

ORCA WHALES- ARE OUR EFFORTS ENOUGH?



The Toronto Star. (n.d.). [Photograph].
<https://www.thestar.com> <https://images.thestar.com/>

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History

The orca whale is a well-known marine mammal. They can weigh up to 11 tons and grow up to 32 feet. Orca whales can be found in any ocean and are extraordinary hunters. Their lifespan is close to that of a human as some are documented to live up to 90 years. Another interesting fact is that there are subspecies of orca whale. Orca whales have been through a lot throughout human history. Between culling, hunting, pollution, and abducting them to live in man-made aquariums, the population of orca whales was severely impacted. Even now, with great stride in conservation efforts, there are still some member of *Orcinus orca* that are listed as endangered. According to NOAA fisheries, “only two populations of orca whale receive federal law protection. These populations are southern resident population (endangered) and AT1 transient population (depleted).” (NOAA Fisheries 2020) Every other kind of orca is protected under the general MMPA (Marine Mammal Protection Act).

Objectives

- According to research, it appears the main problem among all the others listed above is food depletion. The main source of diet for southern resident population orcas are chinook salmon.
- Chinook salmon are being depleted in the ocean according to Orca Conservancy “climate change, dams, overfishing etc” (Orca Conservancy 2020)
- My hypothesis is if chinook salmon population increases, then orca populations will stabilize

Methods/Approach

I plan on estimating the population size of chinook salmon on the west coast of the United States as well as surveying through observation and partnership with other organizations the population size of orca whales as well as their health status in the west coast area of the United States.

Sampling Protocol: I will first begin with a study using a radar with the chinook salmon in order to estimate the population size. In order to secure accuracy, I will be repeating the study once a month for the next five years. Alongside this, I, with the help of marine mammal organizations will collect knowledge of the orca pods found here and will conduct health exams on selected orca whales from the three pods that reside there. I will then conduct the exact same experiment between orcas and main source of their prey in 2-3 stable orca whale populations in other parts of the world.

Major Variables would be to find a pattern between orca health and population size in comparison to food supply to prove to both fellow scientists and the public alike that the natural food chain and the natural world is suffering at our hand.

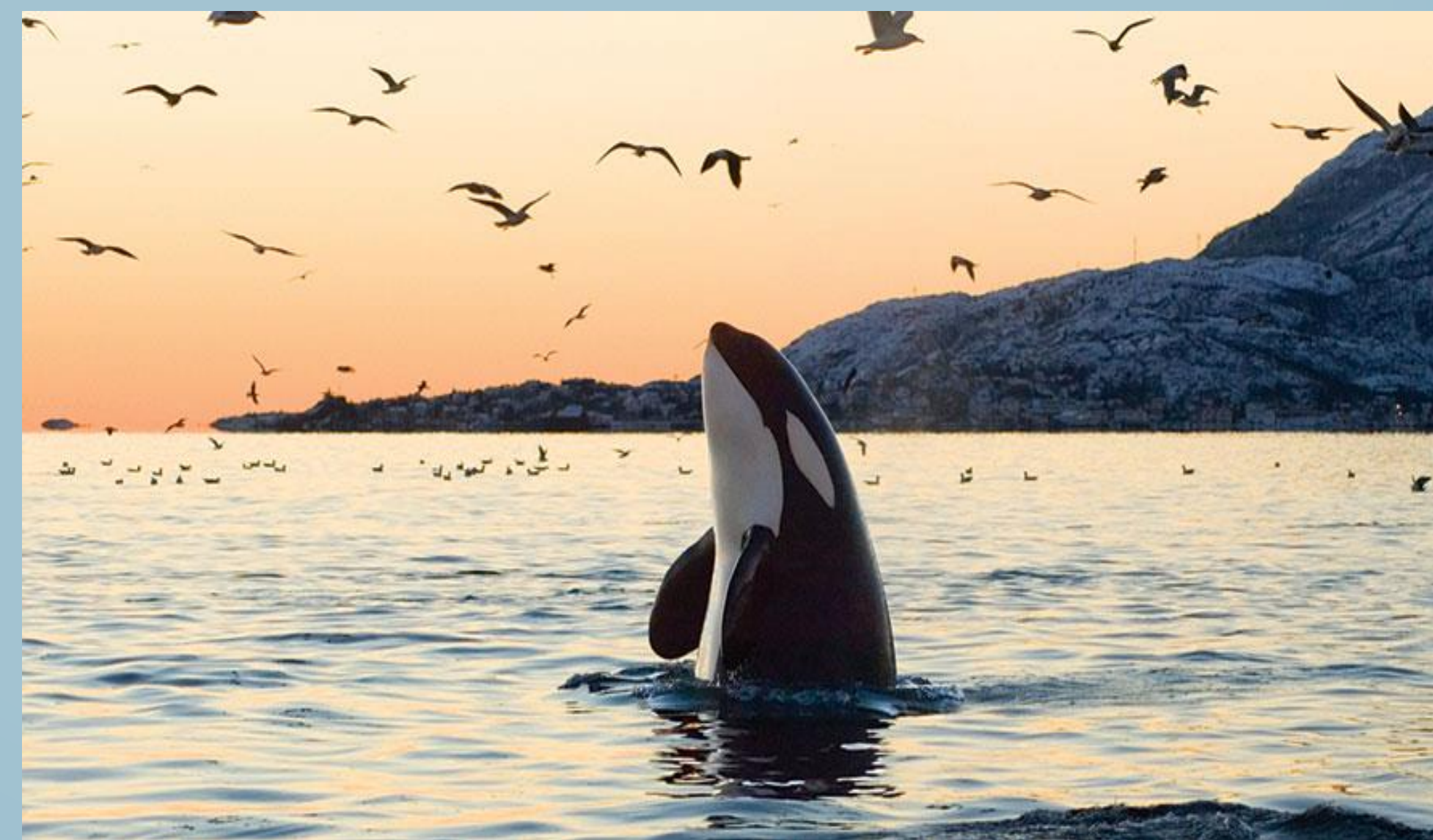
This experiment would take 5 years to collect data necessary for accurate results.



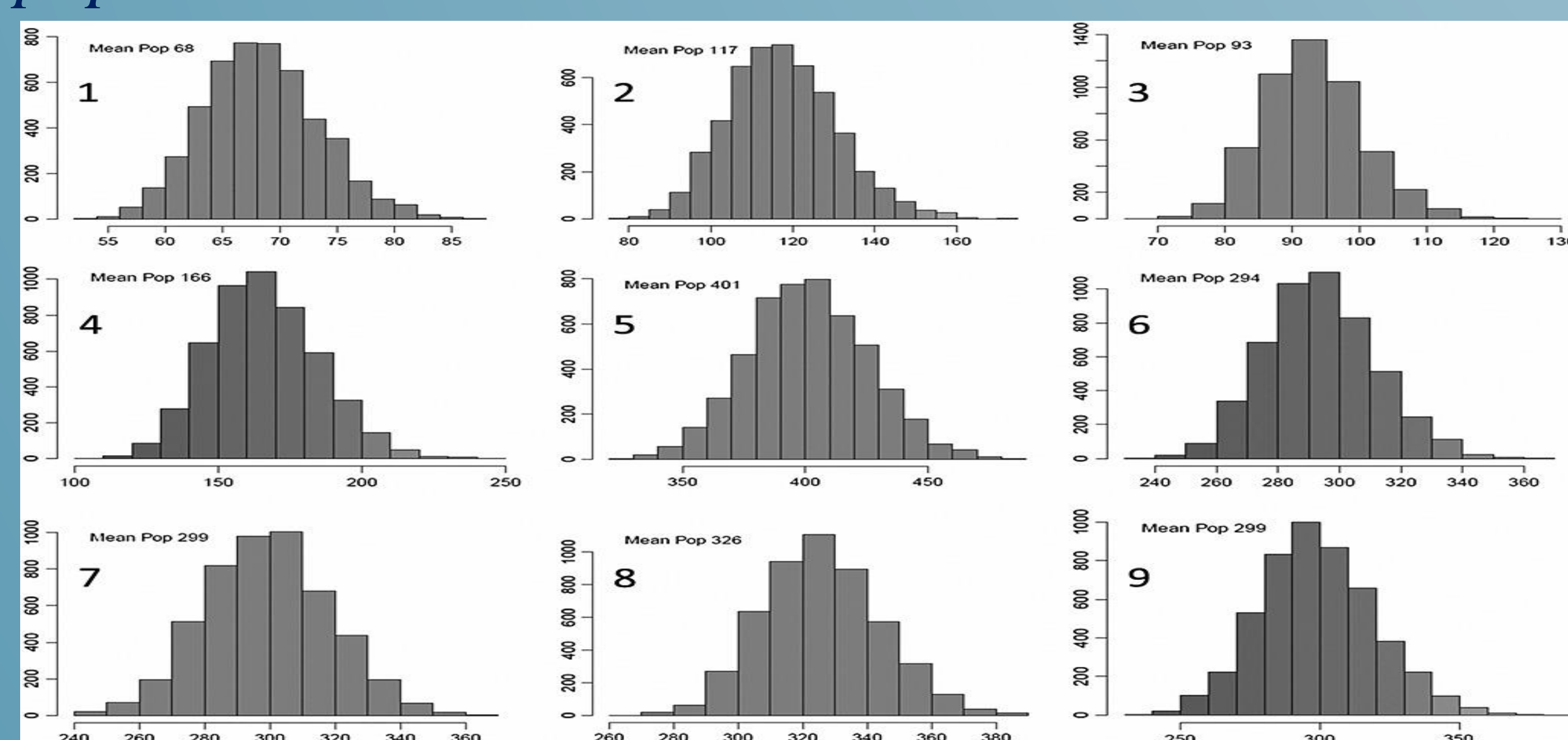
Alie Express. (n.d.). [Illustration]. Alie Express.
<https://ae01.alicdn.com/index.html>

The Bigger Picture

- Orca whales are a charismatic species and many wish to put in the effort to bring all orca whales back to full recovery
- This goes beyond just orcas as the problems for the chinook salmon affect many other organisms, the problems of climate change, pollution, and overfishing are all too real, this is just one out of so many examples
- If this experiment is a success, then it will be one of a thousand other pieces of work to further prove these are real problems. We need to start making long lasting solutions to bring back the chinook salmon population as well as perform our duty as stewards of the earth in protecting our oceans and the ones who live there.



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Figure 1: These graphs are a projected hypothesis of the outcomes of orca whale populations with different fishing scenarios. Graphs 1-4 represent Southern Resident orcas and 5-9 are North Resident Orcas. From “Relative importance of chinook salmon abundance on resident killer whale population growth and viability” by L.A. Velez -Espino , 2015 AQUATIC CONSERVATION-MARINE AND FRESHWATER ECOSYSTEMS Volume 25 issue 6756-780, Copyright [2014]by John Wiley & Sons, Ltd.