

# 2021 Strategy for CCF Salt Marshes

## Protecting the Land

The health of land preserved by CCF is threatened by climate change. As the consequences of climate change become increasingly visible (severe storms, forest fires, rising seas, seacoast erosion, record hot summers, drought, etc.), public concern in Chatham increases. Now seems to be an opportune time for CCF to address climate change, both its local causes and its local consequences. The new federal administration has set combatting global warming as a top priority and is starting to work in this direction. The Commonwealth of Massachusetts has been a leader in environmental protection and is likely to increase support of related efforts. Many Chatham residents would like to see increased meaningful action taken locally. Probably the greatest impact on climate change possible in Chatham is by effective stewardship of the local salt marshes.

While the world has already waited until it is now too late to completely avoid serious and enduring climate change, it is still urgently important to prevent further increases in greenhouse gases like CO<sub>2</sub> and methane in the atmosphere, which could ultimately make the Cape and much of the planet uninhabitable. Climate warming in *Chatham* has already exceeded the 2°C limit targeted by the Paris Climate Accord, let alone the 1.5°C limit urged by the IPCC.<sup>1</sup> Sea-level rise here is occurring at an accelerating rate and the flood plain has already shifted.

Chatham Town Meeting may soon pass a warrant for a “Declaration of Climate Emergency.” In addition to greatly reducing the use of fossil fuels through converting transportation to electric vehicles and transforming electricity production with sustainable technologies, the attainment of carbon neutrality (preventing an increase in CO<sub>2</sub> in the atmosphere) will require removal of CO<sub>2</sub> from the air and long-term storage. Forested land plays a vital role in sequestering CO<sub>2</sub> by uptake of greenhouse gases and storage of the carbon in plants and soils. However, healthy salt marshes have the potential to sequester several times more than trees and to store substantial amounts of methane in their peat soil.<sup>2</sup>

In addition to providing effective mitigation of the cause of climate change, salt marshes can provide adaptation to climate change by protecting shoreline areas (people, animals, birds, sea-life, houses and beaches). For instance, they store flood waters, buffer and absorb storm surges and attenuate coastal erosion, thereby creating resilience against the effects of accelerated sea-level rise. For the East Coast of the US—especially the Cape—the major consequence of climate change will be greatly increased impact of storms, including the accompanying ocean surges and flooding.

As the US takes on climate change, there will be funding for efforts to sequester carbon. Forests and salt marshes will become economically valuable. Federal and state funding for the conservation and stewardship of forests and marshes will likely significantly increase in Massachusetts. CCF should prepare now to take advantage of this opportunity.

## CCF Today

CCF has a more than adequate endowment to financially protect itself for the future. As a land trust, we should be investing in land, more than in the stock market. As the oldest land trust on the Cape, CCF owns substantial acreage of undeveloped land, as well as managing CRs of much Town-owned forested and salt-marsh land. CCF historically focused on acquiring parcels in Chatham to counter over-development. Now, that mission is less urgent as there is little developable land left on the market in Chatham.

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<sup>1</sup> See the Special Report of 2018 by the Intergovernmental Panel on Climate Change (IPCC) for the necessity of limiting global warming to 1.5°C. The effects of climate change vary dramatically from place to place. Chatham, Boston and Rhode Island are among the areas warming the fastest. See *Washington Post*, Aug 13, 2019, “2°C: Beyond the limit,” <https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-america>.

<sup>2</sup> Salt marshes are many times as effective as even tropical forests for capturing CO<sub>2</sub> from the atmosphere and storing it in the ground long term. For an overview of the “coastal blue carbon” process, see: [https://estuaries.org/wp-content/uploads/2018/08/RAE-Blue-Carbon-FactSheet\\_9March2018.pdf](https://estuaries.org/wp-content/uploads/2018/08/RAE-Blue-Carbon-FactSheet_9March2018.pdf) and [https://estuaries.org/wp-content/uploads/2018/08/blue-carbon-infographic\\_final2018.pdf](https://estuaries.org/wp-content/uploads/2018/08/blue-carbon-infographic_final2018.pdf).

CCF recently successfully transitioned from an all-volunteer association to a staffed organization, with continuing strong volunteer support. CCF now has the resources and capacity to expand its mission to focus on restoration and improvement of the land it owns for the benefit of the people, plants, animals and ecosystems of Chatham.

CCF's land is threatened by climate change; it needs protection through targeted measures. CCF should expand its conservation mission from land acquisition to restoration, improvement and resiliency of the land, especially around the salt marshes. This can be implemented without committing to increased staffing by using volunteers and subcontracted specialists, supervised by Board and current staff.

## **Salt Marshes in Chatham**

Chatham juts into the ocean, with numerous bays and inlets. It has many salt marshes—proportionately more than most other Cape municipalities. These wetlands are generally on and/or adjacent to parcels owned or managed by CCF. Conversely, many of CCF's parcels are associated with Chatham's salt marshes. Roughly half of the acreage of salt marshes in Chatham are associated with parcels owned or managed by CCF and about half of CCF's parcels are associated with salt marshes.

In addition to parcels owned by CCF or the Town, there are many privately owned acres surrounding the salt marshes that are undevelopable. For instance, they may be designated as wetlands or they may be in the revised flood plain. Some of this land is connected to a developed lot but could be separated. Owners of these properties might be willing to donate land to CCF or place it under a CCF-managed conservation restriction to gain tax benefits. This could increase CCF's ability to manage the health and future of the salt marshes.

## **A Salt Marsh Strategy for CCF**

The CCF Board should declare its support for a salt-marsh conservation strategy. The long-range goal might be to maintain and where necessary gradually restore the health of salt marshes in Chatham over the next 20 years. The strategy for attaining this goal might include steps such as the following:

1. Preliminary study of each salt-marsh complex, staggered over time, based on a priority schedule (see "Next Steps" below). A list of about a dozen salt-marsh areas or complexes should be tentatively defined. The land parcels associated with a given area should be observed and baseline data compiled. A preliminary survey of each complex should be conducted, including systematic measurements of tidal effects, salinity, invasives, water quality, plants/animals/birds/fish/shellfish and other eco-systems.
2. Targeted studies of potential interventions. For each area in turn, specific investigations should be made to explore desirable interventions (such as removal of tidal restrictions) and their consequences, as suggested by the preliminary study. Drafting of management plans.
3. Work with Town and MA agencies to intervene where needed, based on results of targeted studies.
4. Restore and maintain healthy marshes, taking into account predicted mid-range (e.g., 20 and 50 years) consequences of climate change.
5. Where possible and desirable, acquire available surrounding properties to expand marsh extent and to provide migration paths for marshes given probable sea-level rise.
6. Quantify carbon sequestration on CCF marshes and seek funding to cover restoration and maintenance expenses.
7. Track and publicize improvements in habitat of flora, fauna, birds and sea-life.
8. Provide more trails, lookouts and educational materials for the public associated with salt-marsh preservation.

## **Next Steps in the Strategy**

Implementation of the strategy must balance CCF capacity to supervise multiple projects with the urgency of responding to climate change. By prioritizing interventions and staggering work on multiple marshes, CCF can gain expertise, increase public support, attract governmental assistance and make meaningful impacts.

In 2019, CCF prioritized study of Frost Fish Creek (FFC) as an initial salt marsh. Frost Fish Creek is a particularly scenic area, bisected by CCF's premier walking trail. Deteriorated culverts under Route 28 restrict tidal flow in and out of the creek, resulting in water-quality deterioration. By restoring tidal flow there may be

considerable potential for reestablishing a healthy salt marsh and expanding it into abandoned cranberry bogs. There may even be potential to connect to wetlands to the west and a former herring run to the north.

As studies of Frost Fish Creek proceed, CCF could begin initial work on a second complex, such as Cranberry Lane. This is connected with Bucks Creek to the east and Cockle Cove to the west. CCF property at Cockle Cove now extends from Route 28 to the beach. This complex has high public visibility along the roads leading to Hardings Beach and Cockle Cove Beach. Local residents (including CCF land donors) have expressed public concern about water quality at Cockle Cove and CCF's lack of action there.

Here are some potential next steps for implementing the strategy:

1. Town meeting in Spring should approve CPC grant for two studies of Frost Fish Creek.<sup>3</sup>
2. Conduct staggered site visits to 14 identified marsh systems and refine overview of Salt Marsh planning areas.<sup>4</sup>
3. Conduct preliminary studies of the Cranberry Lane system (including Bucks Creek and Cockle Cove) of salt marshes, including a month of measurements of tidal effects, salinity, etc. by APCC—similar to the study of Frost Fish Creek.<sup>5</sup>
4. Research properties surrounding CCF properties at Frost Fish Creek and Cranberry Lane for potential donations of wetlands or flood plains.
5. Contact neighbors near Frost Fish Creek and Cranberry Lane to involve in CCF plans and efforts.
6. Publicize our strategy, efforts and accomplishments in local press and newsletters.
7. Collaborate with the Town of Chatham, Pleasant Bay Alliance, Friends of Chatham Waterways and APCC to strategize and implement studies of CCF salt marshes.
8. Contact state agencies: e.g., MA DOT and Georgeann Keer, manager of DER's tidal restoration program.

These steps could all be undertaken without substantially exceeding the CCF 2021 approved operating budget or taking staff away from current activities.

## Breaking News

On February 18, the Salt Marsh Task Force was contacted to coordinate with an effort to evaluate the potential installation of a new culvert under Rt 28 at Frost Fish Creek. The effort is currently underway by a planning team at MA DOT. They began with a site visit on February 17 and a meeting including Dr. Bob from Chatham, Rick Devergilio from Cape Cod Conservation District and an expert from Woods Hole. They contacted CCF and APCC, recognizing that CCF owns much of the land and that we have already gathered relevant data through APCC.

This is an exciting opportunity. At this point, MA DOT only has funding to undertake studies and analysis. They have a team of hydraulic and hydrologic (h&h) modelers working on this. For implementation, they will have to seek new federal funds. This means that we will have time to study their analysis and provide input to their plans. If they do some of the studies we had proposed to CPC, we can use our new grant to extend and supplement their studies. We will also have time to communicate with local residents. In addition, this could help us to get technical support from DER.

We had seen one of our biggest obstacles to restoring FFC to be coordination with MA DOT, and now that is starting to take place. Experience with FFC will prepare us for active conservation of other salt-marsh areas. Restoration of a salt marsh takes several years. We can take strategic, staggered preliminary steps at other salt marshes while efforts at FFC proceed.

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<sup>3</sup> The CPC application in January 2020 is pending final (twice delayed) approval by Chatham Town Meeting: [https://gerrystahl.net/SMTF/FCC\\_CPC\\_application\\_2020.pdf](https://gerrystahl.net/SMTF/FCC_CPC_application_2020.pdf) .

<sup>4</sup> In collaboration with APCC, the following overview was compiled of 14 salt marsh complexes in Chatham associated with parcels owned or managed by CCF: [https://gerrystahl.net/SMTF/Salt\\_Marsh\\_Planning\\_Areas.pdf](https://gerrystahl.net/SMTF/Salt_Marsh_Planning_Areas.pdf) .

<sup>5</sup> The APCC conducted an initial study of Frost Fish Creek and produced this report: [https://gerrystahl.net/SMTF/FFC\\_Restoration\\_Report\\_2019.pdf](https://gerrystahl.net/SMTF/FFC_Restoration_Report_2019.pdf)