIS in accordance with existing legislation. \$400,000 is the maximum allowable request. This RFP is only open to Sea Grant programs; it must have a regional focus, and meet certain other requirements.

MAP put a regional proposal together on integrated research and outreach on live bait, requesting \$200,000 over two years. \$125,000 over two years will be put out as a limited RFP to MAP members. The rest will go to a Sea Grant program to support work on this project. This project will ideally consist of an AIS biologist and social scientist. Social scientist will study effectiveness of outreach campaigns to reduce the live bait vector. The PI will have to be from a Sea Grant region, so NC to NJ (excluding NY). The biologist will look at what is coming in and where restrictions could be imposed reducing introductions without hugely impacting the economy. The project will result in a picture of the live bait trade in the region and the best ways to effect change.

Jonathan asked what type of entity would receive such a grant. Fredrika said that she envisioned academia because of the structure of Sea Grant, but co-PIs can come from anywhere. The federal funding will need to go to an academic institution, but sub-contracts can go to anybody. Jonathan asked what product will result from the grant. Fredrika explained there will be pre and post surveys to judge behavioral change resulting from a campaign focused on reducing live bait introduction; guidance for regulatory and policy actions, information on a model for managing other vectors, and insights into success rates of voluntary measures. This project will pull information from and deliver information to the Sea Grant extension people in each state. This will require a statistically rigorous, but inexpensive survey. Sea Grant extension people will work with state agencies to implement the selected campaign. Stay tuned as Sea Grant may ask states to provide information for target audiences. Once Fredrika learns MD Sea Grant has been funded, she will be working with other Mid-Atlantic Sea Grant programs to develop RFP. A 50% match is required. The vision for a final product encompasses a finished, analyzed survey, with recommendations for legal and social actions to take on a local level, but linked to a cohesive regional policy. If policy cannot be implemented region-wide, what are the barriers and the reasons behind them.

### **ANSTF Meeting in Portland, Maine, May 5-6, 2010, Jonathan McKnight**

Jonathan brought our same three recommendations to the Taskforce. He would like to have more or different recommendations to take, but not a 'big ask', like money or staff. We are seeing more and more of the regional panels acting as the arms of the ANSTF, which has no budget of its own. All of the funding stemming from legislation that created the Taskforce goes to FWS which then goes to the regional panels.

### Rapid Response Planning Workshop

At this meeting the regional panels got together and looked at the rapid response plans they have created. A matrix of plans was created to look for commonalities-many exist. The group discussed the use of ICS as a basic process and the need for guidelines for when ICS kicks in and goes away. Only when there are ample resources available, can ICS be fully carried out. Fredrika pointed out that we do have a flowchart that shows where to go and when to go to the head of DNR, for example. Jonathan said that none of the Early Detection Rapid Response plans have been exercised and we need to recognize the limitations of the plans, unless there are thresholds designated for initiation and completion. All of the regional panels expressed lack of funding for rapid

response efforts regionally. The group needs a big available pot. Sarah asked if next steps were determined during this meeting. Mac replied the Western Regional Panel was not involved, so we are going to finish the matrix and distribute it. It is worth having NRCS and others at the table during these discussions because they have the flexibility and money. Steve M. said there must be private landowner/entity to run money through. Don asked if the panel had talked about "dry runs" they had gone through. Sarah explained that MAP funded PA's model exercise which was very useful in writing rapid response plans, helping to point out weaknesses and holes. Ray said that DGIF is only going to use ICS in a case of extreme circumstances because everyone who needs to know how to use it and stay familiar with it cannot be trained. Sarah and Sara said that they do not use ICS, but there is a step by step process once an invasive species is found. A recent exercise in Erie with ICS was not successful because no one agreed to be IC so communication did not happen. First use of the PA plan was in response to round goby which was a bait bucket introduction people were aware of yet did not report for about a year. Field biologists need to be trained in identification and reporting skills. Sea Grant plans to conduct more training to address this need.

ACTION ITEM: Jonathan asked that Sarah share a debriefing on the rapid response exercise in Pennsylvania with the Panel when it is completed.

#### Regional Panel Budget Needs

A fiscal entity is required to process Panel administration expenses and grant funding. Maryland Department of Natural Resources' familiarity with LIP helped provide this service. The regional panels presented budget requests; some requests were quite a bit larger than MAPAIS. It was made clear these requests were unrealistic because the Taskforce has no budget. They essentially said go ahead, thus deferring the lead concerning Taskforce actions to USFWS. Service Assistant Director asked Don to produce a document that identifies FWS AIS program needs. Currently, the national program only has \$5.4 M. The AD wanted to see numbers of staff and budget, but left before the data was available. The new AD is behind this effort, but where it may fall on his list of priorities is unknown. Don boiled the requests from Regional Panels down to the "Budget Needs" document (handout); ending up with \$1M/panel. This is what is felt is needed to keep the program going nationally. States that are returning money to FWS because amounts are too small to do anything with. The panels are OK with requesting \$1M. Panel members asked how they could help push for increased funding and Don responded via respective agency. Service cannot go to Congress and ask for money, but must wait until asked by Congress. The budget needs document is being used to drive the FWS AIS program's internal budget development process.

Jonathan asked if the group was comfortable giving most of its funding away to other groups. He received consensus MAPAIS can support this vision and direction for the panel and FWS.

## **Membership**

Jonathan sent out letters to West Virginia and New Jersey asking for panel members from these two states. He has received no response. We need a subcommittee to issue invitations, especially to New Jersey. Don noted that it is within the Chair's purview to ask the Taskforce co-chairs to write and put pressure on individual states. Fredrika said that Louise Wooten is a possibility, but she is a *Carex cobomundii* person, and not a state representative.

New Jersey has a population of bighead carp and there are obstacles getting in the way of eradication. We need MAPAIS to get New Jersey on board. The state did not want native fish injured, although they are largely sun fish and large mouth bass (not native to the Delaware River) before the carp were rotenoned. New Jersey Conservation Foundation is now asking for funding from the Panel to remove the fish. Don reminded the Panel that it can send a letter to the Taskforce, requesting the co-chairs write to NJ asking for the state to take action. Rob commented both MAPAIS and the Taskforce should send a letter. Jonathan asked if a committee could be formed to address missing state membership.

ACTION ITEM: Ray will call Dan Cincotta and ask him for a West Virginia representative.

ACTION ITEM: Kerrie will ask Martie Kyde DRGP to encourage NJ participation.

ACTION ITEM: Susan will look into involving Coastal Zone programs.

BREAK

## **MAPAIS Funded Projects Update, Lisa Moss, Panel Coordinator/Fish and Wildlife Service**

### 2009

Regional Monitoring via Web-Based Mitten Crab Tracking System

In 2009 significant work has been done on coordination of a regional monitoring web-based system for tracking mitten crab status. Currently 145 Chinese mitten crabs have been reported. The website will be launched in May 2010. SERC is also working on an outreach partnership with Maryland Department of Natural Resources' Stream Waders program to do on-site trainings. Steve M. mentioned current FWS efforts include attempt to link the West and East Coasts, since mitten crabs have been found in both places. Jonathan commented the 145 crabs do not include juvenile shed mostly found in the Hudson River and there is evidence of a reproducing population.

**Study and Removal of Nutria from Nags Head Woods Ecological Preserve**  
The Nature Conservancy NC Chapter will be using data collected to design a control plan. An educational brochure will also be produced for outreach purposes. All waterfront property owners adjacent to preserve lands have been contacted about the nutria presence and efforts underway for eradication. TNC is working with the APHIS and has found nutria activity in the North and South ends of the preserve. Steve K. visited the area in March 2009 and noticed signs of eat-outs and nutria on roadsides. Jonathan commented about the Preserve being an area of high biological diversity and the potential for eradication success is high due to Harriman and APHIS involvement. Northeast has a very healthy nutria population. Nutria tend to be ephemeral.

#### **Virginia's Phragmites Invasion, VA DCR**

Two workshops were held for the public in the summer and fall of 2009. They were attended by a small but enthusiastic and active group. An online mapping component will soon be made available to the public. The Panel funded this project because fresh clones of Phragmites had been found in the area, where it has not been previously documented. A detailed final report is available.

#### **Estimating Risk of Fish Invaders in Mid-Atlantic Region, VA Tech**

Progress report from Nick Lapointe provided to attendees:

We have made significant progress towards estimating the risk of future invasions in the Mid-Atlantic Region. Our analyses are based on data available in the United States Geological Survey's Nonindigenous Aquatic Species database (NASD). This database provides lists of introduced fish species by 8-digit Hydrologic Unit Code (HUC8) watersheds, including the pathway of introduction and whether or not the species established.

We began by summarizing introductions by date and pathway. The probability of establishment was estimated for each pathway, and the type of species introduced via each pathway was estimated. Temporal trends in pathways were also examined, to

identify temporal changes in dominant pathways, and lag times in recording new introductions. Results showed that species identity varied considerably with pathway. Intentional introductions are likely to continue as a dominant pathway, however a range of other pathways have likely increased in importance in recent years. There appears to be at least a 15 year lag time between the introduction of a species and its detection, recording, and reporting in the NASD. Predictions of future invasions should consider pathway of introduction, given that emerging pathways are likely to introduce novel species to the Mid-Atlantic Region.

To understand the relative impact of nonnative species, fisheries biologists throughout the Mid-Atlantic Region were surveyed. Approximately 250 biologists were contacted, and 125 responses were received. Impacts were assessed for each species in each HUC6 drainage on an ordinal (high, moderate, low to none) scale. Respondents were asked to estimate abundance, and the socioeconomic and ecological impacts separately. State and federal collection records were obtained as an additional measure of abundance. Reports of impacts in the NASD and in global databases of invasive species were also consulted. The results of each of these approaches to quantifying impact were compared, and each approach provided different relative impact ratings for the species in the region. A combination of ecological and abundance approaches appeared to provide the most accurate measure of impact, and will be used in further comparisons.

To understand the factors associated with high impact species, we examined how impact related to spread and minimum residence time (MRT). MRT was calculated as the number of years since the species was first recorded as established in the region. Spread was calculated as the number of HUC8s each species is established in. Impact was found to increase with both spread and MRT; however spread and MRT were correlated. Spread had a direct positive relationship with impact, but it was unclear whether MRT explained additional variation beyond the shared relationship with spread. The effect of pathway of introduction and taxonomy on impact will be explored next. Together, these analyses will provide information on the factors associated with nonnative species impacts. Such factors can be used to predict future impacts, and assess the risk of impacts from potentially-introduced species.

We explored how watersheds differed in invasibility to understand which watersheds may be susceptible to future invasions. Data on watershed characteristics such as area, elevation, temperature, human population density, native species richness, land use, and habitat availability were compiled. Relationships between these variables and non-native species richness (NNSR; a measure of invasibility) were explored. The

number of species introduced and the amount of research effort were major determinants of NNSR, but after controlling for these factors, the altitudinal range of a watershed appeared to be the most important factor. Coastal plain watersheds had lower NNSR, and appeared to be less invasible because of lower habitat heterogeneity. Highland watersheds had greater NNSR, probably as a result of increased habitat heterogeneity. Human activity was high in both types of watersheds, but deforestation and impoundment of highland watersheds creates novel habitats there. These habitats are warm, turbid, and lentic, providing conditions for generalist species while cool lotic conditions persist elsewhere in the watershed. Because of these changes, highland watersheds in the Mid-Atlantic Region are susceptible to the establishment of a wider range of non-native species. Non-native species impacts can be moderated by restoration activities that reduce the diversity of artificial habitats available in highland watersheds.

We are in the process of exploring the relationship between nonnative species identity and these same ecosystem characteristics. We have found distinct groups of watersheds with unique nonnative species communities, suggesting that the type of nonnative species depends on watershed characteristics. These patterns will be analyzed further to provide information on the type of species likely to invade particular watersheds.

The studies described above are in various states of completion. They will be completed by July 1<sup>st</sup> and published in Nick Lapointe's doctoral dissertation and a series of peer-reviewed manuscripts.

## 2008

### **Survey and Eradication of Water Chestnut in Delmont Lake**

The eradication of water chestnut in Delmont Lake began by hand pulling, but now PWC is applying for funding to apply herbicides. They are getting good advice on techniques from Mike Naylor and others. This group has been very effective at getting media coverage.

## 2007 & 2008 Completed Projects

Completed reports are available for most of the 2007 and 2008 completed projects. Ray stated PDFs of the reports or abstracts should be made available on our website. Fredrika added we must be careful with completed projects that are being prepared for publication. Sarah suggested posting a list of completed projects with summaries on

our website. Lisa added the ANSTF is interested in highlighting MAPAIS projects on its website. We need a more involved discussion about the Panel's website at some point.

### Preview of 2010 Proposals

- Early Detection and Rapid Response to Protect Crow's Nest and Dragon Run Marshes from Invasion by *Phragmites Australis*
- Creating Water gardening AIS prevention training in Pennsylvania
- Water chestnut eradication in the Bird and Sassafras Rivers
- Examining the distribution and ecology of the exotic water flea in North Carolina – an undergraduate research opportunity
- Morrisville Riverfront Preserve-Phase I: knotweed control
- Years 2 and 3 -Survey and Eradication of Water Chestnut on Delmont Lake
- Mapping AIS in the Mid-Atlantic States
- Invasive Carp Removal in New Jersey
- Development of AIS management plan for New Jersey
- Survey of invasive crabs in Maryland Coastal Bays and assessments as reservoirs for *Hematodinium*, a parasite for blue crabs
- Modeling the expansion of invasive blue catfish populations in Chesapeake Bay tributaries
- A rapid survey for a new introduced species of shrimp in the Chesapeake Bay
- Developing an Outreach Campaign using Social Marketing Strategies to reduce Bait Bucket Introductions in the Mid-Atlantic Region

There were eight reviewers, each scoring 3-4 proposals. Individuals could not review proposals originating from states they represent, and they only read proposals they were reviewing. The Panel no longer requires the letter of support because there is not a way to ensure such letters would be reflective of the collective opinion and not the individual who wrote the letter. Jonathan's concern was the Panel may receive a much larger number of proposals in the future as a result.

Sarah stated we should decide upon a format for final reports for completed grant projects.

Jonathan would like to take \$2500 from funding leftover from last year to pay for an intern to revamp the website and post final grant project reports.

There was a glitch in the 2009 grant administration process for Pennsylvania's AIS field guide, so \$5,000 will be awarded to the PA Sea Grant this year.

ACTION ITEM: Make arrangements to take \$2,500 of 2009 carryover funds to pay an intern to perform website work.

### **Members Forum**

Susquehanna River Basin Commission, Matt Shank

The Susquehanna River Basin Commission has incorporated AIS monitoring into all of their programs. They have stopped using felt waders, and will be hosting a Water Quality Advisory meeting on May 25 with an AIS focus.

Fish and Wildlife Service, Steve Minkkinen

FWS has continued snakehead survey work in the Potomac River with other agencies with the objective of documenting effects on recreational fisheries and tagging to develop population estimates. They are already getting recaptures from anglers. It has been determined acoustic telemetry is not a good system due to interference from vegetation. FWS plans to use radio telemetry tags this year. By 2006 snakeheads were all the way up to Great Falls which functions as a carrier. NPS has plans to make C&O locks functional; this may make spread very easy. Snakeheads can stand 10ppt salinity, so they could inhabit the Lower Potomac. There is higher tolerance in colder water temperatures. Snakeheads were found in Aquia Creek in 2008, Macdoc Creek in 2009, and the St. Mary's River in 2010. The Potomac has been very fresh this year because of increased precipitation. There is an unconfirmed report of a snakehead catch outside the mouth of the Potomac which could mean that they are moving into the Bay. Fredrika commented there is overlap in largemouth bass and snakehead habitats and Steve M. replied both species preferred shallow water and drop-offs. FWS plans to sacrifice every fourth fish caught to perform gut analysis to determine if there is competition for habitat and food. Right now there appears to be no evidence of interaction.

FWS has seen blue catfish in the Nanticoke which were definitely the result of an intentional release. They have also been reported in Marley Creek in Glen Burnie.

North Carolina Department of Environment and Natural Resources, Rob Emens  
North Carolina is in a budget crunch. The state is experiencing some pressure to write their state AIS management plan, because they are the last state on the Gulf and Southwest Panel that needs one. Don provided some additional information on funding.

There is only \$1.075 M available for state plans; and every new plan divides the pie more. States receive funding every year if they ask for it, but that amount is fixed. There was an agreement with FWS that any time the agency received increased funding some of it would go to state plans, but we have not seen that yet. North Carolina can apply for funding support. The ANSTF cannot fund the development of plans, but they can fund implementation if the plan is concise. FWS can give a plan a preliminary review and that makes the final approval much easier. An all-taxa plan is acceptable, but the terrestrial and aquatic sections must be separate. There has been interest from the Wildlife Resource Commission but funds are too limited to pursue this option right now.

5/18/2010 Follow-Up Email:

Recently there has been an attempt to resurrect the North Carolina Invasive Species Advisory Committee (NCISAC). After being largely inactive for most of the past decade, the group met on June 22, 2009. There is support for the group to meet again, but no dates for additional meetings have been set. Rob Emens, one of the committee members representing the Department of Environment and Natural Resources created a website which offers some information on the committee.

<http://www.ncinvasivespecies.org/index.htm>

Currently, there is no state mandate for an Invasive Species Council and no state funded position devoted to dealing with invasive species. The NCISAC is struggling to fill out membership, but does offer some potential to be a bug for state-wide invasive species coordination.

A North Carolina EDRR plan is being unveiled this summer. At present, no Invasive Species or Aquatic Invasive Species State Management Plan has been drafted for North Carolina; however the Wildlife Resources Commission is getting some pressure to take on this task.

The North Carolina Aquatic Weed Control Program targeted 643 acres of aquatic weeds with herbicides and an additional 337 acres with biological control agents in 2009. Additionally, the Lake Gaston Weed Control Council contracted a lake management company to perform hydrilla control on the lake. Approximately 1,404 acres of hydrilla were targeted at a cost of \$892,797 (down from previous years).

The AWC Program has an approved work plan for 2010. Approximately 70 project sites are included on the work-plan with some 35 local cooperators. \$401,990 is allocated for those projects. Funding comes as a line item in the state budget, and the program is

implemented by the Division of Water Resources. The AWC Program has just revamped the website.

[http://www.ncwater.org/Education\\_and\\_Technical\\_Assistance/Aquatic\\_Weed\\_Control/](http://www.ncwater.org/Education_and_Technical_Assistance/Aquatic_Weed_Control/)

A single site infested with Giant Salvinia persists. The infested site is a hardwood swamp approximately 25 acres in size. The entire site was treated with herbicide in 2009.

The NC Dept. of Agriculture is the regulatory agency for noxious weeds. The agency has added Beach Vitex (*Vitex rotundifolia*) as a noxious aquatic weed (<http://www.ncagr.gov/plantindustry/plant/weed/noxweed.htm>), and is considering adding Yellow Floating Heart as a response to outbreaks in South Carolina in 2009.

John Christmas, George Mason University  
Spoke about his Ph.D. work and how he is looking at the nature of management capacity in two states and relating that to AIS.

Kerrie Kyde, Maryland Invasive Species Council  
Didymo has spread to western counties in Maryland.

Discussion of MISC plant legislation

Ashley Walter, Pennsylvania Department of Agriculture  
The governor approved comprehensive EIS plan which is available at [www.invasivespeciescouncil.com](http://www.invasivespeciescouncil.com).  
They are in the process of revising the noxious weed law which will have gradations for different species. Also trying to determine who has authority over aquatic invasive weeds.

Sarah Whitney, Pennsylvania Sea Grant  
Round goby were discovered in a gravel pit in the Erie area. The pit is stocked and owned by PA Fish & Boat Commission. The pit is small (13 acres) and a mostly closed source; there are some groundwater connections but no organic connections.  
Eradication options are being considered. Sea Grant is working with others to develop a VHS workshop.

Also working on techniques for cleaning equipment used in commercial water withdrawals. This is especially important after golden algae were found at the Pennsylvania/West Virginia border.

Check, Drain, Clean and Dry signs have been produced and will be distributed to all boat launches and some angler-only locations.

Rapid response mock exercise report is completed. It is almost ready for public consumption.

They are partnering within the Great Lakes Water Quality Restoration Initiative proposal to target boaters and anglers to get the Stop Aquatic Hitchhikers campaign rolling. They are making sure that all parties in the Sea grant network are using the same protocol for mapping, data collection, etc.

Lisa Moss for Cathy Martin, Delaware Department of Natural Resources and Environmental Control

Delaware Invasive Species Council proposal for the “Pulling Together Initiative” in 2009 was not funded. A new proposal is being drafted for the 2010 cycle and will be submitted. An adult male mitten crab was collected by a commercial crabber in late April just off Collins Beach in Delaware. Notification was made to the Mitten Crab Network which is preparing a press release about 2010 mitten crab reports on the east coast to date. A report and photo of two flathead catfish were sent to us by a Delaware angler this week. The fish were reportedly taken just below the first dam in the tidal portion of the Brandywine Creek in Wilmington. A crew from the Division of Fish and Wildlife will be sampling that area via electrofishing during the week of May 10 to confirm the presence of flatheads in Delaware waters.

Ray Fernald, Virginia Department of Game and Inland Fisheries

Legislation passed to permanently establish the Virginia Invasive Species Council, but no meetings have been called. The advisory group to the Council (VISAC) has continued to meet. They are trying to finalize the EDRR plan for VA. There are no paid AIS positions available. DCR has lost some positions and moved people over to soft money. Mute swan plan is being finalized. Mute swans are considered somewhat privately owned when on private lands. The new policy will say that anytime mute swans are found on public land they will be taken.

The Maryland/APHIS nutria team will be expanding into Virginia.

Bret Preston with the West Virginia Division of Natural Resources has been participating with Mississippi River Basin Regional Panel and will try to participate in MAPAIS.

Thomas Greig, NOAA

NOAA expects that the budget will be going into a continuing resolution. It has been very difficult to plan without a target for the fiscal year.

Steve Kendrot, USDA-APHIS

They will continue to remove nutria from the Choptank and perform spot removals at Blackwater, and in Somerset County. They have a NFWF grant to develop "Judas nutria" which are sterilized nutria which will lead APHIS to unknown populations.

There has been difficulty tracking nutria through vegetation, and signals get confused with local deer studies. An independent team reviewed the removal study over the course of one week and gave them a lengthy report with guidelines for continuing work. The feedback was positive, but there is a lot of work to be done.

Jonathan McKnight, Maryland Department of Natural Resources

VA decision on mute swans was applauded and group was informed Maryland has gone from 4,000 to under 300.

Maryland is banning the use of felt waders in waters for 2011. The two largest wader makers have already moved to take them out of production. Maryland is not banning the sale or manufacture of felt waders, just their use in Maryland waters. They will write warnings for a year before they start writing tickets. Vermont and Arkansas both have felt wader bans pending. There is some concern that when we ban felt waders people will feel like they can be more lenient in other anti-AIS procedures. Bob Wiltshire's website has great information to use with fisheries departments. The wader ban is only one piece of the puzzle, Maryland will not be letting up on boat and other gear cleaning. Sarah commented VT and AK bans are both pending and that if felt sole ban is implemented, the concern is people will feel just switching to non-felt soled waders is enough to do and there is no need to disinfect or check all waders.

Susan Park, VA Sea Grant/VIMS

Has no existing AIS work going on at this time, but expects she will when the regional Sea Grant proposal gets funded.

**May 13, 2010**

MAPAIS Budget

Jonathan presented the Panel's budget status to the group in attendance. 2010 expenses totaled \$47,482 which includes \$45,000 in grants. Anticipated year end carryover is \$2,518.00 for a total of \$52,518.00 as available funds in 2011.

2010 Small Grants Competition

Lisa presented submitted proposals and reviewer ranking results. Thirteen proposals were received this spring. Calculation of scores was explained and relevant commentary that accompanied numerical evaluation was shared. Seven proposals were selected to receive Panel funding.

Panel Business

Review of action items and NJ as tentative location for fall meeting. Date TBD.