HMP sea level 7/15/2020

Sea level has been rising at about ever since the end of the glaciers. More recently, the rate is about xxx feet/year. All lands facing the harbor are affected.

Salt Marshes

Salt marshes are a critical part of the Wellfleet Harbor environment. They are habitat for birds and a nursery for ait fish such as mummichog and silversides. They also provide a natural source of nutriens to the harbor. Finally, salt marshes are extremely effective at carbon sequestration – capturing CO2 from the atmosphere and turning this into marsh peat. (The corbon thus captured is sometime referred to as “blue carbon”.)

(need references)

Salt marshes are at the major risk due to sea level rise, as they are flat and thus easely flooded. They have managed continued existence in two ways.

First, the marshes accrete by capturing small sediment particles carried in by the tides.

Second, the marshes can migrate land word by slowly eroding shoreline beaches and dunes.

Both processes have been studied by scientists from the Cape Cod Seashore, looking at marshes on the west side of the harbor – the Gut, Middle Meadow and Jeremy Point. Not surprisingly, marshes surrounded by higher dunes – such as Middle Meadow – are at greater risk of losing out to the sea level rise. As a consequence of glacial action leaving steep harbor side dunes, much of Wellfleet’s marshland is at risk.

Finally, we must recognize that storms will directly erode marshes. The loss of coast

In Louisiana is an example. Exposed marshes – such as on Lt Island and at Jeremy Point – will be at the highest risk.

Recommendations:

The critical gap at present is absence of data that enables thoughtful planning.

- Initiate a program of monitoring elevations and changes in elevations of Wellfleet Harbor marshesmost at risk: Duck Creek, Blackfish Creek, Lt Island and Audubon.

- Identify marshes backed by low-lying dunes.

There remains the question of an action plan as risks are identified.

One new idea is to use appropriate dredge spoils to augment nature sediment deposition on marshes. This is a method known as “thin layer deposition (TLD)” already in use in Louisiana and Yarmouth. A recent CCS report (A. Mittermyer) shows that the black mayonnaise in the north marina channel could be safely used at Mayo Creek and upper Duck island marshes. For further discussion, see the chapter on dredging in this report.

A second idea is to protect marsh abutting dunes and uplands with a sufficiently gradual slope. This has already been enacted into the Conservation Commission regulations (need ref).

Recommendations:

- Study the feasibility of TLD for Wellfleet inner harbor

- Model the ability of Mayo Creek restoration to rebuild those marshes and to reduce dredging need in the marina north channel.

- Supprt the Conservation Commission efforts to protect key uplands abutting marshes.

- Finally, Wellfleet has today about 1250 acres of salt marsh. Restoration of the Herring River, Mayo Creek, upper Blackfish Creek and Fresh Brook would create about 1200 acres of new and protected salt marsh – a remarkable insurance policy against climate induced loss.