



Long Island Sound Study

A Partnership to Restore and Protect the Sound

**Science and Technical Advisory Committee (STAC)
Meeting Summary
University of Connecticut Avery Point Campus
March 6, 2020**

Presentation Links:

[Ammerman](#)

[Baumann](#)

[Tedesco](#)

In Attendance:

STAC Members: James Ammerman, Sylvain DeGuise, Kristin DeRosia-Banick, Diane Greenfield, Kamazima Lwiza, James O'Donnell (CT Co-chair), Julie Rose, Kelly Streich, Larry Swanson, Mark Tedesco, Jamie Vaudrey, Penny Vlahos, Nils Volkenborn, Laura Wehrmann

Others: Peter Auster (U. Conn. & Mystic Aquarium), Nancy Balcom (CTSG), Janet Barclay (USGS), Hannes Baumann (U Conn.), Zofia Baumann (U. Conn.), Chris Conroy (U. New Haven), Syma Ebbin (CTSG), Michele Golden (NYSDEC), Lane Smith (NYSG)

On the webinar: Cassie Bauer (NYSDEC), Sarah Crosby (STAC Member), Anthony Dvarskas (STAC Member), David Hudson (STAC Member), Elizabeth Lamoureux (STAC Member), David Lipsky (STAC Member), Audra Martin (NEIWPCC), Robin Landeck Miller (STAC Member), Esther Nelson (EPA), Victoria O'Neill (NYSDEC/LISS/NEIWPCC), Casey Personius (NYSDEC), Julia Socrates (NYSDEC), Maria Tzortziou (STAC Member), Chester Zarnoch (STAC Member)

Jim O'Donnell, CT Co-Chair, opened the meeting at 9:15 AM (This was the last major LISS in-person meeting prior to the widespread COVID-19 shutdown.)

Mark Tedesco, EPA LISS: "*LISS Priorities 2017-2019 and Planning FY 2020 Investments*". Mark focused on recent investments made with the increased funding as well as current gaps and future areas for potential new investments, similar to his presentation at the October Management meeting. Increased water quality investments in 2017-2019 included expanded monitoring and modeling of both embayments and open waters and improved nitrogen loading estimates. Additional recent investments included land acquisition, habitat restoration, and expanding the Futures Fund. From there he moved on the FY 2020 budget of \$21.6 M and discussed the proposed enhancement projects. For 2020 the Futures Fund will be increased to \$3.5 M and the Research Program to \$3.0 M. He then reviewed the proposed enhancement project grouped by CCMP theme. Mark then concluded by outlining the 2020 budget process starting with the October 2019 Management Committee meeting and culminating in the April 16th Management Committee meeting.

Following Mark's talk there was discussion about the CAC's Lobby Day in Washington, DC, originally an in-person visit on March 24 but likely to be online instead. There was additional discussion about how the STAC needs to improve attendance and develop priorities to have more impact, much like the CAC does. It was noted that Sarah Crosby and Mickey Weiss are already CAC liaisons to the STAC and it was suggested that there also be STAC liaisons to the CAC. Jamie Vaudrey and Kamazima Lwiza volunteered to participate in CAC meetings as STAC liaisons to provide input to CAC discussions and report back to the STAC.

Jim Ammerman, LISS/NEIWPC: *"Recent LIS Research Directions and Plans Moving Forward-The 2020 RFP"*

Mark Tedesco and Jim Ammerman: *"Open LISS Program and Research Discussion"*

Jim's presentation and the discussion focused on the RFP overlapped. Jim briefly addressed the submission information for the upcoming Restore America's Estuaries meeting in Providence, RI, from October 4-8, 2020. He and others are interested in having several LIS-focused sessions at this meeting and are encouraging participation. (As of April 27th, several LIS-focused sessions were submitted but the scheduled meeting is canceled and subject to re-scheduling.) He then reviewed the proposed components of the LISS Research RFP (the New York and Connecticut Sea Grant Programs released the RFP on March 16, after considering the input from this STAC meeting and additional discussion among LISS and the NY and CT Sea Grant programs). A vigorous discussion focused especially on the size of grants, the requirement for engaging "end users", and the priority topic areas. There was particular concern about the term "end users", and it is likely to be modified. Following this discussion, Jim reviewed the 2014, 2016, and 2018 Research RFPs and the research priorities listed and the projects funded for each. He noted that there were usually four or five research priorities listed for each RFP, and many overlaps among them. Since this is a proposal-driven process and only three or four projects are funded during each round, not all priority topics have been funded. He concluded with a summary of those topics receiving significant funding and others getting little or no funding.

Janet Barclay, USGS: *"Groundwater flow and nitrogen attenuation in aquifers on the north shore of Long Island Sound"*

Janet briefly described the impacts of nitrogen to LIS and the transport processes which deliver nitrogen to the Sound. Her study had two major goals; 1. To evaluate the groundwater flow system in coastal Connecticut focusing on flow to coastal embayments, and 2. To evaluate nitrogen loading for the Niantic River watershed based on a simple loading scenario. To evaluate groundwater discharge to coastal Connecticut the main questions were how much groundwater, where is it from, and how far did it travel? This required development of a groundwater model, and then calculating groundwater travel times, rates of groundwater discharge, and the components of the groundwater budget. She described the details of the development of the model and the model boundaries which include the area between the East River and Narragansett Bay which drains to the coast. This drainage area is defined by the National Wetlands Inventory and is further classified as tributaries or coastal waters. The preliminary model results were then compared with observations. Well water levels were highly comparable to observations. Modeled groundwater discharge was 87% from tributaries, 11% from coastal waters, and 2% from wells. The median time for total and tributary discharge was just over five years, coastal discharge was eight years.

The second part of the study evaluated Niantic River watershed nitrogen loading. The major questions were how much nitrogen is discharging from groundwater, where is it from, and how long did it travel? The boundary was the Niantic watershed and various nitrogen sources and sinks were listed. Preliminary model results showed a reasonable fit of modeled to observed

nitrogen loads, and 43% of the load was from atmospheric nitrogen deposition, 36% from fertilizer, and 22% from septic. Ninety percent was discharged from tributaries and the rest from coastal waters and maps of discharge locations were presented. Median nitrogen travel time through groundwater was two years with a range from two days to 300 years. Janet concluded by reviewing her preliminary conclusions described above and proposed future work.

Continued Discussion of the Proposed Research RFP During Lunch: The RFP discussion continued, especially focused on the subject areas and the grant sizes. There was also a suggestion for data management capability on the LISS website. The subject area discussion focus on the idea of a broad range vs. specific targeted topics as in recent RFPs. Specific topics mentioned included novel communities with species shifts, ocean acidification, and microplastics. There was a suggestion not to focus on methods, such as models, social science, or remote sensing; as have been targeted in past RFPs. Several attendees argued to allow for a broad range of topics, to let the proposals argue for the importance of their issue. On proposal budget size, there was support for a range of grant sizes, from small grants which may help Principal Investigators new to the LISS research program to larger grants of up \$500k per year for two years. These large proposals must be collaborative, interdisciplinary and well-argued. It was noted that proposal evaluation can be challenging when there is a large range of budget size.

(Note: The RFP released on March 16th invites proposals on a wide range of topics that address management needs in the focus areas of the CCMP; budget requests can range up to \$500k per year for two years. The term “end-users” has been replaced by the following: Applicants must clearly identify the actionable information, tools, or outputs to be produced by the research, the individual(s) or organizational users/beneficiaries who will apply or utilize the research results, how these users/beneficiaries will be engaged in the process, and the anticipated management outcomes.)

Peter Auster, U. Conn. & Mystic Aquarium: *“Addressing the Role of Forage Fish in the LIS Ecosystem: Some Food (Prey?) for Thought and Discussion”*

Peter defined forage fish and described their trophic roles; they impact both higher and lower trophic levels. He showed numerous pictures of a variety of forage fish in dense schools. Then he focused on the LISS Science Needs document and the forage fish research and monitoring needs outlined in the sections on Climate Change, HABs/Invasive Species, and Ecosystem-Based Management. He noted that significant sampling would be needed to address time and space distributions of forage fish and that different sampling approaches were required in different ecological settings. He listed the variety of forage fish species found in LIS and described a variety of methods to assess forage fish status, trends, interactions, and ecological roles. The survey methods include several different visual, trawl, and sonar techniques. He showed trawl survey results from LIS included in the Connecticut Blue Plan, as well as a detailed survey map for Atlantic Herring covering coastal New England and the Mid-Atlantic. Peter then showed a series of acoustic surveys of forage fish demonstrating patchiness, diel variation, and predator and prey distributions. These predator and prey observations were coupled with habitat suitability models. Many of these were from Gray’s Reef National Marine Sanctuary off the coast of Georgia. He concluded by describing both the DIDSON acoustic camera showing predator-prey encounters and the application of the ECOPATH models.

Hannes Baumann, U. Conn.: *“Ocean Acidification in LIS and the impact on Larval Fish”*

Hannes showed that there is far higher and more variable CO₂ (up to 4000 ppm at sunrise) in a tidal salt marsh (Flax Pond) than the current climate impact in LIS. The long-term Ocean Acidification (OA) signal in LIS is not yet detectable because of its variability and it alone is not

the largest stressor for fish larvae. OA co-occurs with both warming and hypoxia and at best they are additive negative stressors and at worst synergistically negative. Furthermore, the frequency and duration of extremes are both increasing and probably important. Dissolved oxygen (DO) and pH are highly correlated in both the open Sound and a tidal salt marsh, and low DO is currently the major driver of low pH. DO and CO₂ have different effects on post-hatch survival in three different coastal marine fish species, additive negative in one, synergistic negative in another, and no effects in a third. Northern sand lance are particularly sensitive to OA and warming. This may be because they live offshore, spawn in winter, and develop slowly; in contrast to nearshore species. One hypothesis is that CO₂ sensitivity increases the more offshore the habitat, even though temporal CO₂ fluctuations decrease greatly offshore. Hannes concluded by noting that very few larval fish species, especially those found in LIS, have been evaluated for OA sensitivity. He views the impacts of variations in pH and DO as the next important area of research.

The meeting was adjourned about 2:15 PM. Stay safe and healthy everyone!