How Can Restoring Fish Stocks Help Mitigate Climate Change?

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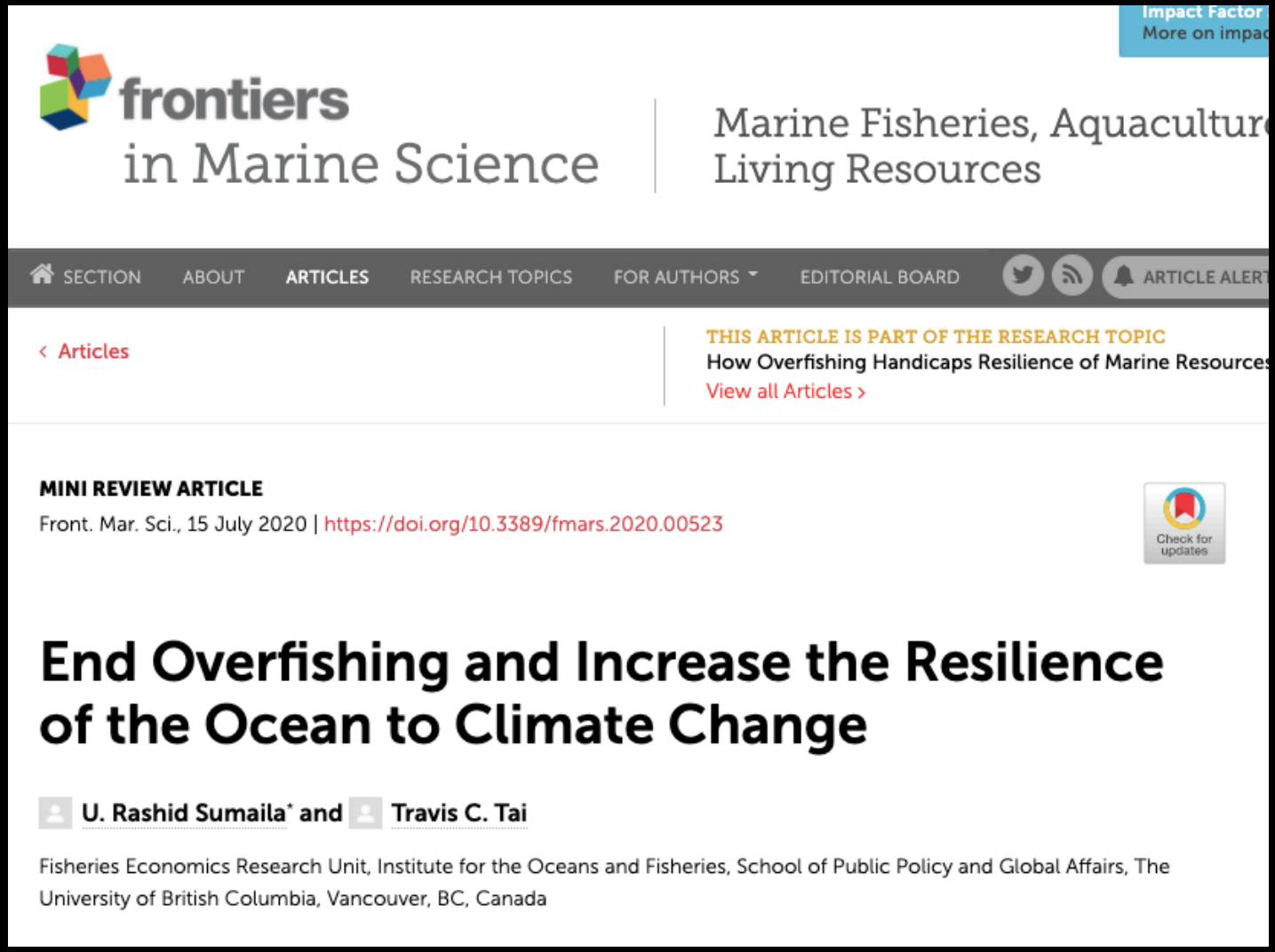
The Impact of Climate Change on Fisheries in the North Western Waters: Examining policy, research, and potential mitigation and adaptation strategie

A 1-Day virtual Workshop organised by the NWWAC FG Climate & Environme

23 November 2021

Further Information & Acknowledgement



frontiers in Marine Science | Marine Fisheries, Aquaculture Living Resources

SECTION ABOUT ARTICLES RESEARCH TOPICS FOR AUTHORS EDITORIAL BOARD ARTICLE ALERT

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THIS ARTICLE IS PART OF THE RESEARCH TOPIC
How Overfishing Handicaps Resilience of Marine Resources
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MINI REVIEW ARTICLE

Front. Mar. Sci., 15 July 2020 | https://doi.org/10.3389/fmars.2020.00523

Check for updates

End Overfishing and Increase the Resilience of the Ocean to Climate Change

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How Can Restoring Fish Stocks Help Mitigate Climate Change?

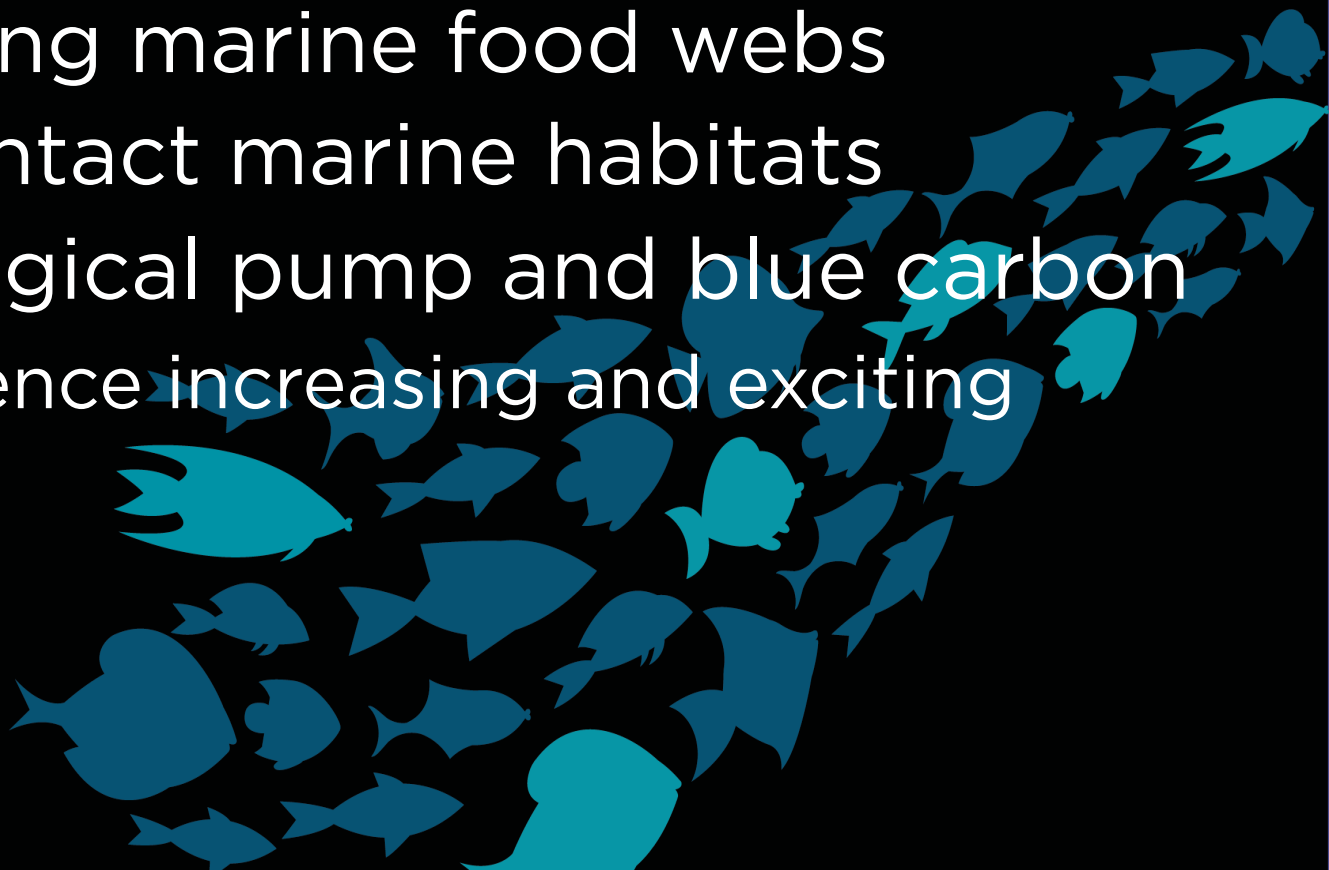
1. Ocean as life giver
2. Fish as the lifeblood
3. Blue Carbon
4. Overfishing sapping our strength
5. Double whammy of climate change
6. How does ending overfishing fight the climate and nature emergency?
7. Redesigning fisheries management for life

Ocean As Life Giver

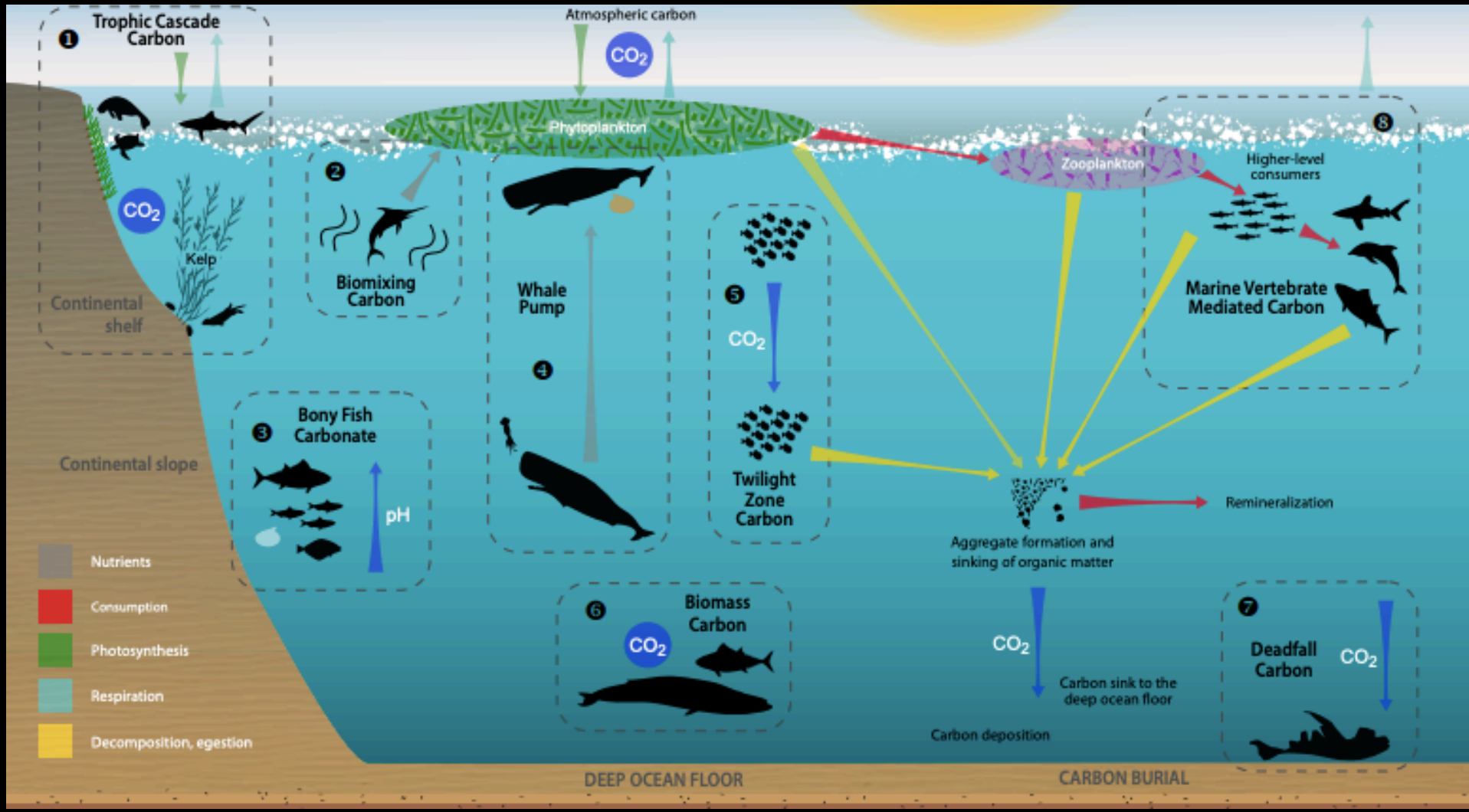
- Source of life on earth
- Oxygen ±50%
- Water and climate regulation
- Heat absorption ±93% (36°)
- Carbon storage ±30%
- Food
- Medicine
- Wellbeing ...

Fish As The Lifeblood

- Healthy diverse fish populations
- Functioning marine food webs
- Healthy, intact marine habitats
- The biological pump and blue carbon
  - new science increasing and exciting



Blue Carbon



SOURCE: Lutz SJ & Martin AH, 2014, Fish Carbon: Exploring Marine Vertebrate Carbon Services.

Blue Carbon

- Previous focus on plankton, but increasing focus on marine vertebrates

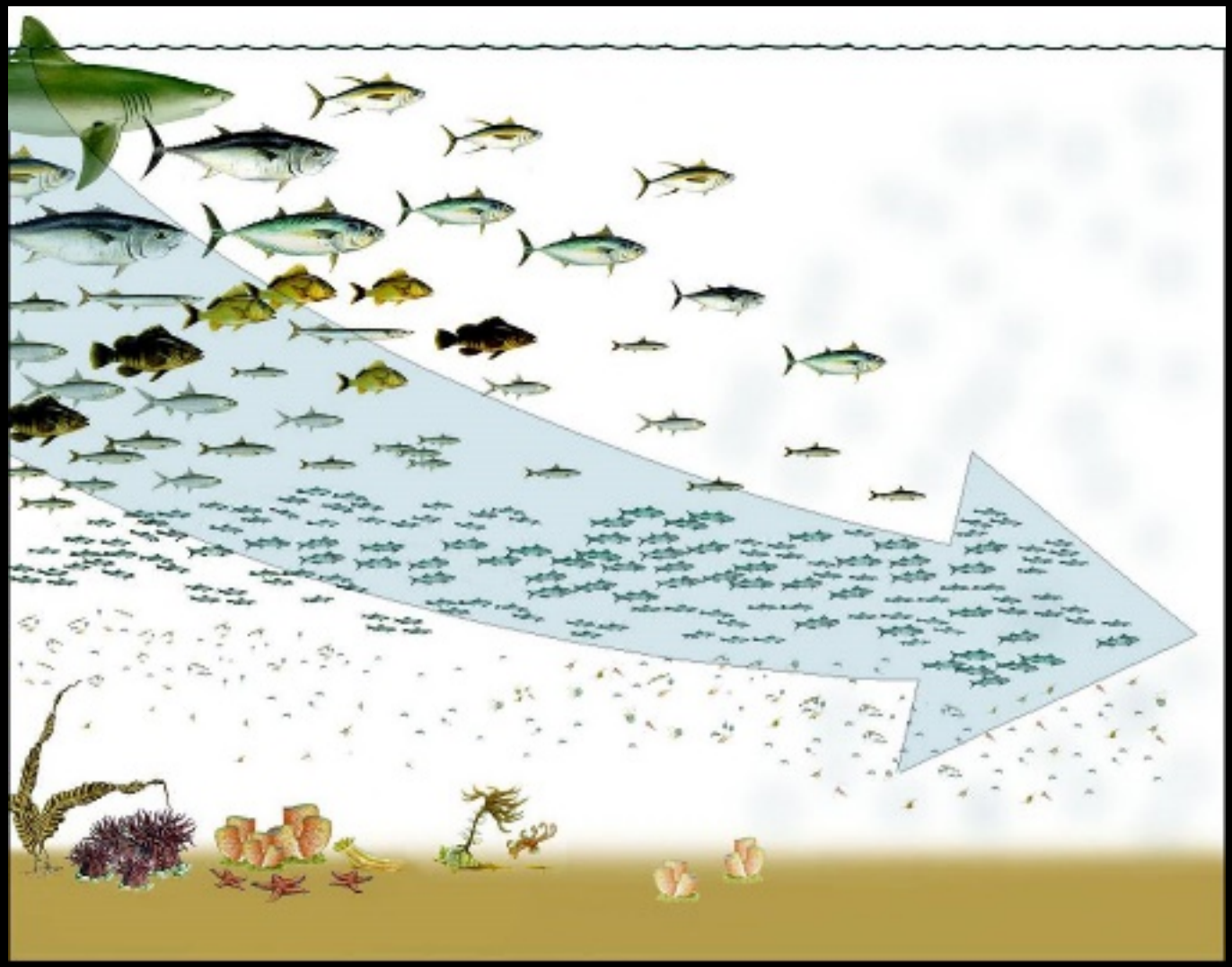
- Biomass & deadfall carbon: dead or alive

- Bony fish carbonate: fish poo is good

- Twilight zone: mesopelagic mixing

- $1 trillion whale pump

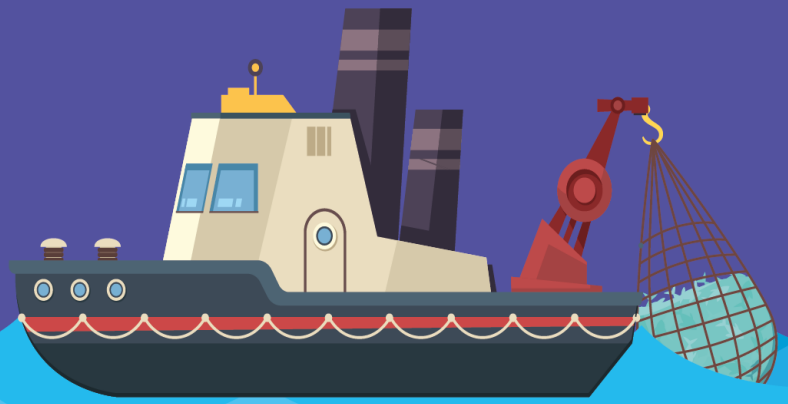
Overfishing: Fishing Down Marine Food Web



Source: Daniel Pauly, et al. (1998), Fishing Down Marine Food Webs, Science 279, 860 (1998). DOI: 10.1126/science.279.5352.860

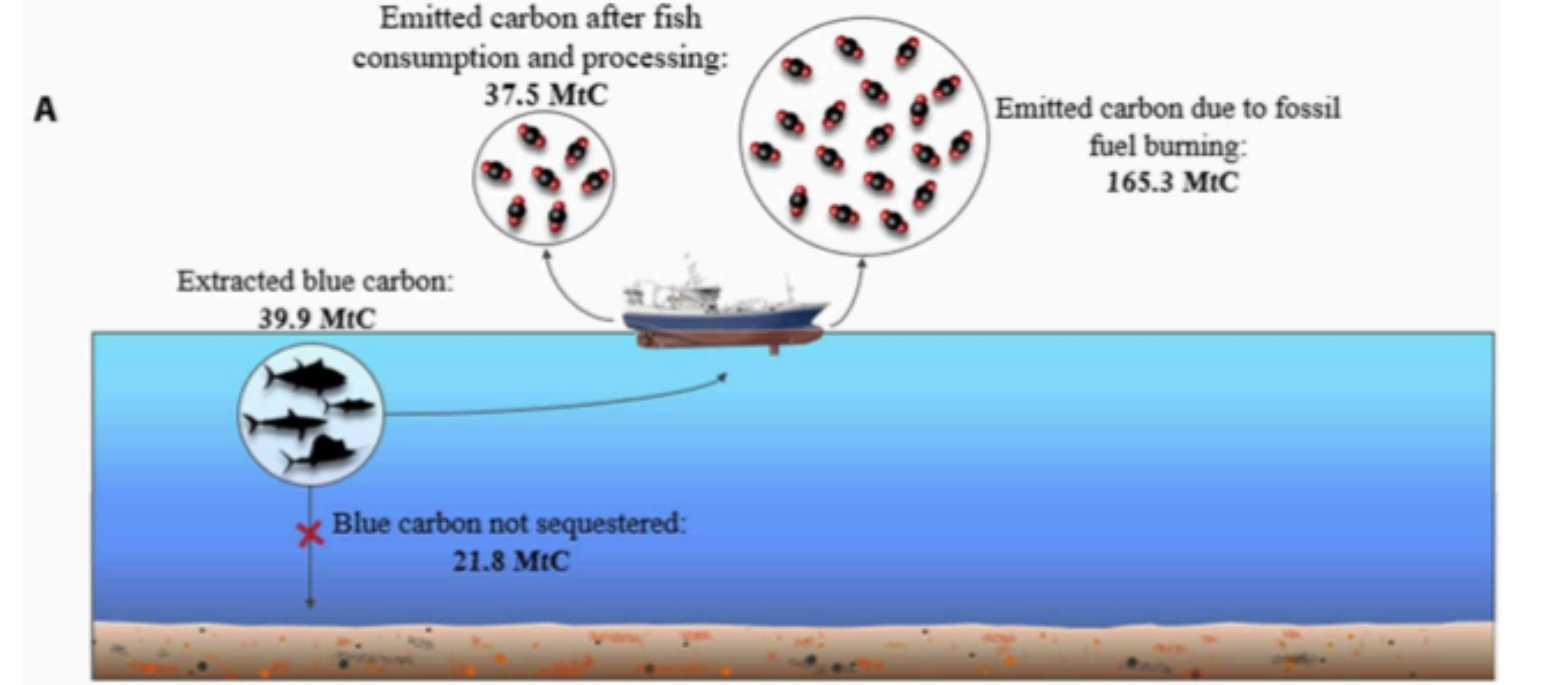
Overfishing Is Sapping Our Strength

- The biggest impact on ocean biodiversity
- Declining catches
- Social impacts



Overfishing Impact on Blue Carbon

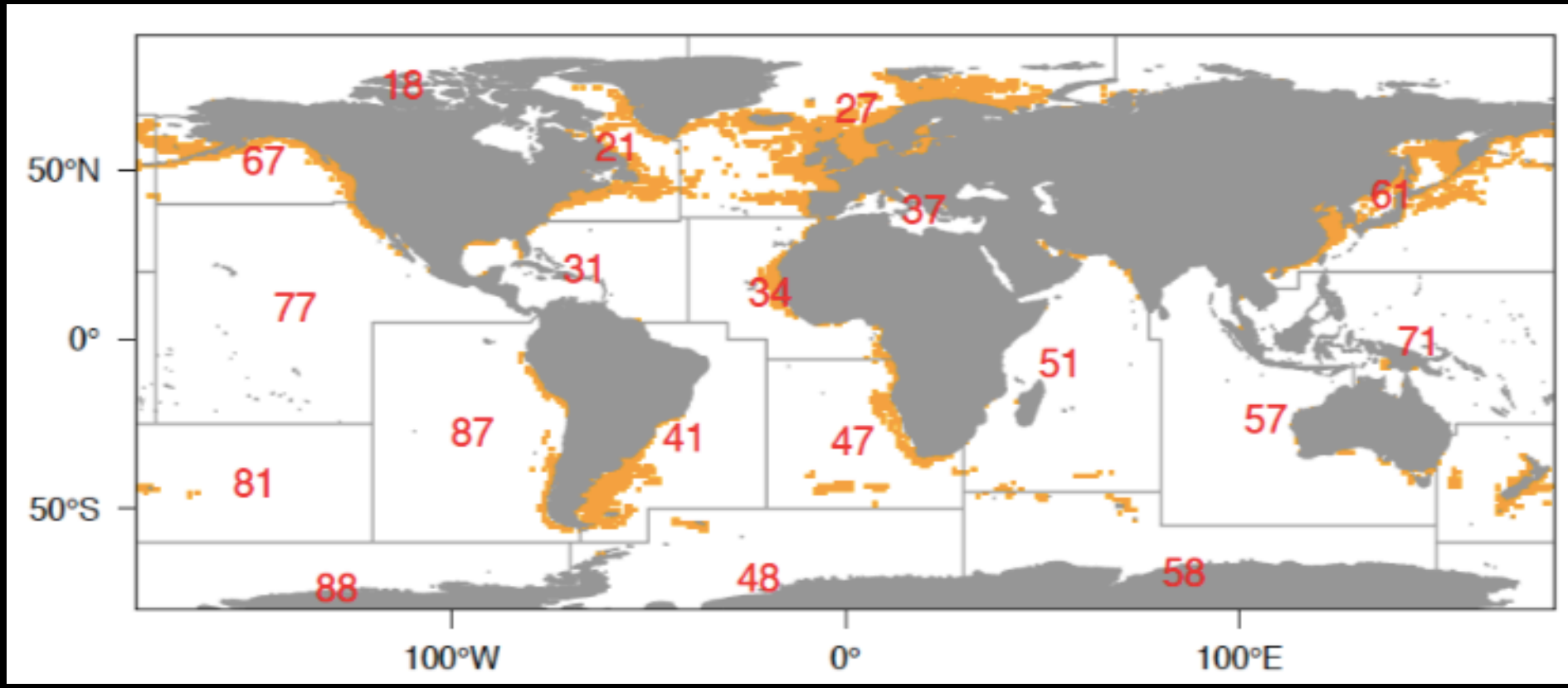
From 1950 - 2014 the world's fishing fleets have extracted 318.4 million metric tons of large fish – this is what it means for carbon sequestration and CO2 emissions



Source: Mariani et al. 2020, Let more big fish sink: Fisheries prevent blue carbon sequestration—half in unprofitable areas, Science Advances, Sci Adv 6 (44), eabb4848. DOI: 10.1126/sciadv.abb4848

Overfishing Impact on Blue Carbon

Fishing intensity and carbon export are highest near the coastline. A global assessment shows this pinch points are highest in Northeast Atlantic and Northwest Pacific



Source: EL Cavan & SL Hill, 2020, BioRxiv, Commercial fishery disturbance of the global open-ocean carbon sink, doi: https://doi.org/10.1101/2020.09.21.307462, https://www.biorxiv.org/content/10.1101/2020.09.21.307462v1

Double Whammy Of Climate Change

- Increased temperature
- Salinity
- Hypoxia
- Acidification

How Does Ending Overfishing Fight The Climate & Nature Emergency?

- Increase fish populations & resilience
- Have complete food webs & functioning biological pump
- Avoid habitat disturbance & destruction
- Decrease CO_2 emissions
- Increase CO_2 sequestration

Redesigning Fisheries Management For Life

- Set fishing limits below Maximum Sustainable Yield or precautionary advice

- Manage the climate and ecosystem impacts of fishing to protect food webs, habitats and ecosystem functioning

- Allocate quota to the least damaging fleets

- Stop subsidising fuel tax

- Recognise ending overfishing as climate action, including in NDCs

ANY QUESTIONS?