Bryan P. Wills

Place Paper: Stonington Connecticut

Silent Docks

"Welcome to Mystic Aquarium's Discovery Lab, home to our native marine-life exhibit. While many of you may live near Long Island Sound we, here at the Aquarium, would like to give you all the opportunity to learn more about the its native wildlife and efforts to restore the Sound." I worked at Mystic Aquarium last summer and must have delivered speeches like this hundreds of times. I was taught on how to present information to guests through reading a guidebook about the animals in every exhibit. In the Discovery Lab we housed; Smooth and Channeled Whelk, Mussels, Clams, Sea Stars, Snails, various minnows, Spider Crabs, Green Crabs, Jonah Crabs, Horseshoe Crabs and Atlantic Lobster. Children were allowed to gently touch all of the smaller crabs, shells and sea stars. Adults were generally interested in asking questions about the blue lobsters. My guidebook helped me answer most of these FAQ's. I explained to guests that lobsters could weigh more than 40lbs, live for over a hundred years and that based off of natural genetic mutations can sometimes have varying shell pigmentations of blue, orange or white. I also was instructed to explain that most of the lobster pollution of the Sound was killed off in the 90s but through conservation efforts were "slowly recovering." [1]

The topic of lobsters has been a sore subject for the village of Mystic and the greater township of Stonington, Connecticut for over a decade. In 1999, a "mass lobster mortality" event occurred in Western Long Island Sound that spread across the lobster population reaching lobster as far east as Rhode Island. The death of the lobster population killed off a multigenerational business of lobster fishing and forever changed the environment shared by

[1] Mystic Aquarium Institute for Exploration, *Employee Exhibit Guidebook* (2012 Edition) 4

hundreds of coastal communities in New York and Connecticut. This disaster was not caused by an overabundance of fishing. Instead the calamity was caused by a combination of manmade chemicals seeping into Long Island Sound and a natural parasite that was able to thrive and kill off scores of weakened lobsters.

It is important to understand the history of this area to better grasp the scope of the tragedy. The job loss that Stonington faced from losing its lobster industry was simply the tip of the iceberg. This calamity was furthered by the ruin of a maritime tradition from a community that values their connection to the sea. The city of Stonington, Connecticut is on the south eastern boarder of the state and is located in New London County. New London Country has developed since the mid-1600s and has had a long proud history as a maritime culture. Throughout the colonial era (1649-1776) the region acted as a producer of merchant fleets and commercial fishermen. [2] From 1801 through the mid-1850s the region thrived as a whaling power with a fleet of "76 barks, brigs and schooners worth almost $2 million and manned by 3,000 sailors." [3] Conveniently for New London County, around the time the whaling industry ended, the federal government opened the naval yard in 1868 that would eventually become the Groton Navy Submarine Base in 1916. The base is still open to this day and serves as a major economic boost to the region and is the main nuclear submarine hub for the nation's navy. [4]

By the 1950's Stonington held Connecticut's last large commercial fleets of over 40 ships. Sadly the overall decline of the commercial industry forced most of the fishermen to cease their operations. However the town has kept a strong local support of those few fishermen

---

[2] Stonington, Connecticut. "Community Profile" http://www.nefsc.noaa.gov/read/socialsci/pdf/CT/stonington-ct.pdf

[3] Tom Andersen, *This Fine Piece of Water: An Environmental History of Long Island Sound* (Yale University Press, Apr 1, 2004) 64

[4] http://www.cnic.navy.mil/regions/cnrma/installations/navsubbase_new_london/about/history.html

remaining, often going as far as leasing important docks for incredibly low prices. [5] The benefit that these fishermen still have today is that the different fish that they are after are still abundant in Long Island Sound and off the coast of Rhode Island and Montauk, Long Island. The lobstermen of the Sound were unfortunately not as lucky. By the time of the lobster mortality event Stonington, Connecticut had the largest amount of lobster fishermen in the state ranging an average of 40 vessels who were berthed in the town from 1995-1999. Their total combined efforts put more than 30,000 pots per year off of the town's shore throughout eastern Long Island Sound. [6] Although Stonington had, prior to 1999, the largest amount of fishermen for a CT town they were actually catching less lobster than those ports west of the Connecticut River. To give a comparison the DEP's official report correlated that western Long Island Sound lobstermen could sustainably catch nearly 100,000lbs of lobster a year. For example a western coastal town like Bridgeport would catch over 500,000lbs of lobster annually. Towns like Stonington could only sustainably catch 250,000lbs of lobster. [7]

Due to the large amount of lobsters that the industry was catching and serving up to customers, critics would not be jumping to conclusions if they first faulted lobstermen for the destruction of their own industry. However the numbers of lobsters that could be caught were regulated by the federal and state governments and were also enforced amongst the lobstermen. The first thing that both the government and the fishermen had to be aware of was how the Atlantic Lobster reproduces. To give context, a female lobster of 1lb typically has over 6,000 eggs whereas an older female of at least 9lbs can produce over 100,000 eggs in a single mating.

---

[5] http://www.nefsc.noaa.gov/read/socialsci/pdf/CT/stonington-ct.pdf 1

[6] Connecticut Department of Environmental Protection, Bureau of Natural Resources Marine Fisheries Office, *INFORMATION REGARDING THE IMPACT OF 1999 LOBSTER MORTALITIES IN LONG ISLAND SOUND* (February 2000) 29, 36

[7] Connecticut Department of Environmental Protection, Bureau of Natural Resources Marine Fisheries Office, *INFORMATION REGARDING THE IMPACT OF 1999 LOBSTER MORTALITIES IN LONG ISLAND SOUND* (February 2000) 24

While this may seem like a species destined to overpopulate the Earth, the lobster needs to have that many eggs to survive. The lobster's young larvae are significantly vulnerable to predators and are forced to remain at the surface of the ocean for up to six weeks, unsheltered and unhidden and are attacked by hungry fish and birds. [8]

Lobstermen have undergone significant research to understand the reproductive cycle of their catch. However there have been examples in history where overfishing has occurred to the detriment of the community. During the Great Depression the lobster industry of Maine was justly accused of overfishing. Lobstermen had overfished to compete against the Canadian lobster industry. The result was that the market was oversaturated and the population was nearly wiped out. The Double Gauge Law of 1933 enforced the federal government to both limit the amount of Canadian lobster that would be allowed in the United States but also strongly enforce the size and amount of lobster that fishermen could catch. [9] Those lobsters that were considered to be "keepers" would be those that were either male or medium sized females. Any female lobster that was about to produce eggs would be tossed back into the ocean and catching larger females was forbidden. This rule was due to the law and the practicality that older large females would produce a large quantity of eggs and that their meat would be tougher and less pleasing to eat. [10] At the time of the lobster mortality event, lobstermen and the government truly believed that they were paying dutiful attention to population control.

Although the lobstermen in 1990's were taking necessary precautions to avoid overfishing there was little they could do to protect their catch from illnesses and diseases caused

---

[8] University of Maine: Lobster Institute http://umaine.edu/lobsterinstitute/education/life-of-the-american-lobster/life-cycle-reproduction/

[9] Richard Judd, *Saving the Fisherman as well as the Fish: Conservation and Commercial Rivalry in Maine's Lobster Industry* (The Business History Review, Vol. 62, No. 4 (Winter, 1988), 610, 611

[10] Richard Judd, *Saving the Fisherman as well as the Fish: Conservation and Commercial Rivalry in Maine's Lobster Industry* (The Business History Review, Vol. 62, No. 4 (Winter, 1988), 612

by manmade chemicals. However, fishermen do not have control over what chemicals go into the ocean. Governments can theoretically have control over environmental issues but for those controls to be implemented there has to be public support to force a positive change.

Rachel Caron's *Silent Spring* brought to light certain environmental issues that could be observed from the homestead in the 1960s. The "Silent" portion of *Silent Spring* was in reference to the amount of birds that had been lost by the use of the manmade pesticide "DDT" to kill insect populations. While there were certainly still birds in the areas affected by DDT, the decimation of their species had a profound impact on readers and helped to bolster the environmental movement. [11]Unfortunately for the Long Island Sound lobstermen they did not have a clear understanding of what was happening to the lobsters in the fall of the 1999 or an advocate like Rachel Carson to absolve them of wrongdoing. Lobstermen in the west LIS were communicating amongst each other but without scientific inquiry assistance from the government they did not realize what was happening to the population. As President Joe Finke of the WLIS Lobstermen's Association recalled "It was the strangest thing, they looked perfectly healthy when we hauled them up, but a lot of them were dead." Finke's NY counterpart, President John German of the Long Island Lobstermen's Association also explained that "Until September of last year, we were having a fair year, and then in September-October, there was a major die-off. This year, I'd predict a couple of hundred thousand pounds, if that and that's the lowest ever." [12]

The states of Connecticut and New York filed for natural disaster emergency relief aid to be sent to those in the lobster industry. The Department of Environmental protection started

[11] Andrew Stuhl, American Environmental History: Lecture (3/31/14)

[12] Laurie Nadel, *What's Killing the Lobsters* (The New York Times, March 16th 2003)

survey to assess the damage done to the industry. Their report in 2000 stipulated that "approximately 70% of the fishers surveyed have lost 100% of their total income and the remainder (30%) have lost 30% to 90% of total income." The government claimed that due to the severity and suddenness of the disaster, that the adaptive characteristics of the fishing population had been negated and that the lobstermen were not to blame. However tragically it obviously noted that many lobstermen had only ever worked in the fishing industry and that most "cannot be easily trained or adapted to new vocations." The government responded with giving aid as they concluded that the families and communities had been harmed socially, economically and psychologically. [13] However, by 2001, most of the industry was left with "Silent Docks." Lobstermen could no longer afford to man their boats and were in a state of panic.

Several state and federal government departments, environmental and academic groups flocked to Long Island Sound to figure out what had happened to the lobster population. The generally accepted notion today is that the near extinction of the Long Island Sound lobster population was due to pesticide and heavy metal run-off weakening the health, immune and reproductive system of Atlantic lobsters. From that point these health risks then opened the door to naturally occurring parasites and predators to overcome much of the population.

There are many chemicals and items that we use on land that when exposed to salt water can have damaging effects on marine environments. For example, in attempting to explain the 1999 lobster mortality event the Coastal and Estuarine Research Federation took LIS sediment samples to determine if chemical stressors which had settled on the Sound's seabed had harmed the lobsters. Their results explained that from the last study taken in 1990 that in the sediment of the water there was a low Dissolved Oxygen content, and high levels of ammonia and sulfide

[13] Connecticut Department of Environmental Protection, Bureau of Natural Resources Marine Fisheries Office, *INFORMATION REGARDING THE IMPACT OF 1999 LOBSTER MORTALITIES IN LONG ISLAND SOUND* (February 2000) P 17

which "increased the lobsters' susceptibility to disease." [14] From a chemical standpoint the sediment was also found to have high traces of heavy metals like Manganese (Mn2+) and high levels of Carbon Dioxide (Co2+) which, in addition to low oxygen levels, is blamed for causing Hypoxia (oxygen deprivation in cells). These chemicals are largely blamed for making the lobsters lethargic, slow, blind and susceptible to disease. [15]

Where did all of these chemical compounds come from? Did someone intentionally dump waste into the ocean? The answer that many scientists have agreed upon is that these chemicals came from pesticides that were being used in Connecticut and Long Island. These chemicals were then being washed into the sea from rain, large storms like Hurricane Floyd and general flooding. During the 1990s major chemical companies had been supplying towns and governments with chemicals like Methoprene, Malathion, Resmethrin and Sumethrin which were deployed throughout the western Long Island Sound watershed area during the summer of 1999. This county-by-county effort was sparked by a public scare to kill off mosquitos responsible for West Nile Virus. These chemicals caused tissue damage for lobsters in their gonads, epidermis, and neural tissue which is what made many of them blind. [16]

Once the lobsters had been severely weakened by these chemicals their natural predators like the Striped Mouth Bass and parasitic protozoans known as "Paramoeba" were the secondary agents in their mortalities. [17] Originally when lobstermen were able to identify the growth and

---

[14] Raymond M. Valente, Carmela Cuomo. *Did Multiple Sediment-Associated Stressors Contribute to the 1999 Lobster Mass Mortality Event in Western Long Island Sound, USA?* (Estuaries, Vol. 28, No. 4 (Aug., 2005) P 537

[15] Christopher R. et al. *Idiopathic Lesions and Visual Deficits in the American Lobster (Homarus americanus) From Long Island Sound, NY.* http://www.biolbull.org/content/217/1/95.long#ref-6

[16] Anna N. Walker et al. *Bioaccumulation and Metabolic Effects of the Endocrine Disruptor Methoprene in the Lobster, Homarus americanus* (2005) http://icb.oxfordjournals.org/content/45/1/118.abstract?ijkey=701c9459b67df1a338a1f0246f0c02a3a34b5510&keytype2=tf_ipsecsha

[17] Connecticut Department of Environmental Protection, Bureau of Natural Resources Marine Fisheries Office, *INFORMATION REGARDING THE IMPACT OF 1999 LOBSTER MORTALITIES IN LONG ISLAND SOUND* (February 2000)

the presence of these parasites on the lobsters the parasites were considered the primary cause of the lobster populations' annihilation. However, scientists like Ralph Dexter identified that oceanic parasites had always been a problem for lobsters and were reported since the 1940s. These "fouling organisms" such as Bryozoa had always harmed small portions of the lobster population. Thus once the pesticides had weakened the lobster's immune systems they were easy meals for the generally weaker parasites and oceanic diseases.[18]

When lobstermen realized what had happened to the lobster population and why they had lost their livelihoods the lawsuits started flying. One example is the class action law suit of 500 lobstermen against the company Cheminova who was responsible for creating the pesticide Fyfanon which contained Malathion. Fyfanon was dispersed in Nassau and Suffolk counties in the summer of 1999. Multiple scientific inquiries were made and by 2003 there was enough damning evidence against Malathion to gain "some" reparations from these companies. However, to quote the LIS Lobsterman Association President John German, "None of this will bring the lobsters back, and every year there are less lobstermen and more scientists." [19]

The lobster industry died off from Long Island and Connecticut by 2004. Today in Stonington silent docks stand as a testament to the once substantial lobster fleet. Although some lobstermen remain they readily admit that their business is no longer profitable. Over a decade later the lobster population has still not recovered to anything near its pre-1999 levels. In the spring of 2013 Connecticut Lobstermen were ordered to heed the "first Long Island Sound Shutdown." The shutdown was ordered to last one entire fishing season and remaining lobstermen like Stonington native Michael Grimshaw are skeptical and nervous. "I'm not sure it's going to do anything, frankly myself and Theiller (another captain) will have to lay off two

[18] Ralph Dexter. *Fouling Organisms Attached to the American Lobster in Connecticut Waters.* (Ecology, Vol. 36, No. 1, 1955), 159, 160

[19] Laurie Nadel, *What's Killing the Lobsters* (The New York Times, March 16th 2003)

crewmen each during this closure." [20] The results of that recent shutdown have not yet been studied yet it is believed by academic and research institutions, like Mystic Aquarium, that the lobster populations' numbers are slowly growing.

History has a bad habit of repeating itself. Rachel Carson's *Silent Spring* should have been a sufficient warning for chemical companies to properly research their pesticides before widely deploying them in the general populace. However, whenever there is a pressing health concern, such as the West Nile Virus, the government feels mandated to "take control of nature" regardless of the long-term risk. The government probably did enough research on these chemicals to know that humans and animals, like birds, would be alright and that these practices were protecting the welfare of the public. Yet, chemists and government officials forgot that everything is ecologically linked and once you put something into the environment it can go anywhere! Hopefully the country will remember what mistakes like this can cost a community, because I assure you that the citizens of New London County will never forget this disaster. It has been over a decade since the lobster mortality event has occurred. Many livelihoods were lost and the environment was forever changed. However, there is still hope. The shoreline communities of Connecticut and New York are deeply invested in protecting and restoring the Sound. Towns like Stonington still take pride in their maritime tradition and today if you tour the Mystic Seaport or the Mystic Aquarium you will hear the exhibitors happily say that Long Island Sound is "slowly recovering."

[20] CBS, New York. "Connecticut Lobstermen Brace For First Long Island Sound Shutdown." http://newyork.cbslocal.com/2013/09/04/connecticut-lobstermen-brace-for-first-long-island-sound-shutdown/

Bibliography

1. Mystic Aquarium Institute for Exploration, *Employee Exhibit Guidebook* (2012 Edition)
2. Raymond Valente and Carmela Cuomo, "Did Multiple Sediment-associated Stressors Contribute to the 1999 Lobster Mass Mortality Event in Western Long Island Sound, USA?" (*Estuaries* Vol. 28, No. 4, August 2005) 529-540
3. Tom Andersen, "This Fine Piece of Water: An Environmental History of Long Island Sound" (Yale University Press, Apr 1, 2004) 64
4. Ralph Dexter, "Fouling Organisms Attached to the American Lobster in Connecticut Waters." Ecological Society of America: http://www.jstor.org/stable/1931446 (Accessed 3/2/14)
5. Richard Judd, "Saving the Fisherman as Well as the Fish: Conservation and Commercial Rivalry in Maine's Lobster Industry, 1872-1933." The President and Fellows of Harvard College. (Accessed 3/2/14) http://www.jstor.org/stable/3115619?origin=JSTOR-pdf
6. Kathleen Castro and Jan Factor. "The Conceptual Approach to Lobster Shell Disease Revisited." The Crustacean Society http://www.jstor.org/stable/4094196?origin=JSTOR-pdf (Accessed 3/2/14)
7. Connecticut Department of Environmental Protection, Bureau of Natural Resources Marine Fisheries Office, "INFORMATION REGARDING THE IMPACT OF 1999 LOBSTER MORTALITIES IN LONG ISLAND SOUND" (February 2000)
8. Christopher R. et al. *Idiopathic Lesions and Visual Deficits in the American Lobster (Homarus americanus) From Long Island Sound, NY*. http://www.biolbull.org/content/217/1/95.long#ref-6 (Accessed 4/8/14)
9. Anna N. Walker et al. *Bioaccumulation and Metabolic Effects of the Endocrine Disruptor Methoprene in the Lobster, Homarus americanus (2005)* http://icb.oxfordjournals.org/content/45/1/118.abstract?ijkey=701c9459b67df1a338a1f0246f0c02a3a34b5510&keytype2=tf_ipsecsha (Accessed 4/8/14)
10. Andrew Stuhl, "American Environmental History: Lecture" (Bucknell University, 3/31/14)
11. University of Maine: Lobster Institute http://umaine.edu/lobsterinstitute/education/life-of-the-american-lobster/life-cycle-reproduction/ (Accessed 4/8/14)
12. Stonington, Connecticut. "Community Profile" http://www.nefsc.noaa.gov/read/socialsci/pdf/CT/stonington-ct.pdf (Accessed 4/8/14)
13. Groton Sub-base History http://www.cnic.navy.mil/regions/cnrma/installations/navsubbase_new_london/about/history.html (Accessed 4/8/14)
14. Laurie Nadel "What's Killing the Lobsters." *New York Times.* (16 March 2003) http://www.nytimes.com/2003/03/16/nyregion/what-s-killing-the-lobsters.html?action=click&module=Search&region=searchResults%230&version=&url=http%3A%2F%2Fquery.nytimes.com%2Fsearch%2Fsitesearch%2F%23%2Flobster%2Bconservation%2F (Accessed 3/2/14)
15. CBS, New York. "Connecticut Lobstermen Brace For First Long Island Sound Shutdown." http://newyork.cbslocal.com/2013/09/04/connecticut-lobstermen-brace-for-first-long-island-sound-shutdown/ (Accessed 4/8/14)