

York River Study Committee / ORV Subcommittee Meeting

Topic: Saltmarsh Marsh Migration / Sea Level Rise

Tuesday, January 31, 2017, 12:00-1:30 PM

York Public Library Community Room

Meeting Notes

Attendees: Paul Dest, Joan LeBlanc, Thom Kearns, Beth Walter, Karen Arsenault, Chuck Ott, Judy Spiller, Claire Enterline, Jean Demetracopoulos, Stefan Claesson, and Jenn Hunter (York River Study Committee)
Doreen MacGillis and Joe Anderson (York Land Trust), Jeremy Gabrielson (Maine Coast Heritage Trust), David Chase (York resident), Charlie Steedman (York Resident), Priscilla Cookson (York conservation commission, YRSC advisor), Paula Sewall (York resident, YRSC advisor), Charlotte Kearns (York resident), Kristen Puryear (Maine Natural Areas Program), and Tin Smith (Wells Reserve)

Meeting led/facilitated by Paul Dest and Joan LeBlanc.

Materials distributed: agenda, resource list (reports, projects, and data), and various habitat and SLR/marsh migration maps from resource list

Meeting goals: York River Study Committee organizing a series of meetings on specific topics to gather, synthesize and share information to help in development of management plan actions and recommendations. Experts and others interested in topics are asked to provide input and share ideas and information in these meetings.

Research and information on sea level rise and marsh migration:

- Presentation by Kristen Puryear, MNAP

See presentation: http://www.yorkrivermaine.org/wp-content/uploads/2017/02/MarshMigration_YorkRiverWatershed-KP-MNAP.pdf

Kristen gave a quick overview of the work done previously by Don Cameron and Pete Slovinsky to develop base maps of where water would go under different sea level rise scenarios (“bathtub” simulation based on LIDAR data) and used to map highest annual tides / potential marsh migration areas.

Subsequent work by MNAP added in additional analysis to refine migration areas under the 1 meter SLR scenario: applied 300 meter buffers to marsh areas; looked at existing habitats and assigned what an area might become based existing conditions; mapped impervious surfaces in buffers, including a 250’ zone of influence around impervious surfaces – subtracting this from the 300 meter natural buffer; identified blocks of habitat to protect; looked at existing conservation lands; and applied these factors/analysis to develop statewide priorities for resiliency planning to protect future areas that had minimal existing conservation. One site in York River watershed was in the top 10% of sites statewide (York River/Eliot site).

- Mapping and analysis by Jeremy Gabrielson, MCHT

See maps: Upper York River: <http://www.yorkrivermaine.org/wp-content/uploads/2017/02/MarshMigYorkRiver.pdf>

Libby Brook/Cider Hill Creek: <http://www.yorkrivermaine.org/wp-content/uploads/2017/02/MarshMigLibbyBrook.pdf>

Jeremy explained MCHT’s interest in expanding to the top 20% of sites statewide (about 65 sites), including 2 areas in York River watershed (upper York River/Smelt Brook marshes and Libby Brook/Cider Hill Creek marshes). They put the impervious surface buffers back into the analysis, in order to think about road crossings and opportunities to improve flow. About 1/3 of the upper York River future marsh area would have impacts from development. The Cider Hill/Libby Brook marshes are smaller and have more development impacts in future marsh areas. Smaller, more developed systems might require strategies more focused on planning and infrastructure improvements; conservation strategies would be more effective for the larger, less developed areas.

➤ Surface Elevation Table (SET) project description by Claire Enterline, Maine Coastal Program/YRSC

Claire described the SET marks that will be placed in a York River marsh site as part of a network of sites across the state that will look at how saltmarshes change with sea level rise, given differences in flows and levels of development at different sites to help answer to question of whether Maine's salt marshes will "keep up" with SLR. Three marks will be placed at the York River site and will be checked twice per year. Data will be available in 2022. It's about \$5,000 per site (in response to question about adding another site in the York River).

General discussion and comments:

- There are about 18,000 acres of marsh across the state. With 1 meter SLR by end of century, it's estimated Maine could lose up to 54% of its marsh area (even accounting for addition of new marsh migration areas), if existing marshes are unable to keep up with SLR. Preliminary SET studies from Great Bay indicate those marshes are keeping up but that's not the case everywhere – it's dependent on marsh type and tides.
- Dams, culverts, and other barriers were not part of the analysis by MNAP or MCHT. Storm surge and increased wave action also were not factored into analysis. Including culvert analysis could provide more insights for project area recommendations; however most culvert data includes assessment for aquatic organism passage but not tidal flows. In general tidal restrictions within the York River system are less of an issue than in other marsh systems, but there might be some specific site opportunities for improvement.
- Temperature fluctuation, sudden ice melt creating large volumes of runoff and marsh erosion; angle of culverts also problematic for scouring and erosion; river landowners noticing greater erosion and disappearance of marsh areas; abundance of green crabs also adding to erosion problem.
- Can a higher resolution model be done for York River that doesn't exclude fringing marshes? A: possible, but given inability of those marshes to "migrate" to adjacent lands, unlikely that the analysis would be particularly useful.
- High tide / high rain events – has anything been mapped for York River?
 - Pete Slovinsky did an analysis for Scarborough that might provide helpful information.
 - SMRPC worked with towns to predict flood surges – possible report?
- Suggestion to compile and catalog the various data sets on the YRSC website. A report bibliography exists that includes lists of some data sets, but it is not a complete compilation and does not include actual data that can be georeferenced or searched.
- In thinking about a build-out study for the York River watershed, how best to integrate SLR / marsh migration data? Do the state models (or output) work in CommunityViz? Marsh migration areas would be another resource data layer.
- Is there data that shows SLR / HAT change for the most recent 20 years? Or 1990 to current? The state LIDAR data is from 2009 but it's not really comparable to other previous data sets. The closest tidal gauge is Portland, where it's measured changes for about 100 years. The change per year for the last 10 or 20 years has doubled compared to the rate of change for the last 100 years (4.2 mm/yr in last 20 years, compared to about 2 mm/yr for last 100 years).
- What are marshes doing in current changing environment? In Webhannet marshes, plant composition in tidal marshes is changing; low marsh is "invading" high marsh. In some places, temporary marsh compression has

been documented due to increased water weight and volume during king tide events. Other climate change impacts will affect marshes: temperature changes, drought during growing season, etc.

Future studies / information needed:

Joan summarized topics that had been mentioned, including culverts, freshwater flows, storm surge, tidal river gauge, SMRPC flood mapping, other climate impacts.

The group noted other initiatives and projects that might provide useful information: coastal hazards and erosion – check with Pete Slovinsky on Living Shorelines project; MDOT green infrastructure for road crossings; NOAA fellow Abby Sherwin working with MGS on community rating system to evaluate ways to reduce community flood insurance rates, looking at infrastructure and erosion potential.

Protection and management strategies:

Joan summarized some options that had been discussed, including land conservation and protection strategies, zoning / ordinances, maintaining or improving habitat connectivity, culvert improvements, buffer protection, and stormwater management.

General discussion and comments:

- Need to know future infrastructure projects – when/where will they be planned. There's an opportunity to improve infrastructure for long-term resiliency that will protect or enhance marsh areas. Infrastructure projects at road crossings that factor in saltmarsh function, storm surge, and SLR will cost more now, but will save money in the long-term. Shorey's Brook project in Eliot is an example of conservation groups working with town to improve culvert replacement project. Follow up:
 - Get workplan from MDOT
 - Get workplan from municipalities
 - Audubon has resources for restoration coordination
 - Guidance document from IFW/MDMR?
- Look at protection of future marsh areas by reviewing ordinances and potential impacts from build-out.
- Upper York River marshes have a fair amount of agriculture/farmland nearby. Farmland conservation strategies don't always address surface alterations in a way that supports marsh migration, so there's an opportunity to work on that.
- Possible opportunity to work with IFW/Beginning with Habitat and State Wildlife Action Plan to get list of species of greatest conservation need and find specific sites in watershed or specific protection strategies.
- Should work with MTA and MDOT to see about interest in/possibility for tidal river gauge in York River. The agency offers some engineering grants that might support this.