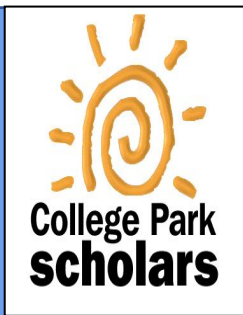


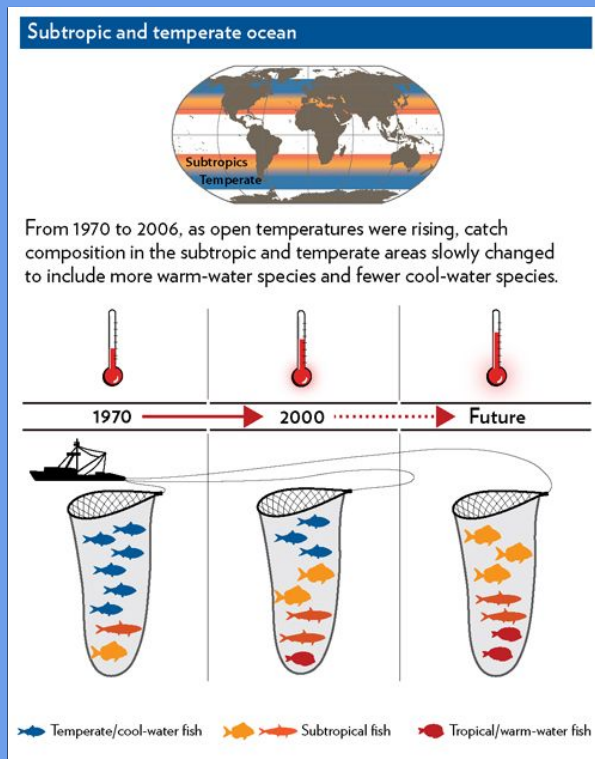


Impacts of Climate Change: Impact on Fisheries



Introduction

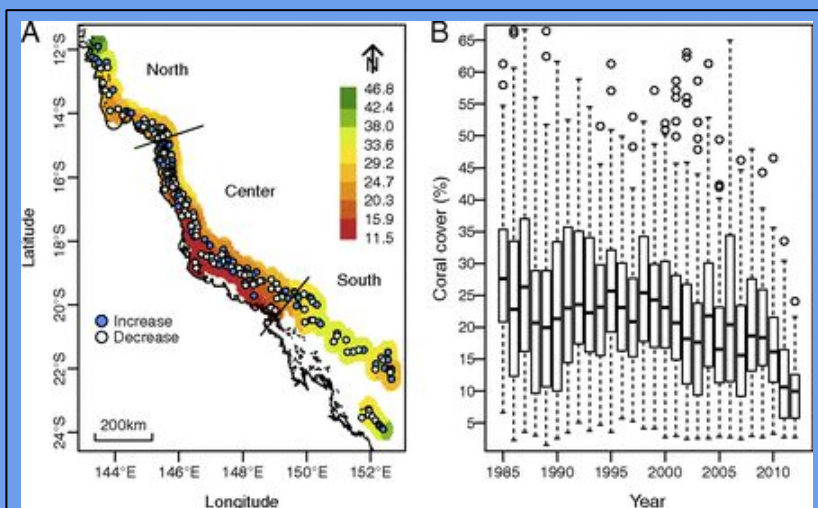
- Fish are an essential protein source for 3.2 billion people and provide 17 percent of the world's animal protein
- However, the effects of climate change has negative consequences on fisheries causing fish population to plummet which can in turn have negative consequences for the billions of people who rely on them for nutrition and income
- These negative consequences include:
 - Water becoming warmer causing it to contain less oxygen than cool water.
 - Pathogen levels increasing in bodies of water
 - Warmer waters changing fishing seasons



This graphic displays the changes in habitation by fish that frequent certain ocean temperatures. Rise in temperatures leads to a change in habitation by staple, temperate/cold fish.

How Current Global Change is Making This Worse

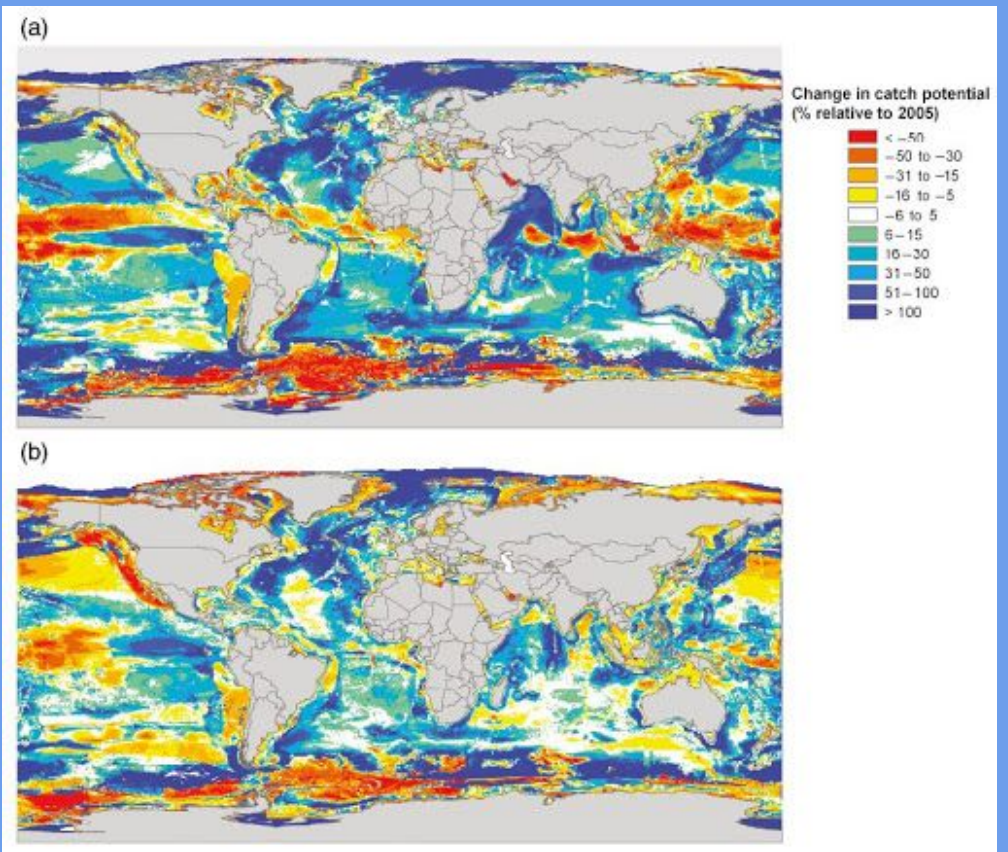
- Fisheries already have a major pressure induced from the overexploitation of marine life for commercial gain and with the anthropogenic impacts of current global change, the welfare and sustainability of fisheries are on the brink of collapse.
- Added pressures from climate change on marine life include: increasing temperature, acidification, deoxygenation and rising sea level; all of which affect the productivity and distribution of marine life.
- Many marine organisms (shrimps, zooplankton, corals) perform calcification in order to form their shells. Rising ocean temperature and increased acidity from increases in CO₂ levels in the surface ocean makes it more difficult for calcification to occur. The absence of this will greatly impact the flow of the marine food web, as places such as coral reefs are declining at a rapid pace.



Coral cover on the Great Barrier Reef. The first figure is a map of the GBR with color shading showing mean coral cover averaged from 1985–2012. Points show the locations of the 214 survey reefs in the northern, central, and southern regions, and their color indicates the direction of change in cover over time. The second figure has boxplots indicating the percentiles (25%, 50%, and 75%) of the coral cover distributions within each year. This shows a significant decline over the allotted time period.

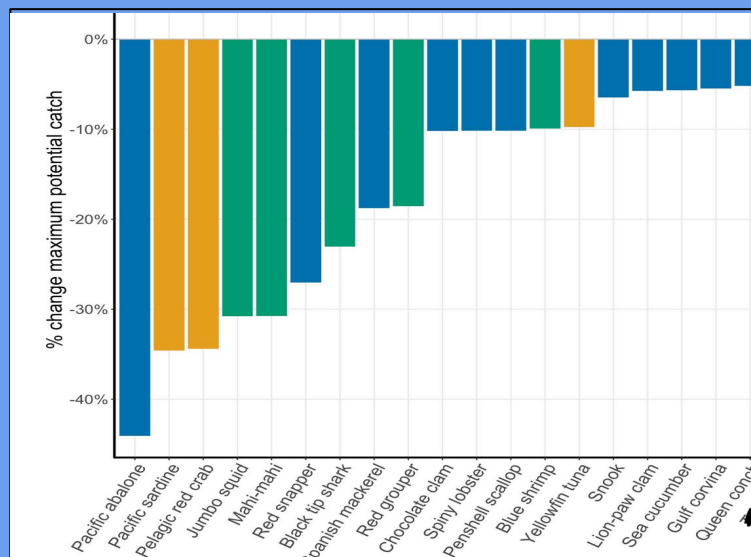


This diagram displays the change in catch rates for fisheries between 2005 and 2055. The loss of fish in this graphic is clearly displayed. Furthermore, once steady populations will also decline.



Impact for the Near Future

- With limited ability for fisheries to adapt, catch potential will be reduced
- Among the largest drops in catch potential are mahi-mahi (-27%), pacific sardine (-24%), and jumbo squid (-23%) due to these specific species' lack of ability to adapt to dramatic climate shifts more than others
- Because of the decline in these important fish, fisheries that rely on them will lose an expected 6.5 million US dollar average profit over the course of a year



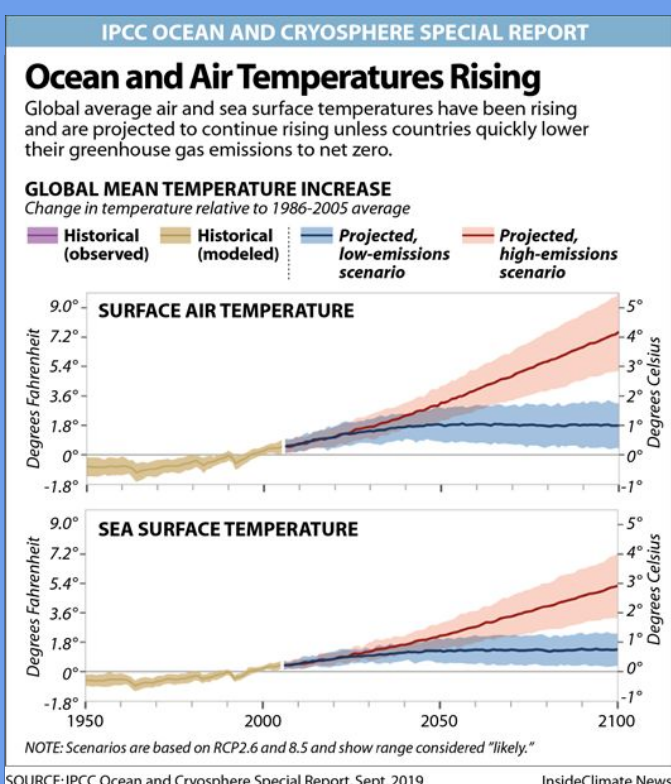
Climate change's effect on maximum potential catch in Pacific. Bar graph shows that climate change is causing a large decrease in the percentage of catches for certain fish populations.

Impacts in Other Countries

- Mexico, a country that relies on these catches to support food supply, will be forced to find new ways to fulfill its needs if solutions are not found
 - Reliance on these catches comes from Mexico's vast coastline and accessibility to fisheries
- Other countries, Iceland for example, is smaller and relies more heavily on these fisheries and often over capitalizes on these catches, making it harder for the problem to naturally fix itself

References

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Increased Sea temperatures correspond to changes in fish habitats around the world, so as the temperatures of the air rise due to increased CO₂ emissions, ocean temperatures rise, leading to fish habitat loss and reduced fishery output