A "Tail" of Resilience:

THE NORTH ATLANTIC RIGHT WHALE

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Illustration: Xochil Hernandez-Urquilla

Throughout history whales have been seen through many lenses. From monsters of the deep, to a resource harvested for products like oil during the industrial revolution, to beautiful marine mammals. During commercial whaling operations, the North Atlantic right whale (*Eubalaena glacialis*) was the target of many whalers - the so-called 'right' whale by hunters due to their thick blubber. As is with many of our large whales, hunting pressure from the 11th to 19th centuries led to its decline, and recovery for this population has been slow[i].

More recently, North Atlantic right whales are making headlines due to their increasingly precarious conservation status. North Atlantic right whales face threats from vessel strike, entanglement in fishing gear, noise pollution, and rapidly changing ocean conditions as result of climate change.

Sometime around 2015, with rising ocean temperatures, the right whale's main food source, *Calanus finmarchicus*, a small cold-water copepod, shifted in abundance and moved further North from the Bay of Fundy to the Gulf of St. Lawrence. With this shift in their food source, we saw a significant change in the migration route of a large proportion of the North Atlantic right whale population. Suddenly, we were no longer seeing large numbers of right whales in the Bay of Fundy during the summer months. They followed their food north - a sign of their resilience and adaptability to the rapidly changing ocean conditions.

Many now find themselves spending the summer months in the Gulf of St. Lawrence, an active fishing area and busy shipping route. In 2017, 18 mortalities from entanglements and ship strikes were recorded – an alarming number for this critically endangered population, now numbering around 335 individuals[ii].

Even though this population was endangered prior to 2017, and measures were in place to protect them and aid their recovery in previously frequented areas, this sudden spike in mortality led to a greater sense of urgency. The Governments of Canada and the United States, who share this population, swiftly implemented measures to reduce the risk to right whales. In Canada, this includes restrictions around fishing activities, and vessel speed limits. Since then, there has been a reduction in mortality.

These measures to save the right whale did not come without an impact. The fishing industry is faced with changing fishing seasons, area closures, and gear modifications – all of which can be challenging and costly. They are testing new ropeless (on-demand) gear and other gear modifications to reduce the risk on entanglement; they are adapting to these measures, making efforts to avoid interactions with the whales, and are actively participating in the process of further reducing the risk to the right whales. The shipping industry now faces slowdowns, causing changed schedules and delays, often with little prior notice.

Cruise ships will return to the Gulf of Saint Lawrence following their interruption due to COVID-19. This increase in traffic is of concern. The oceans will continue to change, and so might the location of the right whales. We must be prepared and ready to adapt.

In 2021 a paper was published raising concerns that compared to historical records, the North Atlantic right whales body conditions are deteriorating. Various stressors such as injury, entanglement, noise and changes in their food source1 have likely caused this. The result of this decline in body condition means that females do not have the energy needed to carry a calf. We believe this has resulted in an overall decline in calves, and longer periods between calving. It is important to note that while this species is well studied, there is still a lot we don't know about them.

However, in 2021 and 2022 there has been a slight increase in calving, with 18 and 14 (so far) calves respectively[iii]. This increase in calving and the decrease in mortalities are a step in the right direction, but with fewer than 100 breeding females left, there is still a long way to go to allow the population to recover and save this species from extinction.

Although we will not see recovery in the near future, this story gives us hope that not only can our ocean be resilient and adapt to changing conditions, but we can follow suit, take responsibility for our impacts and make the changes necessary to protect our ocean ecosystems. We must continue to reduce the risk of human impacts not only to right whales, but to all species in our region and hope that one day we will see the North Atlantic right whales come off the endangered list.

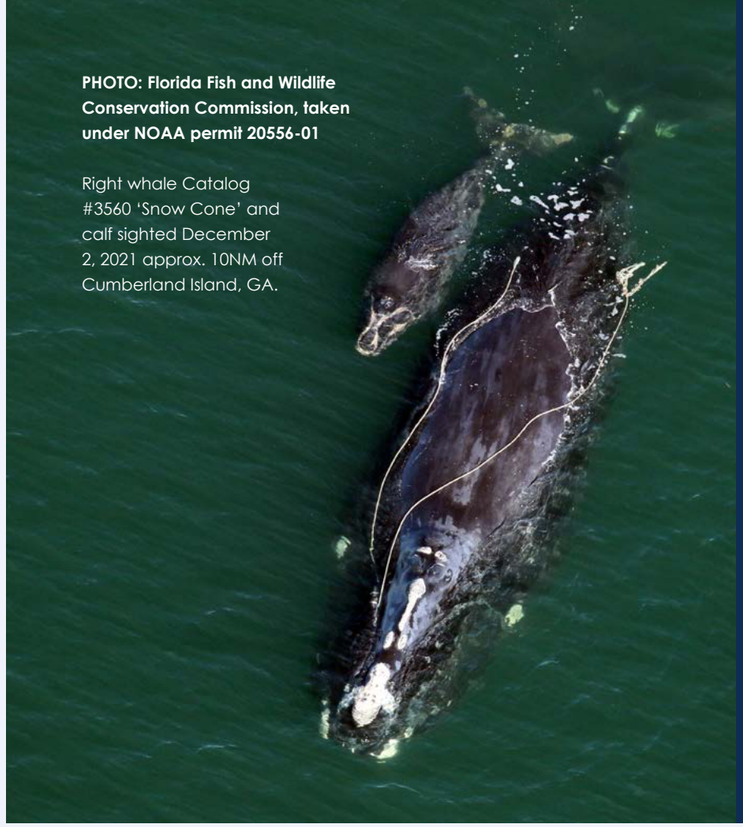


PHOTO: Florida Fish and Wildlife Conservation Commission, taken under NOAA permit 20556-01

Right whale Catalog #3560 'Snow Cone' and calf sighted December 2, 2021 approx. 10NM off Cumberland Island, GA.

A prominent example of resilience in right whales is the story of Snow Cone. The 17-year-old female was seen entangled with fishing line in March of 2021 near Massachusetts. A disentanglement team was able to remove a portion of fishing line from her mouth. Subsequent sightings and disentanglement efforts occurred in Canada in May. She was spotted again in December of 2021 off the coast of Georgia, with a calf, still entangled with rope around her mouth. Snow cone is the first known case of an entangled right whale having a calf, which is both exciting, and concerning. This is Snow Cones' second identified calf; the first was born in early 2020, but was killed by a ship strike later that year. Even with all of the challenges, both Snow Cone and her calf appear to be as healthy as can be expected given the circumstances[iv].

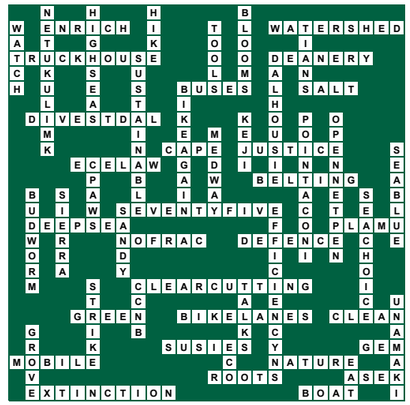
i. Christiansen, F., Dawson, S.M., Durban, J.W., Fearnbach, H., Miller, C.A., Bejder, L., Whart, M., Sironi, M., Corkeron, P., Rayment, W., Leunissen, E., Haria, E., Ward, R., Warick, H.A., Kerr, I., Lynn, M.S., Pettis, H.M., Moore, M.J. 2020. Population comparison of right whale body condition reveals poor state of the North Atlantic right whale. *Marine ecology progress series*, vol640, pp1-16, **https://doi.org/10.3354/meps13299**

ii. Pettis, H.M., Pace, R.M. III, Hamilton, P.K. 2022. North Atlantic Right Whale Consortium 2021 Annual Report Card. Report to the North Atlantic Right Whale Consortium.

iii. Anderson Cooper Center Research."2021-22 North Atlantic Right Whale mother and Calf pair" **https://www.neaq.org/blog/2021-22-north-atlantic-right-whale-mother-and-calf-pairs/** accessed 10 February 2022

iv. A Mother Right Whale's Perilous Odyssey, NOAA, **https://www.fisheries.noaa.gov/feature-story/mother-right-whales-perilous-odyssey**

Xochil Hernandez-Urquilla is a Marine Biologist, currently finishing her MBA, eternally searching for a job in her field. She is a born and raised Nova Scotian and cannot think of a better place to live surrounded, by forests and the ocean. Her hopes are that she will be able to use both her degrees to make a difference in her community and the environment.



List of Acronyms and Abbreviations

Across

6 **ENRICH** Project: Environmental Noxiousness, Racial Inequities & Community Health Project
20 **CAPE**: Canadian Association of Physicians for the Environment
23 **ECELAW**: East Coast Environmental Law
33 **NOFRAC**: Nova Scotia Fracking Resource and Action Coalition

Solution

Down

9 **TIANS**: Tourism Industry Association of Nova Scotia
16 **KEJI**: Kejimkujik
24 **CPAWS**: Canadian Parks and Wilderness Society
36 **CCNB**: Conservation Council of New Brunswick