

How Does Climate Change Affect Possible Polar Bear Extinction?



Jade Gonzalez

M.Gonzalez

New York

2014

Introduction: Climate change and global warming are something that people do not seem to see as a fact. Climate change is the long-term shift in statistics of weather including its averages (NOAA 2007). Climate change and the idea of global warming is a very real problem which not only effects the glaciers and the ice caps, but also animals as well. The Earth is warming and has risen in temperature (EPA). The Earth's overall average of the temperature has risen 1.4 degrees Fahrenheit (EPA). This could potentially be dangerous because if the temperature continues to increase, there will be various changes within our world. The polar bear is the largest carnivorous land mammal on Earth; they are located throughout the northern part of the world. The largest threat to the polar bear's survival is the changing in their climate (Center for Biological Diversity 2013). If the arctic continues its melting trend, the worldwide polar bear population will decline by more than two thirds 2050 and will be near extinction by the end of the century (center for biological diversity may 2013).

Background information: Global warming is an idea that seems to be silly to most people because the idea of the earth warming is elusive. But if the idea is so elusive, then why does it seem to have such real results? Climate change is a circumstance that is affecting possible polar bear extinction. Scientists have come to the conclusion that the reason most of the Arctic sea ice has declined is because of climate change (NOAA 2007). There are many theories to why the climate is changing, a few surround natural variability and human induced change (NOAA 2007). The amount of sea ice has been decreasing by approximately 3.5% per decade from 1979 to 2006 (Greenpeace international 2012), this is bad because the decrease in ice means

multiple complications among polar bear survival. The sea ice is a factor in which polar bears use to survive on, this is where female polar bears go to make their dens for their young. (Center for Biological Diversity 2013).

Results: The polar bear population has declined over time and only in rare cases is the population increasing (see figure 1). Most of the areas are stable but yet there are bigger areas in which the Polar bear populations are decreasing.

Trends in Polar Bear Subpopulations

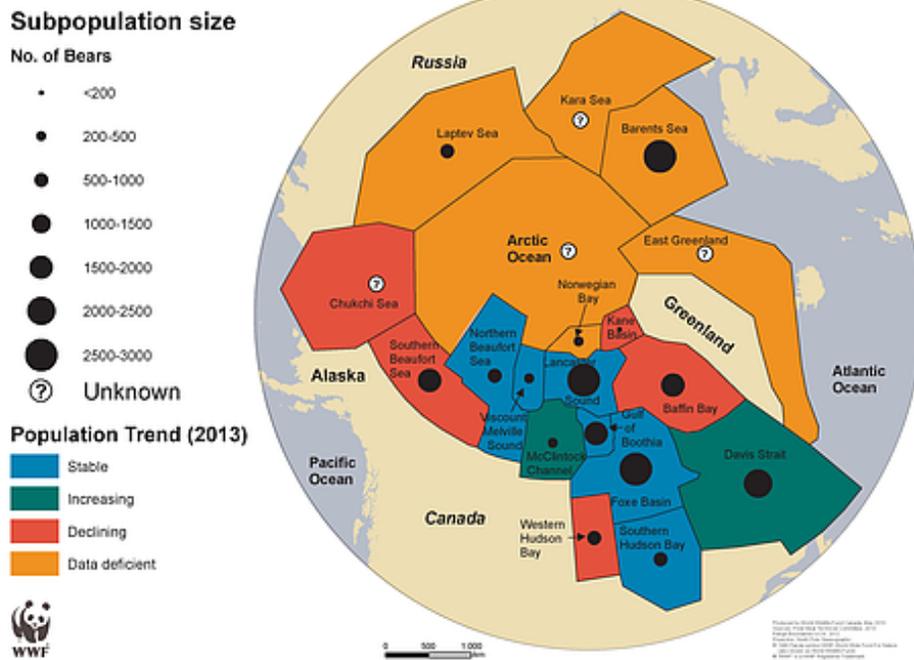


Figure1: shows the population trends in different areas, as well as the number population.

Due to the temperature increase the population trends correlate with the increase in sea level. Figure two shows the overall sea change that happened from 1880-2011, within that range the sea level went from negatives to double digits. The orange line shows the trend based on tide

gauges, which are instruments that gather sea level height data. The purple line; starting in the late 1990s, show satellite measurements which don't measure temperature directly but give an estimate based on radiances in various in different wavelengths.

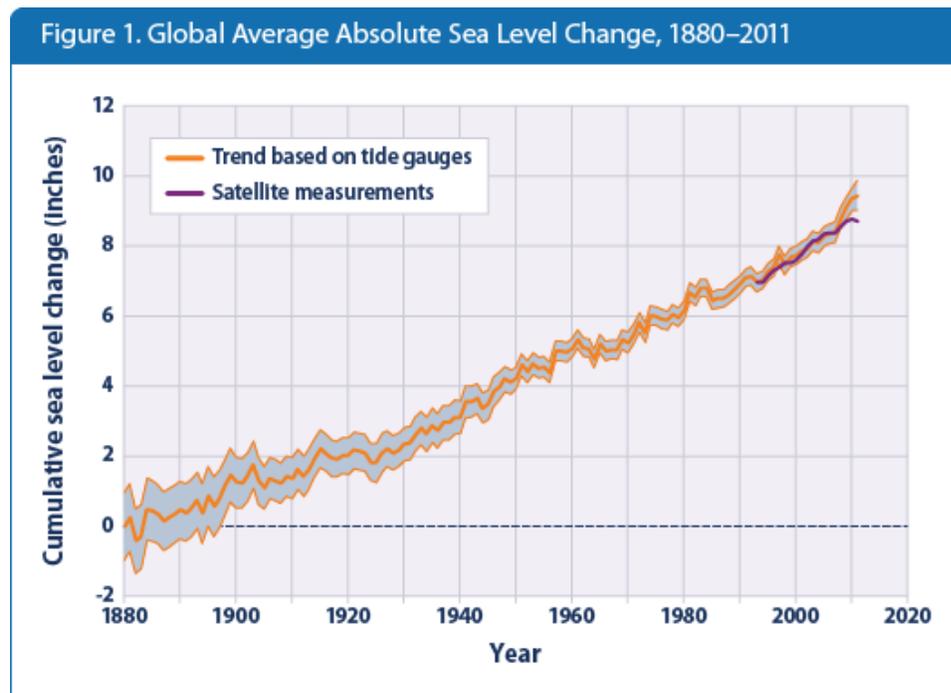


Figure 2: Global Average Absolute Sea Level Change shows the overall change in sea level over the course of 131 years.

Conclusion: Due to changes in temperature the climate is declining and therefore supporting the hypothesis that the worldwide polar bear population will decline by more than two thirds 2050 and will be near extinction by the end of the century. This could be a factor to future generations and would also disrupt the food chain. The fact that the Polar Bear is at the top of the Arctic's food chain, would make it a huge disruption in the chain. This could possibly lead to overpopulation in many small organisms that would mess with the natural order of the food web.

Bibliography:

Allsopp, M (2012), Santillo, A (2012), Johnston, P (2012) ;Greenpeace Research Laboratories (2004-2012)

Center for Biological Diversity (May2013)

Wetzler, A (April2007), Casey-Lefkowitz (April2007); Natural Resources Defense Council April 2007

Amstrup SC, DeWeaver ET, DouglasDC, Durner GM, Bitz CM & Bailey DA (2010). Greenhouse gas migration can reduce sea-ice loss and increase polar bear persistence. Nature 468: 955-960.

<http://www.epa.gov/climatechange/basics/>

Graphs:

[http://wwf.panda.org/what we do/where we work/arctic/wildlife/polar bear/population/](http://wwf.panda.org/what_we_do/where_we_work/arctic/wildlife/polar_bear/population/)

<http://www.epa.gov/climatechange/science/indicators/oceans/sea-level.html>