SENTINEL MONITORING WORKSHOP SUMMARY

10/26/2022

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INTRODUCTION

As part of Task 6 in the FY (Fiscal Year) 2020 Long Island Sound Study (LISS) Workplan, NEIWPCC was charged with conducting a workshop in service to the Climate Change and Sentinel Monitoring (CCSM) Workgroup. Specifically, the workshop as outlined in the workplan was aimed to engage stakeholders and partners to help identify monitoring data sources, centralize available monitoring data, and develop a LISS monitoring network.

BACKGROUND & CONTEXT

There is a wealth of background information on the CCSM project, however in the interests of the workshop summary and the current planning document, we will outline resources below that were used during the planning and execution of the Sentinel Monitoring Workshop. This author suggests reviewing the 2018 report below, followed by the meeting notes. Facilitation services of Lighthouse Consulting Group (LHG) LLC were contracted by NEIWPCC. LHG helped in the organization of meetings, as well as coordinating synthesized materials (agendas, meeting notes, etc.). Added contextual placement of the program can be guided by the websites. Programmatically, close collaboration between the NY and CT Co-Chairs of the CCSM WG provides the most up to date information regarding ongoing projects, followed by EPA (Environmental Protection Agency) and NEIWPCC LISS project manager(s).

RESOURCES

June 2-3, 2022 Workbook & Meeting Notes – This Google Slides document contains background information on the CCSM workgroup and briefly summarized previous efforts of categorizing, prioritizing, and utilizing the climate change sentinels.

Sentinel Monitoring for Climate Change in the Long Island Sound Estuarine and Coastal Ecosystems of New York and Connecticut Volume 2 (2018) – This PDF summarizes prescient background information from initiation to 2018 of the CCSM efforts in LISS.

LIS Sentinel Monitoring for Climate Change Program - Long Island Sounds Resource Center Website

Climate Change and Sentinel Monitoring – This is linked on LISS Website

WORKSHOP/PROJECT GOALS

The primary deliverable of the workshop is to develop a guidance document that can facilitate proposal development. This report is that forementioned guidance document. Following successful completion of the workshop, this guidance document is intended to be a resource for the CCSM Workgroup and its members. During the workshop opening, the attendees were given the following goals:

- Support existing monitoring of indicators that support priority sentinels
- Initiate new monitoring of indicators that support inadequately tracked priority sentinels
- Support a monitoring network

PRE-WORKSHOP METHODOLOGY

With the help of Lighthouse Consulting, an informal survey of the sentinel monitoring database was conducted. In December 2021, a copy of the database was brought offline into an excel spreadsheet. In order to assess the most readily available data that exist to implement in a wider monitoring network, quality control devices were selected from the pre-existing data set. The database was then filtered to reflect only those entries which reflected *both criteria.*

Criteria 1: Quality Control Notes. These notes were added into the database before the December offline "snapshot". These detailed notes broadly concern the useability and accessibility of the records.

> *Useability*: This attempt to address the programmatic concerns of data entries, broadly categorized as: Good, Unsure, Need to Contact & Problematic. To visualize these categories, these terms were color coded:

Green: Good, ready to use

Yellow: Unsure-Varying levels of applicability to sentinels OR updating/fixing needed, determined case by case to keep, or delete.

Orange: "Need to Contact"; these data must be found or fixed. Likely delete, case by case determined

Red: Problematic, Delete data wholesale

> *Accessibility*: This was assessed to determine if the data was readily available for use. The sentinel database had an expressed goal of being a "metadata database", to signify itself as a jump off point to access data records stored elsewhere. Thus, if data were not easily accessed online, it would prohibit ease of integration into projects. (Records: Printed/Online/online records-broken links/restricted access) of the data entries.

Criteria 2: Monitoring Status. Only those entries with "Ongoing" monitoring status were included. Without a source for evaluating entries, it was assumed this category denoted at least a minimal record of past data points, as well as continuing data collection from which to plan against.

Pre-Meeting Results

Results of the data sorting through the criteria listed above yield the following results that were then presented to the workshop participants.

1) Approximately 20 entries in the Sentinel Inventory DB remained after both criteria & monitoring status were applied
2) The entries correspond to only two of the four categories: Water Quality & Quantity and Coastal Habitats of LIS & Associated Species & Systems. The categories without entries meeting the criteria were: Fish Communities of LIS & Associated River Systems and Pelagic & Benthic Systems & Associated Systems.

Workshop Summary

Breakout room Structure

Breakout sessions were organized into the two categories, *Water Quality & Quantity* and *Coastal Habitats of LIS & Associated Species & Systems,* and groups were asked to answer the following questions about the climate change sentinels presented on the website, snapshot, and priority sentinels (For context, see June 2-3, 2022, Workbook & Meeting Notes).

1) For each of your priority sentinels:

   Is there any viable reason not to use these sentinels as presented?

a. Rank the top three (1 most important)
b. What needs to be done to continue to support the monitoring of the sentinels during the next funding cycle?

2) Gaps

   Are there sentinels that are not being currently being measured (gaps) that should be monitored?

   a. Rank the top three (1 most important)
   b. What needs to be done to begin monitoring of the sentinels during the next funding cycle?

3) Spatially, does the monitoring adequately represent the entire region? If not, what are the priority sites within the region that require monitoring investment (this could include "beaches" and/or "North Fork, LI")

4) What needs to be done to support a broader monitoring network in the region during the next funding cycle?

Individual breakout session responses to the set of questions can be viewed within the workshop session report outs (For context, see above link: June 2-3, 2022, Workbook & Meeting Notes).

Discussion Summary

Sentinel DB as it stands has been described as a "static", often unused metadata database with limited importation of new data. The metadata held therein have limited utility based on uncertainty of data collection and wider QA/QC concerns. Adding to this is limited visibility of the database; many "forget" or "wasn't aware it was still being used". Therefore, integration with newer data management initiatives has been troublesome. Users mention that a primary weakness is data if often entered in triplicate with more visible and utilized, and field specific, data collection efforts (example: EPA's Water Quality Exchange (WQX), United Water Study (UWS)). Users suggest that updating the database to better become integrated into other efforts that are API compliant may be the best course of action. This would also facilitate usage across municipal, NGO, state and federal partners as data and metadata reporting requirements differ.

Its strengths lie in the historical context of metadata, while simultaneously possessing many entries that are not fully integrated online (paper records or broken links). There is interest in integrating the wealth of LIS geological info (available offline). These data can be used for deep past reconstructions or constructing historical baselines. Workshop participants agreed that a step in generating success within a monitoring network is to utilize meaningful & successful internal LISS communications and external communications with collaborators. In this respect, the project has the capability to have added relevancy with the forthcoming Communications, Outreach and Engagement Plan aiding collaboration across LISS. To ensure the historical data is preserved, future data management projects should incorporate this information into their databases.

Another strength of the database is that it consists of metadata, and thus, links to available data sources housed elsewhere. This eliminates the troubles of primary data storage and upkeep. However, as mentioned previously, the accessibility of primary data can be "hidden", or unavailable, based on if it is stored offline, (locally stored .csv or .xl files), or only within printed materials. Furthermore, access can be problematic as stakeholders may be apprehensive to share data that has not been tied to a research publication. While metadata compilation is quite useful, it is important to determine the chokepoints that prohibit the ease of data exchange inherent in the sources listed above.

As part of each breakout group, participants were asked to rank the top 3 sentinels in their category. As part of this, participants note that there is a need for a coordinated and defined approach to determine the top 3 sentinels of each category. Workshop participants recommended better defining the sentinels as some are too broad. There is a need to determine specific parameters and locations that should be monitored for each sentinel. From this, determine the work group will be able to determine if additional monitoring needs to be conducted. This more defined approach will facilitate coordination and collaboration among LISS partners. Once desired parameters and locations are identified and existing monitoring is sufficient, if not done already, near-term efforts should focus on data compilation and analysis to obtain an understanding of trends.

GUIDING PRINCIPLES

PRE-WORKSHOP

- Crosswalk needed with priority sentinels as identified in 2018 (and utilized in the DB) to current research/programmatic/technological needs
- What about other categories? Ecological approach acknowledging interplay of categories & variable
- Funding will be needed for a complete survey of existing sentinels
- Establish an "identity" for the Sentinel Monitory Database. What makes this unique? How does this integrate with other data management projects?

WORKSHOP

- The strengths of the DB lie in its historical data
- The DB may more seamlessly be integrated as part of other initiatives, versus the difficulty in scaling up (Concerns for funding, staffing, technological upgrades)
- Advertise and incentivize data input
- Rework the database to facilitate "scraping data" from it. Ease data import/export.
- Known gaps in DB are mitigated elsewhere-UWS as an example have not been integrated into the DB
- New projects should be QA/QC at inception, explicitly identifying sentinels that are to be monitored. Fields must be sorted to pull metadata–QA filters & overall ease of data import

POST WORKSHOP

- Develop a workgroup workplan that identifies actionable targets, through project planning, that directly influence database items (example: data management, database visibility, user experience)
- Determine the appropriateness of, and selectively integrate, historical metadata sources that have limited digital representation, if any
- Assess how this metadata database can be integrated into existing metadata storage/database/data management initiatives ongoing and proposed in LISS.
- Collaborate with other LISS workgroups to better assess the existence, and capability, of research partnerships that would inform a (sentinel) monitoring network
- Categories and their respective Sentinels not covered in the workshop will need to be investigated for their utility; regarding data availability and overall direction of research/monitoring efforts in the LISS. We specifically identify *Fish Communities of LIS and associated river systems* and *Pelagic and benthic Systems and associated systems* as categories that remain uninvestigated.

Participating Organizations

NYSDEC (New York State Department of Environmental Conservation)

CTDEEP (Connecticut Department of Energy and Environmental Protection)

CT Sea Grant

UConn

CSHH (Coalition to Save Hempstead Harbor) (NY)

Cornell University

NEIWPCC

Participant List

Contained within the shared Google Slides presentation. Breakout room assignments are copied below.

Water quantity-quality - Jordan Bishop (moderator) NEIWPCC

Jamie Vaudrey UCONN (University of Connecticut)

Jennifer Pagach Connecticut College

Penny Vlahos UCONN

Samarra Scantlebury NYSDEC

Carol DiPaolo CSHH (Coalition to Save Hempstead Harbor) (NY)

Alissa Dragan CT Dept. of Agriculture (CT DOAG)

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Coastal habitats - Vicky O’Neill (moderator) NEIWPCC/NYSDEC

Alexa Fournier NYSDEC

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