Long Island Sound Study Science and Technical Advisory Committee
Meeting June 4, 2004
Room END120 SUNY Stony Brook

Larry Swanson brought the meeting to order at 10:00 a.m. Attendees are listed in **Attachment 1**.

1. **Introductions, Review of Agenda** - Mark Tedesco

All attendees introduced themselves.

2. **Update on 2004 Work plan Decisions** - Mark Tedesco

Mark Tedesco presented a summary of decisions made at the recent meeting of the Management Committee. Tedesco explained the changes in budget processes. The funding can be broken down into four categories: the base program, enhancement program, research program, and implementation program. Mark described that there was also a separate line item of $5 million to support implementation actions in both states. These funds are divided equally between CT and NY for infrastructure improvements and planning for nutrient removal, and storm water management, and habitat restoration. Tedesco reported that both ferry monitoring projects (Bridgeport – Port Jefferson ferry and Orient Point – New London ferry) were approved for one year of funding under the base program. Enhancement program funding decisions were reviewed, and are listed in a previous mailing entitled *April 29, 2004 Management Committee Meeting Summary*. The total budget was $1.4 million for enhancement programs, $1.3 million for the base program, and $5 million for implementation.

3. **Stewardship Initiative: Coastal** - *Mark Tedesco*

a. Progress to date - Attachment 2
Tedesco briefly descried the current state of the program. An inventory of sites were identified, mapped, and presented to the public at six public meetings around the Sound. The next step will be to identify those sites with the most value, and finally to take action to improve various aspects of the sites such as public access and improved management. The intent is not to take control of any sites or create new programs but to work with the present owners in management and decision-making to improve stewardship.

b. Introduced Legislation
In the senate, the LIS Stewardship initiative bill was introduced. This would authorize funding for the stewardship initiative as well as creating a formalized structure and definition of the initiative.

Yarish asked how the attendance was at the various public meetings. Tedesco answered that the meetings drew between 15 and 50 people. A summary of all the meetings is being prepared.

Tedesco introduced the topic of Underwater Stewardship. He mentioned an ongoing discussion regarding the use of the terms marine protected areas vs. reserves. The process so far has been to

inventory and map underwater areas – this has been done primarily by the Fish and Wildlife Service. Questions posed to the STAC are:

> "What do we do with that information? What are the stewardship options, do we begin underwater zoning, creating marine reserves, or protected areas? Also, what additional information about the sound's underwater resources is needed to make those types of decisions?"

4. Stewardship Initiative: Underwater Areas

a. Work to date-Tom Halavik, USFWS
Halavik displayed several maps that identified the study areas (underwater and coastal), and identified the important resources in the area including fish, birds, and mammals. These maps were taken to experts and advice/input was received to help identify the most important areas/habitats. One goal was to bring maps to the public to improve the public knowledge of the underwater habitat. The timetable allows them to finish the maps by the end of this month. These maps will then be used for public comment. Halavik hopes the maps will be web enabled in the near future to allow for easier viewing.

Question: Are you identifying the locations where the animals are using the habitat now or historically?
Halavik: Where we have historical data we are using it. This includes some anecdotal data that we are considering.

Question: Latimer: Follow up question - how do you handle historical data?
Halavik: At this time we have everything grouped into one data set. For terrestrial data we go back 10 years, but for underwater data there is so little, we use everything we have. Also, Woods Hole has a large archive of data that could be used to further identify the underwater habitats in the sound.

Question: Chytalo: (for David Simpson). How are the DEP trawl data dealt with.
David: Most of it right now is for individual species, some cluster analysis was done with Peter Auster. We have ideas for further analysis. Most of the species we see are so broadly abundant that it is not very useful to map. We do some work looking at biomass, species diversity, pelagic vs. demersal, but more work is needed to look at community structure.
Zajac: to help parse out important data we divide the data, removing dominate species to improve the understanding of the secondary species.

Question: Are you looking at the entire water column?
Halavik: This is a new area for GIS mapping, 3-D is not commonly done so difficulties exist.

Question: Glowka: are we looking at the inter-tidal zone and the changes that are taking place?
Halavik: Yes, we are looking at shoals, reefs, and fringing wetlands as much as possible.
Glowka: Has anyone looked at the decline in the blue mussels, or the Asian shore crab issues?
Halavik: We know there is data out there, but it needs to be compiled.
Yarish: One LISS-funded research project is to look at food-web structure in Long Island Sound.

Chytalo: Another thing the Habitat Restoration Workgroup is doing is to look at the shells and shellfish as a habitat.
Zajac- There are GIS data of the area you are interested in. The question is- are these data making it to the managers to assist in decisions. That is an area that needs work. The key effort needs to be to link individual researchers with the DEP, DEC, LISS, etc.

b. **Benthic mapping of embayments** - *Roger Flood*
Flood displayed some results of the work being done on the embayments on the North Shore of LI. The overall objective is to provide a basis to improve understanding of the benthic habitat. NOAA navigational maps are the starting point for understanding the benthos because they provide a basic outline of the bottom depths. Multibeam and sidescan sonar greatly improve the spatial resolution, as well as describe the bottom densities. This allows researchers to obtain information on bathymetry, as well as sediment characteristics which can define habitats. Much of the sonar work has been done and ground truth sampling has begun. Ground truthing will be done with grab sampling and underwater photography. Results for Port Jefferson Harbor were displayed. Color contours of bathymetry, sun illuminated bottom contours and backscatter strength plots used to identify sediment density are completed for the Harbor. Both multibean and sidescan was used for PJ harbor to help understand the differences and similarities between the two scanning methods. Huntington Harbor was also studied. Present status: fieldwork has been completed, sediment sampling needs to be completed, and final analysis can then be completed. Additional samples have been collected for faunal studies. The work is ready to begin, and will when contracts are in place.

Question: Art, Is the resolution good enough to resolve lobster pots and fish?
Flood: The system is presently designed to ignore things in the water column and the present resolution can not resolve things of that fine a resolution.
Question: Tedesco: what are some applications for this data?
Cerrato, we've been doing faunal studies, we have a powerful technique that we hope to refine. Once you have this data you can address certain features and allow us to identify areas worth further investigation, i.e. transition areas, and go directly to those areas without having to randomly search. Also, this is more powerful for habitat investigations than, for example, grain size data. Now you can explain much more of the variance observed.

Bavaro: In the Peconics, we plan to identify 10-20 habitat types using a similar technique. We hope to us it to site aquaculture, better define fish habitat, biodiversity, etc.

Question: Stacey: Are you focusing on certain seasons?
Cerrato: we have been trying to stay away from spring due to the high variability in fauna. Right now we are concentrating on Fall sampling.

Question: Will this be extended to the western harbors?
Flood: We have funding for these three harbors, we would be willing to do additional harbors in the future if funding is available.
Halavik: UCONN has done this for 7 or 8 areas on the CT side of the sound.
Question: Lin: Is it possible for the best scatter signal to characterize the chemical nature of the

sediments, like the organic matter content?
Flood: There is a relationship between the backscatter and the grain size; grain size can be used to guess at the age of the sediments and accumulation rates.

Question: Simpson: Did you do Huntington Bay out to the Lighthouse? There is some interesting flora in that area.
Flood: In PJH we have noticed some growths on the sides of holes which we believe to be sponges and the sonar does pick them up. Yes, sponges have a distinct miltibeam signal.

Bavaro: In the Peconic areas the preliminary data being gathered has re-energized the Citizens monitoring, for example finding the fuzzy sea cucumber, which many people hadn't seen before.

c. Where do we go from here? - *Discussion*
This topic of discussion was saved to be included in a discussion after the SAV presentations, since the topics are related.

5. **Submerged Aquatic Vegetation**

a. Status and Trends - *Charlie Yarish*
Yarish Mapping sea grasses along the North Shore of Long Island Sound. Over 500 samples were taken. Underwater photographs of sea grasses were shown. The sea grasses are important habitats for seaweeds, scallops, fish, etc. Stressing of the sea grasses leads to epiphyte growth on the grasses. All the information is accessible in the state database. Verified that the Clinton area population is a fringe area and a small disturbance could destroy the sea grasses in that area. Grasses were sampled to obtain growth rates. Environmental variables such as temperature, salinity, light attenuation, chlorophyll levels, nitrite/nitrate levels, ammonia levels etc. were also monitored. Sediment cores were taken to describe organic matter levels. A list of threshold levels for sediment and water quality parameters was developed.
The question of how to grow new beds was examined. Use of seeds was considered and the flowering/seeding/germination cycle of the grasses was studied. Seed identification via color was done. Germination studies looking a germination success vs. temperature and salinity showed that these grasses can germinate in lower salinity and can germinate after several years.

b. New Projects - *Paul Stacey*
Stacey presented data (1993 - 2002) on the distribution of eel grass beds with reduction in the west. Nitrogen has been identified as a possible cause: increased phytoplankton leading to decreased light penetration. Historical studies (e.g.: Yarish, see above) used diver and boat, the most recent study was done with aerial photography, so some differences will be present. Clinton area bed has disappeared. In some areas, eel grass distribution is broader. One theory is that this may be related to salinity, i.e. drought induced declines, or possibly lower salinity could lead to enhanced germination success. This implies that river flow and drought cycle could play a part in eel grass reproduction. Other areas, like the Niantic River showed eel grass decline, possibly due to non-point source nitrogen stress. Eel grass acreage table showed LI Sound's acreage doubling from 409 to 1147, while embayments' coverage decreasing from 220 to 120 [this number includes 48 acres restored and 28 acres previously unmapped, so the decline is even larger than

these numbers suggest]. Sewage treatment plant areas showed eel grass decline, e.g. Mystic River and Little Narragansett Bay. Management success was noted in Mumford Cove, Groton where the STP outfall was relocated to the Thames River and an improvement in the eel grass beds are being observed.

The future monitoring goals are to continue mapping every two to three years to continue the trend analysis. The next mapping is planned for summer 2005. Also, we want to model nitrogen impact to embayments, nitrogen loadings from groundwater and watersheds. Conclusions: eelgrass has been eliminated in the western sound, and continues to decline in many embayments. Nitrogen decrease is a likely management choice for improvement of eel grass health. Mumford Cove shows the potential for success with management by reduction of nitrogen inputs.

Question: D'Amico: Can you determine the difference between eelgrass and macro algae in the aerial photos?
Halavik: No, but we have ground truthed ALL of these areas with drop-cameras.

Question: Glowka: (to Yarish) on the historic eel beds, is there any firm date on the demise? Or a correlation to population?
Yarish: I did not see any voucher specimens west of New Haven, so I can't put any confidence in the observation that it was ever there.

Question: Glowka: Chesapeake Bay species are growing in much more turbid water, why is there a problem with turbidity with the LIS grasses?
Yarish: That shows that LIS species are genetically different than those found in the Chesapeake Bay.

Question: DeQuillfeldt: Have there been thoughts about taking species from other areas, Chesapeake or South Bay, to transplant or seed in the western sound.
Yarish: I feel we should look at the variations in the local species first to see if there are more applicable variations in the species. Also, transplanting bring about issues of introductions of other species.

Question: O'Donnell: The drought index is a long term average, salinity and river discharge are correlated, that correlation can be greatly reduced due to annual variation in precipitation while salinity variations do not follow. I.e. the index could show an overall average condition which is the result of, for example, a low flow spring and a high flow fall; it ignores the important shorter term variability.
Stacey: and that's even more important in the embayments.
O'Donnell: temperature and salinity in the spring may be better things to compare to the eelgrass than the drought index.
Yarish: agreed.

c. Peconic Program - *Chris Pickerell, Cornell*
Pickerell described the eelgrass monitoring and restoration work presently being done in the

Peonic bays. Yearly data from Peconic Estuary Program eelgrass monitoring has been analyzed from 1997 through 2002. A table describing planting suitability index for scoring prospective sites was created which considered data on health and well-being, abundance, distribution, and phenology and growth habit. Work that was done in SE LIS was presented. From 1997 to 2002, a decline in stem density was observed but aerial coverage was not obviously changed. Seeding efforts have shown variable success, and is partially dependent on the energy in the area. Significant success has been achieved in some sites. A planting suitability index model has been developed.

Question: Glowka: How do brown tide and scallops fit into this?
Pickerell: Brown tide did cause problems, bottlenecks in the eelgrass populations in the 80's and 90's. Scallops don't require eelgrass, but may prefer it.
Yarish: a significant brown tide can wipe out an grass bed because brown tide means high chlorophyll.

Lunch 12:30 p.m. Charlie Yarish called the meeting to order. 1:10 p.m.

d. Ground Water Nitrogen Discharge - *John Mullaney, USGS*
Excessive nitrogen nutrient loading is detrimental to eelgrass. A Niantic River watershed study will begin when funding becomes available in October. Some objectives are to:

- estimate input of N (and maybe P) – direct and indirect
- estimate groundwater recharge rates
- look at direct and indirect groundwater discharge into the sound
- determine base-flow water quality in the watershed and
- determine land-use characteristics
- determine dominate sources of nitrate in the base flow
- assist UCONN researchers (J.Kremer) in ground water and over-ground flow rates fro input into nitrogen loading model
- stable isotope use is also being explored as an option to include in this study

Some background information on the geology, hydrology and land-use characteristics of the Niantic River watershed were given. Mullaney showed system wide increase in developed land and also showed nitrogen concentrations down gradient from different land use areas.

Question: Halavik: Have you looked at studies in other areas and nitrogen changes with management practices, e.g. Buzzards Bay where houses were taken off septics and the N stayed around for years?
Mullaney: That's another important step. It's not the goal of this study, but I may make some estimates of residence times. That could help to determine the delay between management decisions and changes in the output. Travel times can be decades long so changes can take a long time to appear, and there's potential for N-concentrations to change along the way.

Question: Stacey: Wouldn't you agree that 15 to 20% development in a watershed can have significant impacts on stream and groundwater quality. Small changes in development levels could be important.
Mullaney: I agree, I was saying that this watershed shows less development than some other

areas of Connecticut which are considered highly developed.

6. Discussion of Underwater Marine Zoning - *Mark Tedesco*

Mark Tedesco recapped the mapping and embayment discussions from earlier and posed several questions to the group:

- What additional data need to be collected?
- There have been discussions about marine zoning, is that something we want to get into?
- If so, what types of data would we use to make those distinctions?
- What's missing and what's needed?

Wilson: Spatial distribution of bottom Temperature, Salinity, and Dissolved Oxygen.

Question: Tedesco (to Bowman): What were the conclusions to the public workshops examining the concept of "wilderness areas" or marine protected areas for New York state?

Conover answered (while Bowman went to get meeting summary): The purpose of the meeting was to talk about the idea of protected areas as a tool, not the location or specifics of creating them. The interesting part of the meetings, besides the variety of people attending, was that we reached a strong consensus that the use of protected areas as a tool may be useful. Even some people in the recreational fishing community left the meeting with an optimistic view of an effort to protect these areas.

This meting was called a "wilderness area" workshop. The term wilderness area is used because "protected area" implies fish protection. Small areas would have little impact on fin fish, these areas would be designed to protect habitat, endangered species, recreational and other human uses, etc.

Chytalo: I got a sense that we need to do more research to look for more unique areas worth protecting. The idea of scientific reference sites has been part of the discussion as well.
Yarish agreed with this suggestion about scientific reference sites.

Question: Glowka: Did these meetings look at just the sound or ocean areas?
Conover: All waters.

Question: Glowka: Are there other areas that have done what you are looking at too?
Conover: Yes, Florida, but the reasons for the closures there are somewhat different than the reasons we may use.
MacLellan: Massachusetts did just fund a state coastal program to do extensive benthic mapping of their waters in support of potentially zoning all state waters.

Conover: One value of protected areas is that it would protect areas from being considered for future sighting of things such as dredge disposal or wind farms.

Question: Tedesco: What are the next steps in regard to these underwater zones?
Bowman: We defined a "marine protected area" which basically prohibits extraction. We looked at the background of the effort. The recommendations were that maps should be made, information on areas that are already closed, and information on shoreline areas of importance, historical, recreational, and commercial significance.

Stacey: There is probably no place in LIS that hasn't be changed somewhat by man. Any areas that haven't been altered probably are strong enough that they don't need our help. Second, how do we know what these areas looked like before anthropogenic influence? Maybe we could pick areas that are not currently being used by anyone and close them altogether to see what happens.

Yarish: one thing that we can do is to look at historical reports that are more complete and return to those areas to see what changes have occurred.

7. **2005 LISS Work Plan and Budget Process, and STAC 2005 Budget Priorities -** *Mark Tedesco*

A framework for 2005 Work Plan was handed out and outlined **(Attachment 3.)**

Tedesco opened the floor for discussion and recommendations for work to be done. He is requesting STAC input on priorities, especially to help guide the next RFP for Enhancement Program projects.

Pickerell: mapping is a big emphasis, is there a priority for monitoring?
Tedesco: not so far, I leave it to the STAC to recommend whether or not it's important.

Yarish: one of the things the LISS has tried to do is to implement bi-state programs.

Glowka: I noticed that fish are only mentioned once; fish are an important indicator species. Second, we need to implement a report card so that we can follow trends.

Wilson-Pines: In regards to decreasing beach closures, the new standards being stricter will lead to more beach closures. This will lead to a negative public view. Phrasing the goal as decreasing beach closures is not a good way to put it. She added that the science used to change those standards isn't good, and is old.

Yarish: one thing I'd like to do while mapping eel grass is to identify what larval fish species are in the areas, and looking at dispersions of larval fish. Also, besides eel grass, which is only present east of the Conn. River, there is another species of sea plant that we would be mapping: *Ascophyllum*.

Glowka: the dominant resident species (e.g. blackfish, winter flounder) are all in decline in the sound.

Question: Dam: clarification of the purpose of STAC recommendations. What's the best way to

prioritize, we need to REALLY prioritize and simplify our work plan, decreasing the number of priorities.
Tedesco: Ultimately the Management committee will decide. The current priorities were established in the 1994 Comprehensive Conservation and Management Plan and the 2003 LIS Agreement. The point of the STAC is to look at areas where the STAC can make a difference and add something. We don't want to add priorities, we want the STAC to help us get more specific – so we can give clear guidance for the enhancement proposals. Also, the sub-committees are there to help allow more discussion and the extend this process between STAC meetings.

Dam: I think there should be more of a meshing between the STAC and the management committee so that that the MC is giving us feedback on how our information is used and acknowledges our input to that committee.

O'Donnell: since there's no narrowing of priorities, a few out of the numerous levels of priority get funding. For the work plan, first we should identify our priorities, then funding of the projects that best support those priorities. These projects should be rated and those at the top of the list should be funded and others should be dropped. Funding should be aligned to what's valued, not what's a good proposal. Basically, we need to prioritize the priorities.

Yarish and O'Donnell suggest that the STAC be surveyed and that it then rank the priorities.

Monahan: Perhaps we could change the meeting format to have less formal presentations and more discussions of the priorities.
Agreed by other members.

Yarish, perhaps we should add a September meeting to hash out the priority list.

The discussion continued but time required that it be cut short. STAC members should feel free to make suggestions and continue the discussion on the STAC web-site.

8. LISS Fellows Project Update: LIS Contaminates of Concern *Travis Baggett, SBU, Alison Branco, UCONN*

An outline of the work plan was handed out (**Attachment 4**). A request for suggestions of papers, data sources, etc. that would support the review was put forth. Also welcome are recommendations regarding the list of contaminants and additions or subtractions that might be made.
It was noted that the new STAC message board would be a great place to hold discussions in regards to this subject, as well as others. That discussion board can be logged into from the STAC web-site at: **http://www.longislandsoundstudy.net/stac_comm.htm**

Adjourned 2:25 p.m.