

My name is Phil Colarusso, a career marine biologist for almost 32 years. I have a PhD from Northeastern University, where my dissertation centered on the physiology of eelgrass. In my career, I have mapped, restored and conducted research on the many ecosystem services eelgrass provides. I submit this testimony **in support of LD 593 An Act to Restore Regular Eelgrass Mapping in the State.**

When the Clean Water Act was being written, the ecological significance of seagrass was recognized and it was afforded protection under that legislation. Like many other coastal states, Maine has also acknowledged the significance of this resource and provides protection for it under current state law. These protections were largely inspired by data showing seagrass serving as a valuable nursery habitat for many fish and shellfish species. Much of the initial research supporting the legislation came out of the mid-Atlantic and Chesapeake Bay. Subsequent research, including a study I participated in, showed eelgrass serving that same important nursery role here in New England. There have been several Maine specific studies reaching the identical conclusion. Obviously without healthy young fish, one does not eventually get healthy commercially important adult fish.

This nursery function was sufficient to inspire the original protection of seagrass under the Clean Water Act in the 1970s, but only within the last 10-15 years did a different ecosystem service start to be recognized by the wider scientific community. Seagrass has the ability to collect and sequester large quantities of carbon, thus serving as an important buffer to climate change. Seagrass meadows act as filters, the leaves trap organic particles floating by with the tide. These particles end up in the sediments below the meadow and are held in place by the roots and rhizomes of the plants. In a very recent publication, my research team found carbon in New England seagrass meadows in excess of 100 years old. New England eelgrass meadows contain a large reservoir of stored carbon and our data shows that some of the largest reservoirs reside in Maine. As long as the meadow remains intact, the carbon will remain sequestered and not able to contribute to climate change, but if the meadow is degraded or lost, much of the stored carbon will be released back to the environment. It has been estimated the annual global loss of seagrass, salt marsh and mangroves (2 other aquatic habitats that also sequester carbon) results in the release of carbon dioxide back into the environment equivalent to the emissions from the industrial sectors of Poland and Germany combined. These habitats represent a positive buffer to climate change, but their potential loss represent another substantial source of greenhouse gas emissions.

How do we protect our seagrass meadows? John Steinbeck wrote in his novel *The Log of the Sea of Cortez*, nothing really exists until it is on a map. Seagrass meadows are generally submerged, hidden from the eyes of the casual passerby. This lack of visibility only further illustrates the need for a good mapping effort. The first step in protecting any resource is to have an accurate measure of where it is. Maine has two iterations of large scale mapping of this resource, first done in 1995 and again in 2010. By comparison, New Hampshire had its eelgrass mapped annually for 30 years beginning in the mid 1980s, until 2016, they have since moved to mapping every other year. Massachusetts maps eelgrass along its coast in segments, completing its entire coast in 3-5 year cycles. In many locations, they have completed 5 cycles since the program began in 1995. Rhode Island have been mapping their eelgrass on a roughly 6-7 year timeframe as has Connecticut. Thus, Maine due to its extensive coastline, protected inlets and cold water possesses the greatest acreage of eelgrass in New England, but its effort to map this important resource lags behind all of its neighbors.

Finally, spending the money on mapping eelgrass makes good business sense. In the early to mid 1990s, the Maine Department of Transportation had spent \$17 million dollars building a causeway and road on Sears Island in anticipation of the construction of a new deepwater cargo terminal. Lawsuits forced the development of an Environmental Impact Statement. I was one of the first people in the water off of Sears Island documenting the presence of eelgrass, which until that point in time had been unknown. The presence of several hundred acres of eelgrass and the similar discovery of unreported freshwater wetlands contributed to the demise of the proposal. For a mere fraction of the \$17 million, Maine could have mapped these resources and found a more suitable location for the port. With more information, we all tend to make better decisions. Funding this mapping effort, will allow for the collection of important data that will serve to protect this important habitat, but will also facilitate wise decision making in the coastal zone in the future. As aquaculture and other marine industries try to grow and expand, this information will be critical in allowing that to occur in the most sustainable way going forward. Thank you for the consideration of this testimony.