LONG ISLAND SOUND STUDY

A Partnership to Restore and Protect the Sound

SCIENCE & TECHNICAL ADVISORY COMMITTEE

of the Long Island Sound Study

website: http://www.longislandsoundstudy.net

The STAC meets three times annually on the second Friday of February, June and October or as otherwise scheduled.

LISS Science & Technical Advisory Committee Meeting
Friday, February 11, 2011
University of New Haven Main Campus, Bartels Hall

AGENDA AND NOTES

9:15 am **Continental Breakfast**

9:30 am **Introductions, Review of Agenda,** *Carmela Cuomo*
(bold names in banner indicate STAC member presence)

9:45 am **Long Island Sound Synthesis Book Discussion**

- Progress to date and review of timeline, *Jim Latimer*

Using a powerpoint presentation

- ✓ Jim introduced the book – summarizing 20 years of science and management of Long Island Sound.

Purpose of today's discussion is progress on chapter writing, discussion of next steps.

- ✓ Summary of book: 562 pages, 120 figures/photos/diagrams, 10 color images max. 80 pages per chapter, 17 b&w photos, 1 color.
- ✓ Recent history – 2009 wiki established & funding secured; 2009&2010 author workshops; end 2010 Jim became editor; also 2010 revised timeline to meet fiduciary deadlines; chapter POCs established to provide stronger chapter coordination.
- ✓ Chapter status slide – POCs are Weigold (history), Lewis (geology), O'Donnell (physical oceanography), Cuomo (biogeochemistry), Varekamp (pollutants), Lopez (biology/ecology), Tedesco (synthesis and management) – flurry of activity on the wiki lately.
- ✓ Revised schedule – final draft of chapters submitted by March 1; chapters distributed for outside peer review April 1; compile reviews by May 15; response to comments completed June 30; final submitted to Springer July 30.
- ✓ ACTION ITEM: Sections of each chapter are supposed to be compiled by the chapter POCs before posting to the wiki; however, if this is not possible pre-compiled material can be posted
- ✓ Copyediting help is available from Bonnie Stevens (bonnie.stephens@stonybrroke.edu); Larry is the point of contact for this service; the timeline for this isn't really clear. Anne suggested that Bonnie could get going on this editing for the chapters that are already complete (e.g., History chapter);
- ✓ Professional illustrator is available for figure preparation and help through UCONN Virge Kask (virge.kask@uconn.edu); Charlie is the point of contact; as soon as figure preparations are needed Virge should be contacted (e.g., History chapter). Marilyn said that her illustrations all went out in June but hasn't heard anything back – Charlie says the illustrator hasn't received anything. ACTION ITEM: This needs to be sorted out.

✓ It was pointed out that most of the universities have spring break in March and this would be a good time for authors to finalize the chapters.
✓ Cornelia asked about ACTION ITEM Editors lining up peer reviews – this has not been done yet; it will soon be addressed by the editors
✓ Challenges: Expiration date for honoraria funding and contractual publication costs 9/2011; the management committee is extremely concerned that this book isn't going to get written.
✓ Next Steps: finalize chapters; ID chapter gaps that may be covered in other chapters; ID chapter redundancies (covered in more than one chapter); ID completely missing components – Chapter POC meeting/teleconference is needed, late Feb/early March; need process to evaluate chapter content, integration; need process for evaluating and communicating chapter specifications; facilitate specific chapter needs; set up process for peer-review
✓ Carmela asked about maps – which are being used? Supposedly the illustrator can modify the base map that was distributed to tailor to specific chapter needs; Charlie thinks she has GIS experience. Mark reminded everyone of the base map that was distributed (was not posted to wiki) and said that we need to agree on whether it is sufficient before we need to move forward. Jim O'Donnell said that he can make his own figures/maps (he doesn't like ArcInfo). Jim Latimer said that chapters aren't required to use the base map. Carmela said she wanted to use existing maps but didn't want to devote 6 of her 17 chapter figures to do maps. ACTION ITEM Jim Latimer: said that a larger, separate discussion of what maps will go into the book (and where they will be located in the book) is clearly needed. It was agreed that the most recent version of the map would be posted on the wiki and distributed via email.
✓ Special symposium of NEERS spring meeting (May 5-7, Port Jeff) about LIS science and management synthesis (symposium afternoon of May 5) – no one identified specifically to present any sections yet, but this needs to be worked out.
✓ Stuart commented that timeline is tight but momentum is good. He said the review for readability can happen at the same time as the technical review. Stuart suggested having one reviewer have a stake in the book (e.g. author on another chapter) and then a second completely external reviewer (who may not make deadlines for review).

- **Series of short presentations from chapter leads; discussion to follow each presentation (*Confirmed presenters: Marilyn Weigold, Jim O'Donnell, Mark Tedesco, other presenters TBA*)**

Note that all action items have been copied to specific chapter documents that will be transmitted to the Chapter POCs and Leads

Marilyn/History: Starts with Adrian Block, early settlements; transportation (shipping through history, overland travel in NY and CT, steam navigation, railroad, various boats sinking in the Sound, ferries, parkway construction, NE Thruway construction, LI Expressway construction, bridge construction); land use patterns (pre- and post-contact periods, agrarian activity, industrialization, sewering in the region, urbanization and movement to the suburbs post-WWI and post-WWII); fisheries (written by former STAC fellow Beth Pillsbury, fishing by native peoples, cod fishery, menhaden fishery, shad/salmon in CT river, oysters/clams, lobsters/flounder, recreational fishing); recreation (steamships, parks, waterfront access issues, waterfront homes); management (power generation, energy cables, Broadwater); dredging and dumping.

Jim Latimer questions – her chapter is 54 computer pages long – anyone know the conversion to book pages. Need to figure out that conversion (JSL checked the conversion is that 1 page of MSW ~ 1 book page). Also she had too many figures, needs to cut that back. Connections to other chapters? She says that's hard to figure out because she hasn't read any of the other chapters yet besides geology. Joop said that he still needs to send her a couple of pages on Adrian Block. Louise Harrison asked why the chapter leads with transportation, seems to stick out a bit from the other topics? Marilyn answered that this is a major part of LIS history; she would be willing to rearrange things if there is a suggestion for alternative outline. Louise suggested starting the chapter with native peoples and their interactions with the land and water. Cornelia Schlenk asked about the land use section – did she work with the CLEAR group at all? Chet replied that they only go back to 1985 in terms of satellite maps, but he's happy to provide any of this. Cornelia also asked about sand and gravel mining – is it in another chapter? Carmela says it needs to be added to the industrialization or transportation sections, because the remnants (pits) affect many other processes discussed in the book. Mark Tedesco emphasized that cross connections should be made between the

history chapter discussion of historical fisheries and later discussion of recent fisheries. Larry Swanson suggested including Supreme Court decision in 1980s limiting federal role in LIS and the resulting effects on Broadwater – he said he would send Marilyn some stuff about this. Paul Stacey talked about historical floods/hurricanes, ACOE modifications of the shoreline. Jim O'Donnell asked about politics of train line development in Connecticut, since this has such huge impacts on wetlands, biology, etc – Marilyn asked him to send her information/text about this. Louise asked about discharges from early industrialization in terms of pollutants, to set the stage for the pollutants chapter. Joop said that he can send Marilyn information about this. Marilyn made a general request that people who had suggested things please send her text to incorporate.

Ralph/Geology (Jim L. presented): mapping done in the past; geological framework (bedrock, coastal plain, glacial, post-glacial) – chapter posted on the wiki

No gaps/redundancies/additional info noted. Bob Wilson suggested an inventory of the existing bathymetric data sets it would be very helpful to the rest of the book – including recent surveys from ACOE. He suggested talking to Roger Flood about this, can be contacted via email. Cornelia suggested that he not only list the data sets but talk at least briefly about what these data sets show. Paul Stacey said that the Long Island Sound Resource Center has done most of this compilation already; Ralph Lewis is a really good person to talk to about this. Carmela pointed out that bathymetry ties to sedimentation, which ties directly back to geology. She also pointed out that this would be a good place to indicate what areas need to be better mapped. Louise Harrison suggested including discussion of importance of groundwater on the Long Island side. John Mullaney says he'll add it to his section too.

Jim O'Donnell/Physical Oceanography: overview (hydrography, tides, winds, residual circulation, heat flux, waves, frontal zones); physical processes influencing hypoxia; climate change and interannual variations; severe storms; sea level rise.

Penny asked about how much detail in temperature he is giving – Jim said that he wants to just cover stuff that has been peer-reviewed and published, so this is limiting a bit what he can put into the chapter (e.g. the bottom water temperature work he has been doing with Penny).

Jim had a summary slide that talked about issues/knowledge gaps – 1) more info on lateral circulation; 2) lateral variability in seasonal evolution of the hydrography; 3) more info on stratification variation and role of internal waves; 4) more info on the mean structure and seasonal variability of circulation; 5) few direct estimates of vertical mixing rates exist; 6) more info needed on the variability in the waves. Jim also pointed out that the bathymetry in the Fishers Island Sound area is very poor currently; also the evolution of the deepening of the East River over the last 300 years would be important to discuss – apparently there are very good maps of the bathymetry of the NY harbor area were done by the English in the colonial period. Jim thinks it's important to include, but doesn't have the knowledge to put this in his chapter. Discussion with Joop and Bob Wilson about what water is coming into the East River – from the Hudson? From WWTP? Larry Swanson also pointed out that the cross-sectional area of the East River has also changed over the last 200 years (in addition to the depth). Carmela suggested that a lot of these changes (wetland filling, dredging, urbanization) need to go into the history chapter, then the impacts be discussed in the subsequent chapters. Art Glowka said that more water is leaving through the East River than coming into the Sound based on his understanding of tidal height differences. Jim presented some maps that he had created with Google maps. Stuart suggested transport for particles/solutes (Jim said solutes would go under residual circulation but he wasn't going to include particle flux). Stuart also asked about air/water gas exchange – Jim doesn't have a place for this discussion yet because he doesn't know of Long Island Sound-specific work. Carmela said geochemistry is including chemical fluxes across these boundaries, and asked for a general description of the physical processes that occur at these boundaries. Jim said he could turn the "waves" into "sea surface physics" and that he could include a general (not LIS-specific) discussion of this. Carmela asked how much technical background should we be giving to major topics? Jim said he wrote the chapter for an audience with physical oceanography background and just stuck to LIS-specific knowledge. Stuart said that someone with general science background should be able to read this book even without detailed technical knowledge of each chapter topic. Jim said he could reference other works that people could go to for more details on some of the more technical aspects. Charlie deQuillfeldt asked about embayment/open Sound interactions. Jim said there isn't enough space in his

chapter to get into these details, and he stuck to the open Sound only. Carmela asked about general book formatting – she says we shouldn't limit ourselves to peer-reviewed information only, but include things that we are working on now and the most current ideas. Larry Swanson agreed. Stuart said to be careful about putting in unpublished results (won't be able to publish in peer-reviewed journal then), but could put in new interpretations and ideas regarding published data.

Carmela/Biogeochemistry: chapter divided into sediment and water column; sediment (sediment chemistry with references to geology/physics, grain size and TOC, factors affecting sedimentary organic carbon loads, changes in western LIS benthic communities (historical, seasonal, etc), sediment microbial communities, fluxes in sulfide, ammonia, etc., bottom water chemistry, fluxes, seasonal variation, biomineral cycling, radionuclides); water column (to be done by Altebet).

Stuart asked about shallow water/marshes. Carmela said she's planning to add marshes but just in terms of chemical fluxes. Penny pointed out that some of this will be covered in Roman's section in Biology. Carmela said they are also planning to pull in information about specific harbors and embayments where data are available. Carmela says the chapter is 65% done; major gaps in writing are radionuclides and water column right now. John Mullaney said there are links with external sources of Si, P, organic C in the pollutants chapter section he is writing, but that these aren't really pollutants – maybe put that text in Carmela's chapter? Carmela said communication has been difficult with her section authors.

Varekamp/Pollutants: organic pollutants; element fluxes; trends of pollutants in time; nutrients as pollutants. Nothing that could be uploaded to wiki yet. Problems getting in touch with Marilyn tenBrink. Joop showed some data and maps, said that only bits of text have been written. Reviewed east-west patterns, said it doesn't appear to be correlated with sediment grain size or sewage inputs for many elements. Larry asked about north-south trends. Bob Wilson asked about correlations with salinity. Joop said no to both. He is planning to discuss the effects of historical floods on release of pollutants, (and also during wet periods in general). Joop's section outline: Spatial distribution; grain size control, sewage sources, climatic impacts on distribution, reworking of polluted sediment from west to east. Paul Stacey asked about atmospheric deposition of mercury? Joop said it will be included.

Anne discussed her section: organic contaminants and effects in LIS – sources, distribution and levels, accumulated levels in biota, toxic responses observed in resident biota, emerging contaminants, SLR and climate change, data and monitoring needs. She summarized data sources (NST, EMAP, NCA, USGS, NYDEC, NOAA's Benthic Surveillance Program) and reviewed published syntheses. Patterns in data seem to follow population density and WWTP inputs – most chemical levels dropped significantly from 1980s but hotspots in coves/embayments.

John Mullaney discussed his section: N, P, Si, total organic C loads, yields and trends in CT rivers. Highlighted lack of data in NY relative to CT. Talks about nutrient ratios too. Looks like his section is completely written. Also looks like number of figures might be an issue for this chapter – all three sections have a lot of figures currently. Paul Stacey asked about the area below the fall line, important because there are a lot of big treatment plants below the fall line, discharging close to the estuary. John said that he hasn't included it to date but could include some information he has been compiling for a separate report. Paul suggested that he include it as an identified gap. Louise asked about the gauging station on the Nissequogue River – John said that NY USGS did some analysis of this data in the late 1990s. Also major gap in data – what happens in the tidal reaches? USGS just beginning to monitor lower CT River. Paul also suggested John consider stable isotope work that has been done to estimate sources (talk to Shimon Anisfeld about this).

Charlie Yarish/Biology – his subsections are seagrass and seaweeds have been posted to the wiki, are looking for feedback from chapter leads. Communication with chapter leads has been poor until the last 72 hours, and Charlie commended Jim Latimer for his efforts. Apparently there are four outlines posted to the wiki. Penny said communication with chapter leads has been terrible. Ellen (via Joop) has been extremely frustrated too. Anne talked to Glen Lopez the other day, apparently no one person is in charge? But Glen has been working on the benthic section with Roman. Perhaps a re-scoping of the chapter is necessary.

Mark Tedesco/Management: Outline posted to wiki – considered preliminary because it will be revised as the technical chapters start to come in. Idea is to begin with review of key points in technical chapters. Also sections on history of watershed development and effects on water quality, climate change, nutrient reduction goals (TMDL, nutrient criteria). Bob Wilson pointed out that the interannual variability in physical forcing is compounding the ability to assess the effects of management actions, need to include this. Carmela also said that the sediment contributions to eutrophication need to be included as well. Recommendations for ecosystem-based management: enhance models, enhance positive feedback loops (aquaculture, restoration), marine spatial planning/seafloor mapping, data management and interpretation (buoy/ferry data & improved temporal resolution, GIS data management and analysis). Larry Swanson said that we agreed to include hypoxia and lobster die-off in this chapter – pointed out that hypoxia missing from many of the other chapters as well. Mark said that lobster die-off included in climate change section (Penny says that she has text for this that could be included in this chapter). Mark said he envisioned hypoxia discussion would go into water quality section. Jim Latimer asked if this chapter is intended to introduce new information or summarize stuff from other parts of the book? Mark said this chapter is supposed to be more of a summary; he would rather reference Penny's text in the biology chapter than include it here. Paul Stacey said he thought a lot of this outline seems repetitious of other chapters – but it seems to be missing discussion of human impact on the watershed and how it has gotten us to where we are today. He also said a discussion of whether management goals are realistic. Paul also would like mention of CT nutrient trading program and managing for impervious cover. Paul suggested adding a section to the outline called "watershed management" and include tools available for management in this section. Louise suggested adding in stuff that LISS is doing. Stuart asked about policy/political context for trying to manage LIS (e.g. two state challenges) – Carmela suggested that Mark write a section about this for the history chapter. Penny said that fisheries need to be at least mentioned, in terms of the structure of how they are managed (e.g. ASMFC).

12:30 pm Lunch and NY co-chair election
Unanimous support of Larry Swanson re-elected as NY co-chair

1:00 pm: Update on LISS Research Programs, *Cornelia Schlenk*
Cornelia gave update on 2009 research projects – wrapping up by end of the month (except winter phytoplankton project), but probably most will be asking for no-cost extensions. Passed out info on those projects. Had two PI meetings about these projects, should they have another meeting? Cornelia thinks it would be a good idea, going to check with PIs about it. Might be able to coincide with the November STAC meeting. Cornelia noted that many of the grantees are also authors on the book; hopefully they can contribute some of their results from these projects. Jim Latimer asked about how to get access to reports and information from these projects? Cornelia said NYSG is working on getting a searchable database. Mark Tedesco indicated that this information, including reports, is posted on the LISS website in the research section. Cornelia talked about most recent RFP. About a million dollars of funding were available, combining 2 years of money to 2 state Sea Grants. They received ~40 pre-proposals, reviewed by panel of federal, state, SG, external peer review. 12 full proposals were requested. Five were funded. Sea Grant provided review comments both at pre- and full proposal stage.

Cornelia asked the STAC whether they should lobby the management committee for more research funds. Cornelia agreed to compile total amount of funds requested, also could highlight how many proposals were related to each subsection of the RFP. Jim O'Donnell pointed out that frequently prioritization of research topics in a review panel can be biased by the areas of interest of panel members. He said it would be good to look at how applicants responded to different areas of the RFP as an indication of what research interests are in the community.

Nancy Seligson stated that the CAC assigns recommended percentages to the areas of spending by LISS for circulation to the management committee and said that the STAC could do something similar. Jim Latimer said we (as the STAC) need to spend more time prioritizing research topics to give better guidance in the future.

1:30 pm: FY11 LISS Budget Update, *Mark Tedesco*
Mark Tedesco said that 2011 budget still has not been passed so not much to say there. Mark pointed out that the research budget had been greatly increased last year, due to additional funds being made available over the base budget. Unfortunately this year it looks like last year's relatively high level of funding will not be repeated. Nancy

Seligson emphasized the need to get the word out to congressional representatives that LISS should maintain appropriations at FY 2010 levels, not FY 2008 levels (currently proposed).

1:50 pm: Future STAC Discussion Topics and Agenda Items, *Carmela Cuomo*

STAC Fellows program.

Science questions:
John Mullaney suggested presentation by USGS about new decision-support tool?
Art Glowka asked about Zhang's water quality assessment work, also about the EPA Bold results. Jim O'Donnell said he was involved with some of the nutrient sampling that the Bold did – Altebet used the data in his LIS-funded research project. Perhaps PIs from the research program could present at either the summer or fall STAC meetings.

Jim Latimer suggested watershed/embayment-estuary interactions as a potential topic. Adam Whelchel asked about linkages between nearshore habitat and the watershed – how to manage around change in the entire coastal fringe habitat, with links to land use policy? Art talked about problems with breakwaters in the harbors and their impacts on the nearshore environment.

Carmela would be interested to hear updates on our understanding of biology/biota of the Sound. Carmela noted that many of the biologists have stopped coming to STAC meetings.

Also need to start the discussion of monitoring in LIS.

Jim O'Donnell wants to present his recent analyses of area and duration of hypoxia.

Which of these should be prioritized? Mark voted for monitoring, because of the budget implications of this information. Carmela suggested combining examining the monitoring efforts we have in place with a discussion of monitoring gaps. Suggestions for speakers? Katie O'Brien-Clayton, Jim O'Donnell, someone from New York?

2:00 pm Adjourn