
Long Island Sound Study

2011 - 2013

Sentinel Monitoring for Climate Change

Work Group Work Plan

“A certain amount of restructuring of any monitoring plan will always be necessary and is a positive aspect of continued attention to the LISS monitoring program. - Once we have made lifestyle changes intended to improve the Sound, we must determine their effectiveness through additional monitoring.”

Long Island Sound Study, CCMP 1994, p. 43, 121

Recommendations to the LISS Management Committee (for consideration during their October 2011 meeting):

At the October 2007 meeting, the Management Committee (Committee) stated the need to identify and subsequently address the effects of climate change on Long Island Sound and its watershed. As a brainchild of that meeting, the Sentinel Monitoring Program was created and tasked with establishing and maintaining a monitoring program to address the need of identifying the effects of climate change on the various coastal and marine ecosystems of LIS. The August 2011 LISS Action Agenda states that this program and partners will “Synthesize and assess existing and historical datasets. . . to identify trends in LIS and its ecoregions that could be related to climate change. . . From the analysis, report significant early-warning findings and develop recommendations for action by 2013.” In order to achieve that goal, this work group recommends that the Committee support the funding of two enhancement grants to synthesize and assess existing and historical datasets in the context of climate change to identify trends and data gaps the regional, Sound-wide, and local scale.

To date the work group has identified numerous existing data sources that could be used to determine climate change trends in Long Island Sound and is implementing a LISS-funded web-based data citation clearinghouse to coordinate research and synthesis. This clearinghouse will be completed in the spring of 2012, so funding for these assessments would be timely if awarded in fall of 2012. Previously it was suggested that this work group pursue funding for the synthesis through the research grant program, and the topic was incorporated in the LIS Research program. However, no proposals under this topic were selected. Additionally, this assessment component

would complement funds already appropriated to implement sentinel monitoring on the pilot scale. Reviewing the current data to identify data gaps and additional directed resources towards synthesis of existing data would better direct LIS research projects.

Additionally, it is extremely likely that monitoring beyond the pilot study will be needed to verify long term trends to identify appropriate long term adaption strategies. As is, there is not enough pilot monitoring money to fund all six (6) priority sentinels selected for the pilot and we do not want to see an important sentinel go unmonitored.

Tasks that require additional funding at this time

1. Review and synthesize currently collected and historical data in the context of climate change to identify trends on the regional, Sound-wide, and/or local level
2. Review data on data citation clearinghouse to identify data gaps and better direct research
3. Additional funding for monitoring is needed. We're anticipating that pilot data will identify a discernible climate trend(s), however, it is extremely likely that additional monitoring will be needed to verify long term trends to identify appropriate long term adaption strategies. Additionally, there is not enough pilot monitoring money to fund all six (6) priority sentinels selected for the pilot and we do not want to see an important sentinel go unmonitored.

Tasks that are being funded in FFY2011

1. No funding was secured for sentinel monitoring in FFY 2011 (effective October 1, 2011). However, projects move forward with funding secured in previous fiscal years (2008 & 2010).
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Mission Statement:

The purpose of the Sentinel Monitoring for Climate Change Work Group is to assist the Long Island Sound Study (LISS) Management Conference in designing and developing a dynamic climate change monitoring program for the ecosystems of the Long Island Sound (LIS) and its coastal ecoregions. The work group will focus on activities that:

1. Identify climate change drivers and potential indicators to assist in identifying responses in LIS and its coastal ecoregions;
2. Develop bi-state sentinel monitoring strategy for climate change;
3. Oversee implementation of a dynamic pilot monitoring program from a broader strategy;
4. Enhance public outreach, education, awareness and participation in climate change adaptation issues and inform management decisions on adaptation planning; and
5. Pursue additional funding to expand monitoring program and data synthesis.

Background:

Since the development of the Long Island Sound Study Comprehensive Conservation and Management Plan (CCMP), global climate change impacts have come to the forefront in current science and management issues. The complexities of a changing climate and the subsequent impacts on different ecosystems has caused many estuary programs to revisit their own

management plans to take into consideration regional climate change. The LISS Management Committee also saw the need to address the localized effects of climate change and created a sentinel monitoring project and workgroup to address the need of identifying the effects of climate change on the various ecosystems of LIS.

The Sentinel Monitoring for Climate Change Work Group was formally convened in the summer of 2009 and began more effectively coordinating efforts already underway in both states to develop a strategy. The ultimate goal of this strategy development is to begin a long term monitoring program, through which we will be able to identify how LIS is changing and inform proper management strategies to protect as many resources as possible.

Accomplishments in 2010 - 2011:

- Finalized and published the strategy document titled '*Sentinel Monitoring for Climate Change in the Long Island Sound Estuarine and Coastal Ecosystems of New York and Connecticut Volume 1 (2011).*' The strategy was highlighted by the EPA's National Estuary Program and Climate Ready Estuaries Program.
- Performed and compiled data from an online survey to prioritize comprehensive list of climate drivers and indicators matrix resulting in a complete matrix and selection and prioritization to six pilot sentinels
- Created a Sentinel Monitoring webpage on the LISS website <http://longislandsoundstudy.net/research-monitoring/sentinel-monitoring/>
- Coordinated the states of Connecticut and New York to come to an agreement on the use of pilot implementation funds between the two states and drafted an RFP for the solicitation of a vendor for pilot implementation.
- Began work on the on-line data citation clearinghouse by contracting with UConn utilizing funds granted by the LISS Management Committee.
- Work group members participated and offered technical support at the Groton Coastal Climate Adaptation workshops held by CTDEEP and ICLEI, including the culminating joint town council presentation and final report.
- Work group members have given presentations and briefings to the STAC, Management Committee, CAC, EPA, 2010 and 2011 CT Conference on Natural Resources (interactive session, poster presentation, and oral presentations), NEIWPCC Climate Change Workgroup Meeting, New England Regional Climate Priorities Workshop, ASLO Ocean Sciences Meeting, the Association of National Estuary Programs' November 2010 meeting, 2011 Ecosystem Indicators Conference in Boston, MA, and other meetings during 2010-2011.
- CTDEEP intern interviewed researchers and identified data gaps, information found went into the strategy and work plan for the data citation clearinghouse
- The Sentinel Monitoring program is serving as a model for regional-scale sentinel monitoring efforts throughout the New England region and the New York Bight

Please note that much more information can be found in the strategy document, which is available for download at <http://longislandsoundstudy.net/research-monitoring/sentinel-monitoring/>

Tasks/Products: Integrated Priority Areas

This work plan is composed of three priority areas: 1) Develop a bi-state sentinel monitoring strategy; 2) Implement the monitoring program; 3) Develop a web-based data citation clearinghouse; and, 4) Synthesize and disseminate data. The emphasis is on climate change and its impact on LIS ecosystems. These efforts will support ongoing climate change adaptation efforts in LIS. This work group shall advise the two states' environmental agencies in their roles with the sentinel monitoring program and shall work in coordination to carry out and implement the work plan.

1) 2011 - Develop a bi-state sentinel monitoring strategy

Tasks:

- Review and compile climate change literature and data to identify climate change drivers and potential indicators (State leads and CRE technical assistance contractor, 2009)- COMPLETE
- Use potential indicators to predict ecosystem impacts and responses (all participate, 2009) - COMPLETE
- Review existing monitoring and identify gaps including level of mapping (all participate, CRE contractor 2009 - 2010, STAC fellows 2009) - COMPLETE
- Rank indicators to determine monitoring priorities (State-level work groups with review and synthesis by bi-state workgroup, 2010) - COMPLETE
- Write an all-inclusive strategy with a specific outline for a pilot study in both states (SeaGrant lead, all participate, in process 2010) - COMPLETE
- Review and synthesize physical parameter data that is publicly accessible currently collected and historical data in the context of climate change to identify trends on the regional, Sound-wide, and/or local level - Included as a priority topic in 2010 Research RFP and funding requested in this work plan*
- Review clearinghouse data and identify data gaps in order to better direct research efforts - Funding requested in this work plan*
- Circulated monitoring strategy among state level work groups, Management Committee, and the STAC to garner comments for future iterations (all participate, 2011) - COMPLETE
- Expand current sentinel monitoring database into data citation clearinghouse that includes all monitoring efforts (Funded by 2010 LISS base program, 2011-2012) - IN PROGRESS
- Incorporate comments and review the strategy in 2015 to ensure that the strategy is a “living document” that does not become stagnant.

Products:

- i. Final bi-state sentinel monitoring strategy ready for pilot implementation in both states (June 2011).

- ii. Strategy also included a larger monitoring program for future implementation or implementation by partners through LISFF, Enhancement grants and other potential regional or federal funding opportunities (June 2011).

2) 2012 (ongoing) - Implement monitoring program

Below, "contractor" refers to a future contractor for implementation TBD, not the recent CRE Technical Assistance contractor, ICF.

Tasks:

- Develop RFP and facilitate a joint contracting process between NYSDEC and CTDEEP to contract pilot study implementation (all participate, Funded by 2008 and 2010 LISS base program, 2011).
- Develop QAPP (contractor).
- Begin pilot monitoring, data collection, and public warehousing (all participate, contractor, 2012).

Product:

- i. Fully functioning pilot monitoring program

3) 2011 – 2012 - Develop a web-based data citation clearinghouse

Tasks:

- Create an on-line interactive database of historic, current, and emerging research which is intended to facilitate the synthesis of existing Long Island Sound data in the context of climate change. - IN PROGRESS

Product:

- i. A fully functioning and accessible (to scientific community) web-based data citation clearinghouse.

4) 2012 (ongoing) - Synthesize and disseminate data

Tasks:

- Review and synthesize, utilizing the data citation clearinghouse, currently collected and historical data in the context of climate change to identify trends on the regional, Sound-wide, and/or local level (Enhancement Grant for a contractor*)
- Review data on data citation clearinghouse to identify data gaps and better direct research (Enhancement Grant for a contractor*)
- Eventually synthesize two years of pilot monitoring data along with existing historical data and draft a report that identifies trends and pertinent data gaps

- Review and approve the report and encourage the contractor(s) to publish in a peer-reviewed journal (all participate, STAC)
- Submit report to Management Committee for adaptation recommendations (all participate)
- Disseminate data to the public through the Communications Team (all participate or contractor)
- Revisit strategy including sites and indicators (all participate, state-level work group)

Products:

- i. Synthesis of collected and historical data which identifies climate change related trends
- ii. Final report
- iii. Regularly updated strategy (every 5 years)
- iv. Public outreach information and materials

Tasks that require additional funding at this time

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B. Table of Environmental Deliverables, Outputs, Outcomes from proposed tasks				
LISS Program Element/ Work Plan Activity	Deliverable(s)	Target Date(s)	Environmental Output	Environmental Outcome
Synthesis of existing Long Island Sound data	Assessment of historical data for determination of trends related to climate change in LIS Indicators chosen based on the August 2010	2012	Identified climate change trends in LIS that would inform management decisions and help direct	Improved predictive ability of changing LIS ecosystems leading to more effective protection and management

B. Table of Environmental Deliverables, Outputs, Outcomes from proposed tasks				
LISS Program Element/ Work Plan Activity	Deliverable(s)	Target Date(s)	Environmental Output	Environmental Outcome
	stakeholder survey		future monitoring programs	
Data citation clearinghouse	Web-based tool compiling information about all research related to sentinel monitoring in Long Island Sound and its coastal and marine ecoregions	2012	<p>Web-based tool that facilitates synthesis and analysis of existing data in the context of climate change</p> <p>Provide documentation for sentinel monitoring work that has occurred to date</p> <p>Better communication between and among researchers, managers, and stakeholders</p>	Improved predictive ability of changing LIS ecosystems leading to more effective protection and management
Implementation of the strategic plan	Coordinated ongoing sentinel monitoring and standardized data collection for LIS building upon all data collection efforts	2012	Data to improve management decisions on federal, state and municipal adaptation plans	Improved predictive ability of changing LIS ecosystems leading to more effective protection and management
Synthesize and disseminate data/ information and evaluation of pilot program	Synthesis of pilot monitoring and historical data	2013	Final report, updated strategy and outreach materials	<p>Active management and enhanced response to priority climate change impacts in LIS</p> <p>Serve as a resource and model to other NEP's for climate change</p>

B. Table of Environmental Deliverables, Outputs, Outcomes from proposed tasks				
LISS Program Element/ Work Plan Activity	Deliverable(s)	Target Date(s)	Environmental Output	Environmental Outcome
				monitoring and adaptation, leading to increased regional coordination

Workgroup Members:

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Calendar:

The SMCC Work Group meets on an informal “as needed” basis. The work group utilizes telephone, video, and face-to-face meeting locations as well as utilizing a “Google Docs” tool for collaborative writing and publishing products.