

### **Entry requirements**

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Topic: Climate change

SDGs:

### **Life Under Water**

This report sheds light onto the effects that global warming has on marine life by zooming into the effects that sperm whales are experiencing due to climate change.

### **Climate Action**

This report will focus on how to mitigate and slow down the effects of climate change and global warming for the future of marine species.

### **Responsible Consumption and Production**

This report will investigate how to slow down global warming by changing our consumption habits and our method of producing goods. It will draw on examples of responsible consumption and effective production in Singapore's economy.

## **Saving The Earth's Biggest Brains**

In 2015, a sperm whale -later nicknamed "Jubi Lee"- was found dead in the waters off Jurong island. Upon further investigation, scientists discovered that Jubi Lee died after a collision with a ship [1]. This prompted concern as due to climate change and warming oceans, increasing numbers of sperm whales are following their prey to new areas, making them closer to shores where they're more likely to encounter ships and -consequently- danger.

The sperm whale is a sensitive and intelligent creature with the biggest brain of any animal species [2]. Known for its appearance in the literary classic "Moby Dick", the sperm whale has amazed and intrigued readers and scientists alike, with mammal researcher Marcus Chua, from the National University of Singapore, describing the mysterious species as "glowing giant fingers when alive" [3]. The detrimental effects of global warming have proven to endanger this species.



Fig. 1: picture of sperm whales (source: [https://en.wikipedia.org/wiki/Sperm\\_whale](https://en.wikipedia.org/wiki/Sperm_whale))

### **Climate Change and Warming Waters**

2023 was the hottest year on record [4], with temperatures in Singapore reaching the 4th highest on record [5]. In response to record-high ocean temperatures globally, many marine species have been moving away from the equator due to a myriad of factors, such as habitat loss; a change in their prey's migration patterns; and the temperatures at the equator being uninhabitable for some species [6]. According to a study analysing nearly 50,000 species, researchers have shown that the movement of marine species fleeing the equator can now be observed at a global scale [7]. This effect not only damages marine ecology by introducing invasive species to new environments, but it also endangers migrating species.

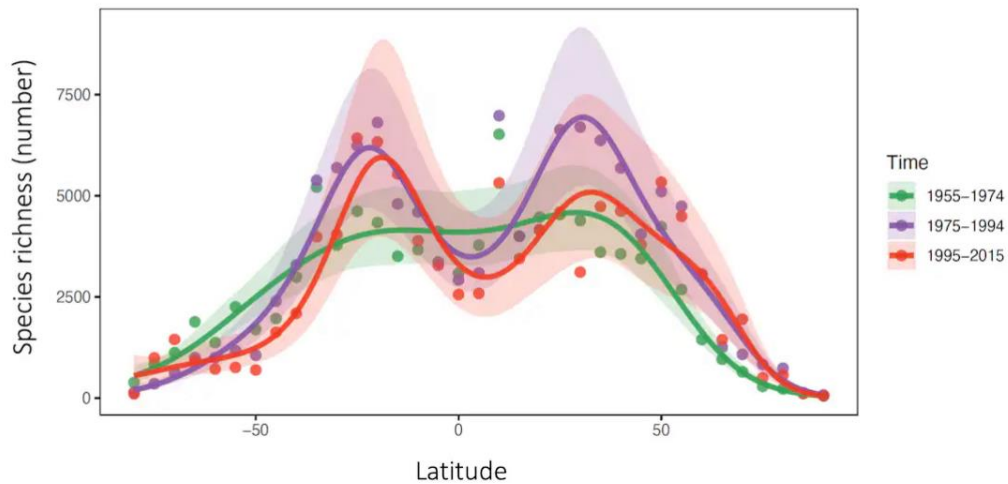


Fig. 2: graph showing how the distribution of marine species at the ocean's latitudes varied over time (source: <https://www.pnas.org/doi/10.1073/pnas.2015094118>)

### **Sperm Whales are in Hot Water—Literally**

Owing to global warming, sperm whales have been observed following their prey to lower latitudes [8]. The sudden change in their migration patterns has made them more susceptible to colliding with shipping vessels, entanglement with fishing lines and encountering illicit whaling vessels. Furthermore, it also makes them more likely to accidentally migrate closer to shores, where they're prone to colliding with fishing ships (as Jubilee had) and becoming beached — a process by which a whale accidentally swims up-shore and becomes stranded [9]. In the words of Mr Beng, chairman of the conservation group of the Nature Society in Singapore: "Dead whales washing up on our shore is literally the biggest sign that our ocean is in trouble" [10].

Other than potential contact with humans, scientists are also concerned about the dangerous environments of the places that the sperm whales are migrating to. In 2018, sperm whales were spotted in the Arctic, which startled scientists as sperm whales are not physically and biologically compatible with the Arctic environment. This prompted scientists to believe that the oceans are warming so rapidly that whales are completely altering their migration routes with little understanding of the new ecosystems they're entering. [11]

### **The Solution to Save the Whales**

The solution to save sperm whales from global warming is not simple, one-time acts such as taking the public transport or boycotting public utensils. While these actions do help the environment, we must focus on adapting a long-term, sustainable

mindset towards our consumption and production of goods so as to combat climate change as a society, rather than as an individual.

### Responsible Consumption and Production

With rising disposable income and spending power, Singaporeans' consumption and production of goods and services has also been rising at an unsustainable rate [12]. This has resulted in irresponsible consumption and production choices being made by Singaporeans.

For example, Singaporeans' irresponsible consumption habits have worsened the problem of food waste. Every year, massive amounts of fruits and vegetables that do not fit into strict cosmetic standards are thrown away by consumers and producers, even though they have the same nutritional benefits as normal groceries. According to a survey that was conducted on the consumption habits of a thousand Singaporeans, 52 percent admitted that they would rather throw away conventionally ugly food instead of eating them [13]. When it comes to food, it is clear that "Singaporeans eat with their eyes first" [14]. This problem has led to unnecessarily large amounts of energy being used to produce and deliver goods that would be eventually thrown away, exacerbating the problem of climate change.

In response to this, many producers have tried to promote more eco-friendly consumer habits. Next to the rows of perfect-looking fruits in FairPrice, stalls consisting of "ugly fruits" and banners that educate Singaporeans on the misconceptions that they might have about conventionally unattractive fruits and vegetables have appeared. It is crucial to support local initiatives such as these businesses so as to achieve a positive, global impact on the climate.



Fig. 3: sighting of a business selling and advertising "ugly fruits" at FairPrice (source: Author's camera)

On a more personal note, during this year's Lunar new year, my classmates and I used recycled hongbao envelopes to decorate our classroom rather than buying paper decorations. By recycling, we played a part in conserving the trees and fuel used to produce paper. Small acts like these accumulate to combat the problem of global warming and climate change.

### **Why Sperm Whales are Important**

According to WWF, sperm whales play an integral role in climate change mitigation as they can capture substantial amounts of carbon from the atmosphere, making scientists believe that when it comes to combating climate change, "one whale is worth a thousand trees" [15]. Throughout their lives, sperm whales capture carbon from the atmosphere and store it in their bodies. Furthermore, they are also a substantial fertiliser of phytoplankton, which are creatures responsible for producing about half of our oxygen supply [16].

The vitality of sperm whales makes the endangerment of this species an ever more alarming issue, as if we do not take action to protect them now, we could be even more vulnerable to the disastrous effects of climate change in the future. We should protect the ocean in the same way that it protects us. Hence, it should be a no-brainer to protect the earth's biggest brains.

## References

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