Climate Change and Sentinel Monitoring SHARP Collaboration
Meeting Summary
Monday, January 23, 2023

Attendees

Samarra Scantlebury (Co-Chair, NY DEC), Kathleen Knight (Co-Chair, CT DEEP), Jonathan Cohen (Presenter, SUNY-ESF), Chris Elphick (Presenter, UCONN), Alison Kocek (Presenter, SUNY-ESF), Deborah Abibou (CT Seagrant), Juliana Barrett (CT Seagrant), Jordan Bishop (NEIWPCC), Robert Burg (NEIWPCC), Emma Coffey (CT DEEP), Sarah Crosby (Norwalk Maritime Aquarium), Gwen Gallagher (NY Seagrant), Elizabeth Hornstein (NY Seagrant), Heather Kordula (CT Audubon Society), DeAva Lambert (CT DEEP), Esther Nelson (EPA), Victoria O'Neill (NY DEC), Suzanne Paton (USFWS), Ron Rozsa (Citizen), Sarah Schaefer-Brown (NY Seagrant), Paul Stacey (Foot Prints in the Water LLC), Cayla Sullivan (EPA), Penny Vlahos (UCONN), Harry Yamalis (CT DEEP)

Introduction

Samarra Scantlebury called the meeting to order at approximately 10:00 AM. Samarra provided the intent of this special meeting and CCSM's intended use for the information shared at this meeting.
The overall objectives were to:

- Established a shared understanding of the existing and intended continuance of data available through SHARP
- Establish a shared understanding of data gaps.
- Identify climate change monitoring collaboration opportunities.

CCSM's intent is to:

- Address the FY2023 Charge: To review the latest science related to the 2018 Sentinel Monitoring Strategy to feed the preparation of an update and implement a sentinel monitoring network for the LIS.
- This meeting was intended to not only addresses retrieving the updated understanding of priorities outlined in the 2018 strategy, but is also a key component to evaluating marsh health relative to climate change, which was identified as a short term priority in the 2022 Workshop

SHARP Overview and Connecticut Research

Presented by Dr Chris Elphick of the Evolutionary Ecology and Biology Department of the University of Connecticut.

What is SHARP: Purely a collaboration and information sharing of researchers with similar research interests.

Origin of SHARP: Originally a few researchers came together to determine if we had enough information to determine if saltmarsh sparrows are at risk. It was determined that not enough was known and the formation of this collaboration was initiated.

Study Focus: While salt marsh sparrows were the originating concern, even from first grant the focus is a set of truly dependent marsh species (Salt Marsh Sparrow, Clapper Rail, Atlantic Coast form of Nelsons Sparrow, Eastern Willet and Seaside Sparrow). Program has grown to include data on all other birds that utilize the marsh and have habitat studies.

Geographic Coverage: Maine to Chesapeake (Most work is centered in NE)

Parameters: Primarily divided into two types.
1. Surveying Birds and their habitat (selected via randomization selection process and initial survey was done in 2012, these were repeated in 2013, and again in 2021/22)
   a. >7,000 Survey Points in total range
   b. 5 min point count (all marsh birds)
   c. Playback (to try to account for those who are hard to detect, like rails)
   d. Vegetation surveys

2. Demographic Plots (30 sites have been done this is nearly annual monitoring, but not intended to be long term data set, however some sites can be used this way)
    a. Finding nest and monitoring them
        i. Look at survival rates, fledging rates
    b. Capturing birds for tagging/markers
   i. Bands
        ii. Feather/blood samples

As these sites are very work intensive employing a new method known as rapid demo to develop a method to increase spatial coverage of sites and be a middle approach between intensive demographic plots and surveys. Covers both vegetation transect and mist nets (especially important for male/female ratio). First test completed and first round of the analysis is very promising.

Specifics for Vegetation Parameters:
- Within marsh itself quadrants along transects are used
- Adjacent uplands are also surveyed for marsh vegetation and tree health (cores)

Connecticut Specific Data Available:
- We have vegetation data from 2002 (before SHARP)
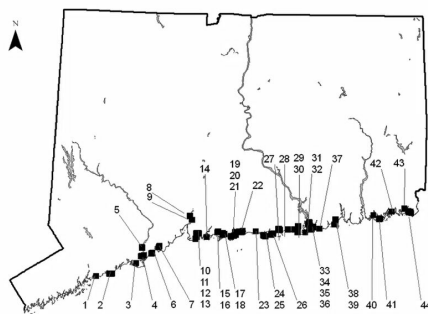
Studied in CT: 2002-21
44 marshes
>3800 banded birds
>1300 nests

- Species composition studied at 170 transects across LIS to track migration of marshes. Beginning at defined marsh boundary and following a transect 100m back.
- Increasingly focused on restoration and pairing controlled sites. SHARP has 40-50 sites in total.
    o Sediment addition sites
    o Living shorelines
    o Altered hydrology
    o And recently added runnels
- In Connecticut testing types of sediments to track how vegetation regrowth, GHG emissions and soil properties change over time that can inform sediment addition restoration. (Great Meadows Marsh in CT is example of this study)
- Also, at Great Meadows Marsh doing 5 different planting treatments (species and densities) to track the rate at which these become revegetated and tracking the bird use at these plots. (Willet has been noted already)

- Recent funding from FWS to continue to track the vegetation above and track bird use more intensively including trying to see if restoration has adverse impacts and soil microbial community (to understand potential consequences for GHGs)

SUMMARY of LIS SAMPLING:

- How often are data collected?
- Is it being collected at the same locations?
- Are they representative of LIS marshes?
- Are data comparable across New York and Connecticut?

	Frequency	Repeat locations	Site selection	Standardized protocol?
Bird surveys	1-10 yr cycle	>100	Random	Yes
Vegetation	1-10 yr cycle	>100	Random	Yes
Bird demography	Approx annual	4-8	High quality	Yes
Rapid demo	??	>5	Opportunistic	Yes
Marsh edge	~8 yr cycle	>100	Random	Yes
Upland veg	~8 yr cycle	>100	Random	Yes
Restorations	1-3 yr cycle	2-4	Opportunistic	Yes

*historical info; current funding all ends in 2024

SHARP Research in New York

Dr Jonathan Cohen of SUNY-ESF introduced Post-Doctoral researcher Alison Kocek who presenting on NYC & Long Island's SHARP research.

Demographic Study:
- 2012-2016 and 2018-2019
- Focus on Salt Marsh Sparrow and the Seaside Sparrow (species of special concern in NY), and did give other Marsh nesting birds base monitoring too.
- Focused in NYC and W. Long Island
- Daily Nest Searching & Banding Nestlings: 1100 nests, noted nest success rates and banding nestlings provided insight to survival rates and recruiting back into monitored sites.
- Initially monitoring nest attending by target netting nests but have now implemented pit tags that can be read with RFID reader (less handling)
- RFID reader is now implemented method SHARP wide.
- Using quad (m^2) checking vegetation cover, thatch, veg height, depth of nest, percent cover, nest height.
- Systematically banded birds 1/study plot / month. Added location data for density information.

Other less routine studies:
- Radio tracking of birds, hatchling year 2015
- Rapid Demo in 2018
- Nest Camera study 2015-2016 (feed rates and some understanding of what is being fed)
- Invert and disturbance study in 2015
- New demographic work in 2024 focused on Habitat Restoration. Idle Wild Marsh in NYC is one location. Alison asked team for additional collaborators/locations for this restoration work.

- Broadcast surveys on LI, to be repeated this year summary below:
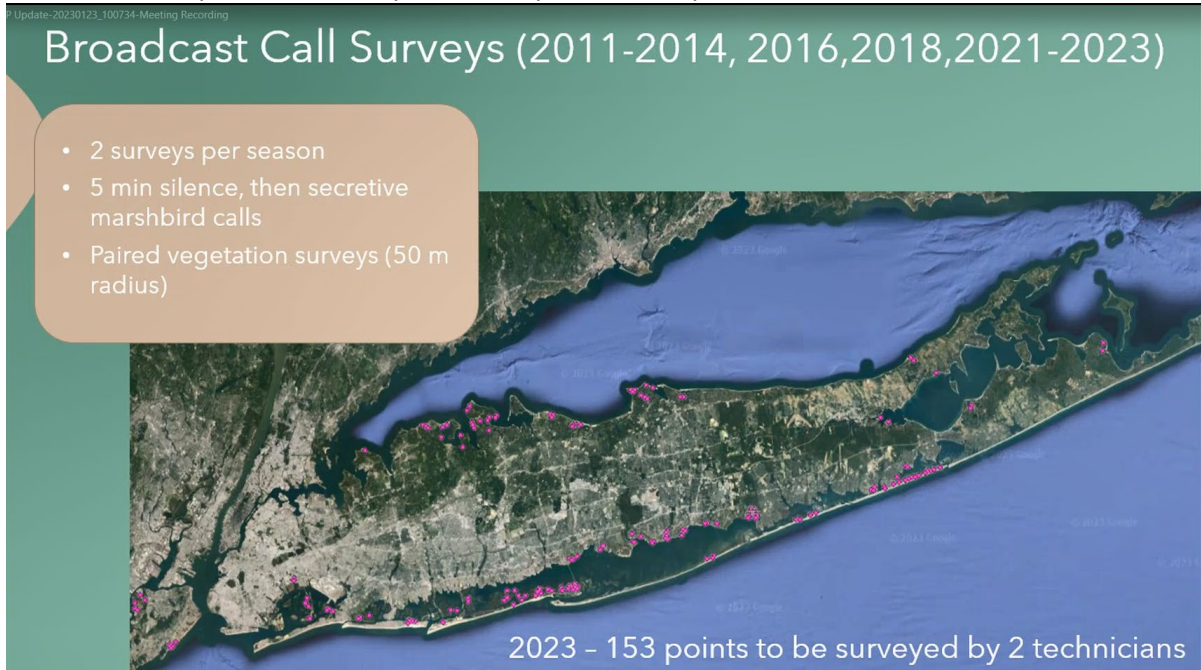
-
Key Findings:
- Urban nests are unique
  - Nest height is very important for nest survival and NYC sparrows are nesting higher off the ground, compared to LIS, SHARP and broader lit review.
  - Tallest veg types are taller in the NYC area, but average is similar.
  - One possible reason is tidal flow in Marshes, see below (Urban marsh tidal regime is much higher):
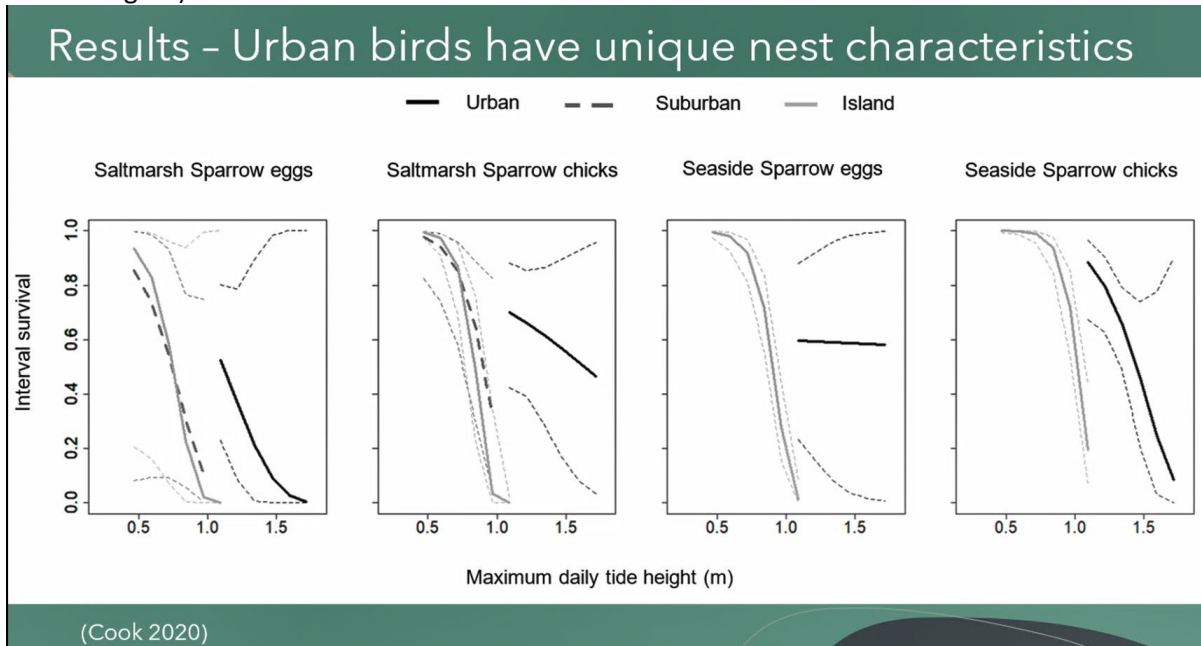
- Also, distinction between N New England and CT-NJ region, Northern sparrows consistently select for thick thatch, but southern sparrows will not post flood and post predation event. Southern are really

looking for tallest of tall. It does seem that predation pressures of Southern birds are higher and seem to be adapting to avoid it, which means added pressure on same portions on marsh.

- While this noted adaptation is good, at this point we don't think they are adapting fast enough to avoid the impacts of sea level rise.
- Noted on LIS there is 2.2 males/females but noted we may be overestimating if using singing birds since males sing and females do not.

-

Discussion & Q&A

Q&A

- Q: For NYC area is absolute elevation of nests similar across all the sites?
- A: We did find the Idlewild had significantly higher tidal heights, but elevation is somewhat lower. But not sure about all NYC. There is a lot of work to be done to help raise the sediment in those areas?
- Q: Is there a similar urban signature in CT?
- A: We cannot really answer that because CT sites aren't that urban, but it also depends on what you mean by urban. Housing density may not have that effect, but it might have influence on predator community and, but we know N runoff has significant effect. The nature of what's going on in the watershed than simply urban v nonurban. Predators, isolation, and sediment deposition etc that we have yet to explore.
- Q: Are the priority species identified in the pilot study are they still the appropriate species for the climate change objectives?
- A: They were selected bc they are the specialist marsh species and that remains true. So, these are the suite of species that can index what is happening in marshes.
- Q: In addition to salt marsh species do you have other species that could be impacted by salt marsh species? (Example is tern populations and fish populations and their primary prey base)
- A: Chris's program does have some data regarding other birds that use marshes, some on ospreys, but we do not collect data on habitats. LISS does track terns though indicators but its something we need look at in this context here, and fish with regards to this. Suzanne noted that net sizes can be problematic for tracking bait fish. Ron noted there was a study in 1970s and wildlife in DEEP do the annual surveys. Chris noted that the surveys will have location data associated for nesting sites for all of the colonial water birds, in the atlas data base and available in e-bird.
- Q: Is there specific elements from the SHARP program that are robust enough to potential indicators?
- A: From bird perspective the point count data will tell us the best big picture and there are some indices that will be available in next year or so. But there are somethings that point count data miss, salt marsh sparrow for example so some demographics is important but very intensive to do so would need to be small selection of sites. However, this new rapid demo method could provide the resource to do the needed indices, because even though its new method it still draws on older data so you would not loose the trends. But for looking at the broader system vegetation is really key metric, the remote sensing with ground truthing is best method for capturing this data. The new drone method CT is developing is very helpful getting full picture, but the catch there is it will only be useful going forward. However, utilizing land sat data integrated with this we may be able to develop methods going forward.
- Q: Are the partners on the call able to identify restoration sites on Long Island to implement the rapid demo method?
- A: Suzanne Paton noted some possible connections to follow up with Alison. Dr Cohen noted funding for 2024 that has enough flexibility in scope to allow for partnerships and collaboration.
- Q: Sarah's team at Maritime Aquarium is ready to study low marsh processes and looking for collaboration opportunities. Some of the foundational process-based sea level and warming responses provide an opportunity

- A: Connections in chat to follow up on.
- Q: Any thoughts about location recommendations for overview sites?
- Alison noted ACJV's priority marsh list, south shore tends to be larger focus there because that is where the populations happen to be, but expanding to the N shore is valuable. Chris noted coordination with ACJV is important coordination network too, the point of contact coordinating this is Mo Correll Maureen_Correll@fws.gov Chris highly recommends sharing what you are working on with Mo. Alison noted that she is going to start working on updating this document for the Long Island Section that will be circulated. Suzanne noted same for Connecticut, and Marshes that Suzanne noted are the high priority and will follow up with email. Suzanne also noted that Audubon for Hammonassett and East River Marshes these high priority for Suzanne's group.
- Q: So many living shorelines are relatively small, so what are the parameters for being monitored and is there a list beyond permitting lists for tracking living shoreline?
- A: Chris noted they have been monitoring at Stratford Point, which is small but we are still doing bird and vegetation sampling. The other problem with living shoreline is they are created and managed very different from each other. As we get capacity and funding we would like to monitor this more.
- Q: Do we have a database for living shorelines or is this a need for LIS?
- A: Chris monitors based on what he gets from point of contact, NFWF has a large database, unsure if Atlantic Coast Joint Venture—Alison noted that she thinks they will, and Save the Sound has a document that tracks this. Suzanne noted that a lot that are not adjacent to salt marshes, but save the sound has an effort specifically to save the salt marsh. Harry Yamalis noted he maintains a data base and recently began to add living shorelines, currently not tracking style as a field but it is in the narrative portion.

Discussion
- Ron R. noted the natural restoration at barn island is in its final stages. Ron cited examples of pooling marshes elsewhere and believes that SHARP data doesn't tell us at Barn Island about the stability of the spartina patons in unditched marsh. Ron has placed transects at transects and have elevation for ditched and unditched marshes at Barn Island. Ron recommends in addition to SHARP plots for CCSM to have perpendicular transects for elevation using Bill Neering methodology.
- Chris noted agreement with the differences in ditched and unditched marshes but noted that our area has very few unditched marshes, so to be representative of the area ditched marshes are important to understand what is representative of the area. Barn Island points are demographic plots not the survey points. Also, it is important to note the changes we are observing with SHARP related data have all been.
- Ron noted a GIS project he built for wildlife division for tracking nesting sites. But GIS project was not updated.
- Paul Stacey noted that the Sentinel Monitoring WG should not be focused only on birds and should be whole picture and noted the NERACOOS sentinel planning, and this needs to be more than climate change. Recommended to think more broadly.
- Ron noted that a conceptual model for tidal marshes that should be souped to nuts that would address differences between ditched marshes and unditched marshes. Ron has submitted a draft proposal in past and plans to provide the team with an updated proposal and discussed his thoughts on the funding mechanism/contractor to do the work.
- Ron noted there is long term marine fisheries data set on fish species in Long Island Sound so this should be continued. Bill Neering set up long term forest monitoring plots, that also gives us a long data set. Ron noted his observations on Barn Island regarding natures 100 yr cycle to return to natural state. Indicated mega pool mapping is indices needed to determine speed for returning to natural state. Offered to demo.
- Chris noted to other efforts we should be aware of:

- o Atlantic Coast Joint Venture – is very large scale and there is a move to repeat that and with a broader ground truthing effort. The analysis part is not yet defined.
- o White out solutions is flying drones along the entire coast [A project funded in CT DEEP's LISS grant] this will be with LiDAR (both terrestrial and bathymetric, there fore will give us depth of pools as well). This is similar methods used at SHARP sites that this same company worked on. Suzanne noted this would be of value to continue for LI.

Follow up Item Summary

- Non-marsh birds and bait fish that may also be impacted by Climate Change need to be reviewed and considered for the update of the strategy. Indicators Review Team of the Long Island Sound, tracks the data provided by CT DEEP and NY DEC surveys, needs to be reviewed in the context of this workgroup too.
- Ron will share a new proposal for team to read through.
- Continue to enhance cross coordination with LISS workgroups to capture non-climate change aspects of pressures on our systems.
- Continue to enhance coordination with NERACOOS
- Co-Chairs to share notes and presentations.

Meeting Adjourned at 12:00 PM