

A large school of fish swimming in clear blue water, viewed from an underwater perspective. The fish are densely packed and move in a coordinated pattern, creating a shimmering effect. The water is a deep, clear blue, and the lighting is bright, suggesting a sunny day. The fish are small and silvery, typical of a sardine or anchovy school.

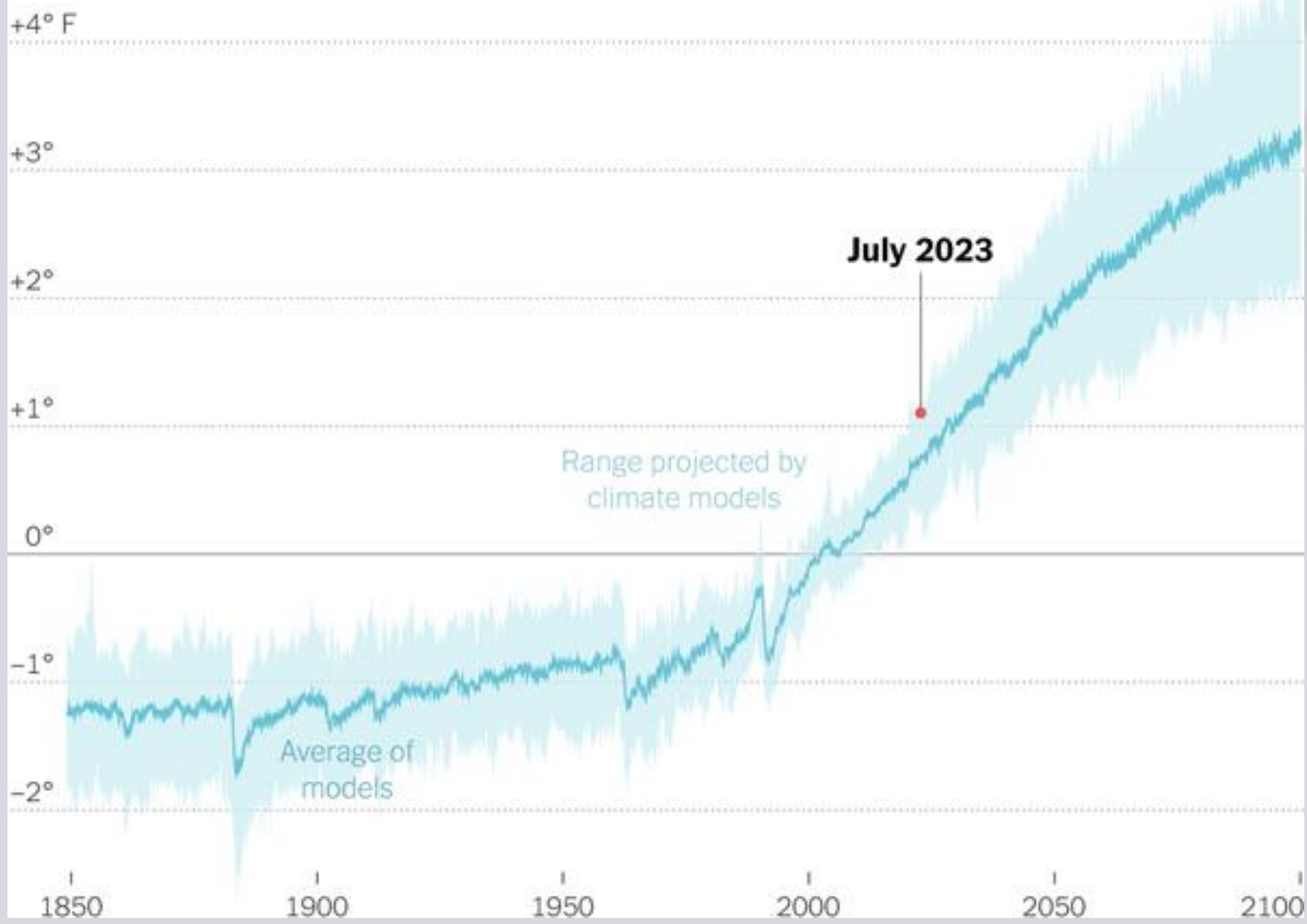
**What Is
Sustainable Fish
and...**

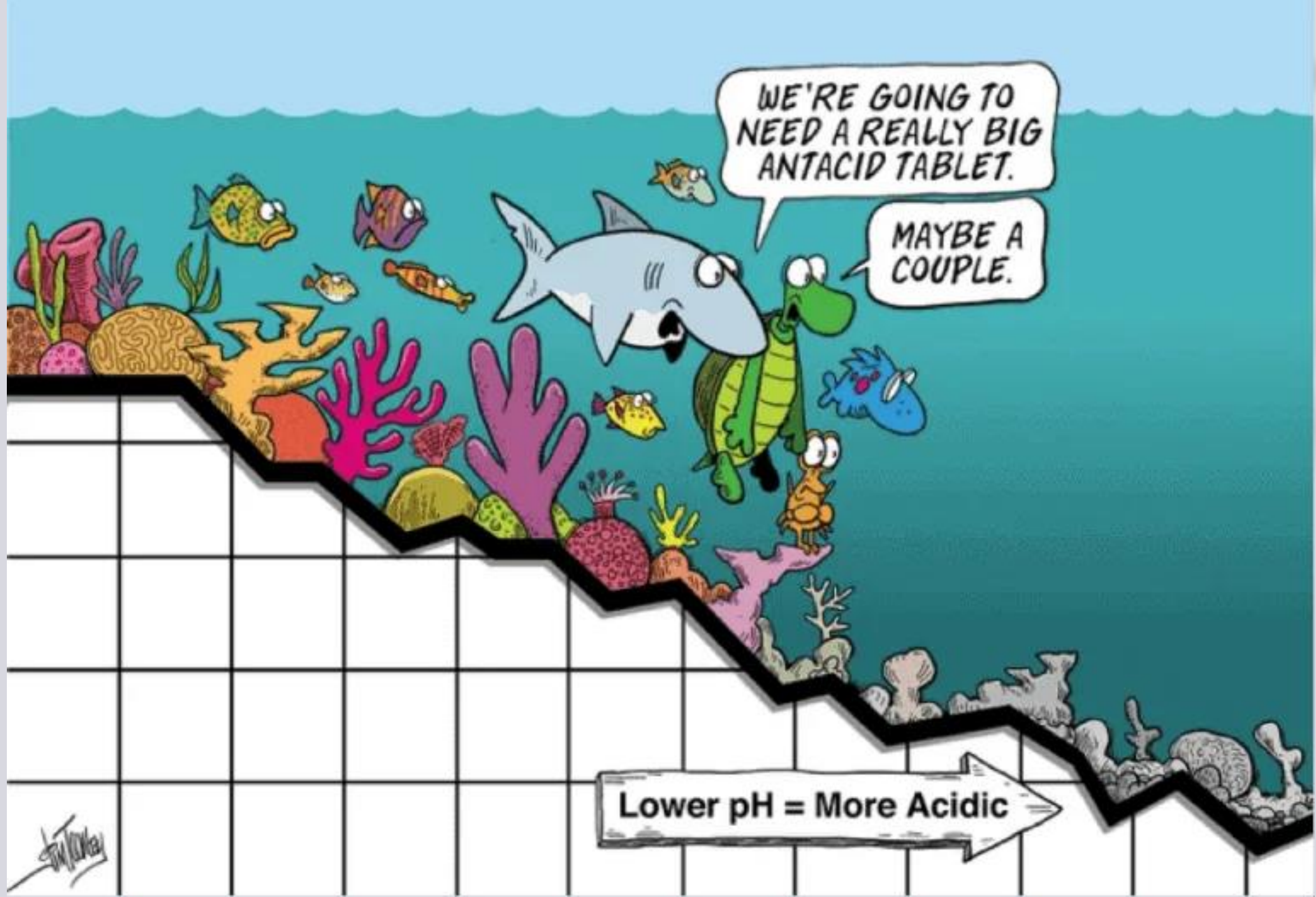
**Why Is It Better
for the Earth?**

How does climate change affect oceans and marine life?

- In the past 30 years, marine heatwaves are estimated to have increased by more than 50%.
- Globally, ocean temperatures are predicted to increase by 1-4°C by 2100.
- These changes are impacting marine life. Sudden rises in temperature and acidification can lead to the loss of marine habitats and species. Shifting ocean currents and warming waters are changing the distribution of fish stocks and altering the structure of ecosystems.

Global sea surface temperature anomaly





WE'RE GOING TO
NEED A REALLY BIG
ANTACID TABLET.

MAYBE A
COUPLE.

Lower pH = More Acidic

Stu Kuper

Climate change is having a profound impact on our oceans and marine life. Its effects are changing the distribution of fish stocks and their food.

- Balancing economic and environmental priorities is now even more important to keep our oceans healthy and full of fish for the future - we can only do this by fishing sustainably.



Climate change is causing streams to warm, shrinking brook trout range because of their requirement for cold water. Climate change impacts have exacerbated other external stressors, like deforestation and land development in their native regions. Eastern brook trout are also sensitive to water pollution caused by fertilizer runoff and acid rainfall caused by air pollution which have resulted in pH levels being too low to sustain them, according to the U.S Fish and Wildlife Service. These impacts are directly making their habitats unsuitable and affecting their spawning capabilities, meaning less brook trout in the future.

60%

of wild caught fish
were found to have
microplastics
in their organs



Centuries of overfishing have taken their toll on the environment. Here, fishers haul a huge harvest off the coast of Iceland.





WORLD fisheries situation



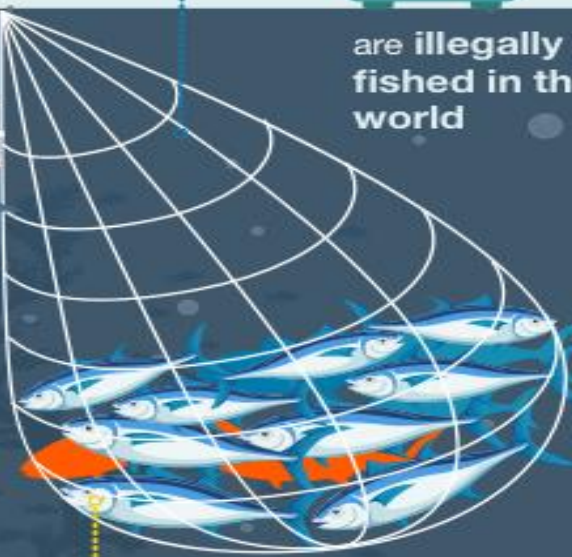
31% of **FISH POPULATIONS** IN THE WORLD ARE **OVEREXPLOITED**



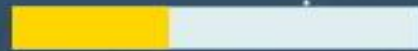
26 MILLION TONNES



are illegally fished in the world



of fish stocks in the world **have now reached their maximum exploitation**



30% of world fisheries are **not reported** to the United Nations (UN)

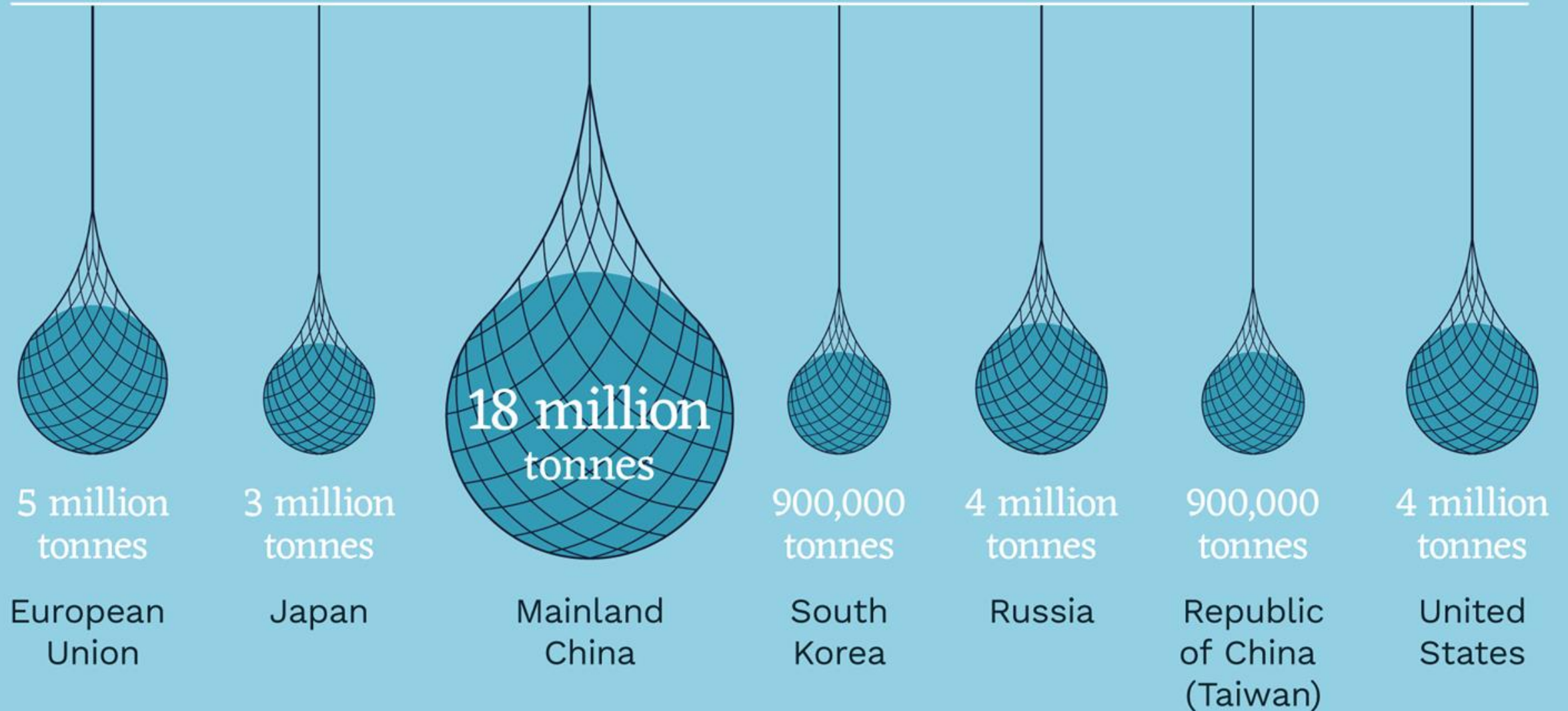
FISHING STOCKS categorised as over exploited **INCREASED**



20% in the last 15 years



Half of the world's fish is caught by seven major economies/blocs:

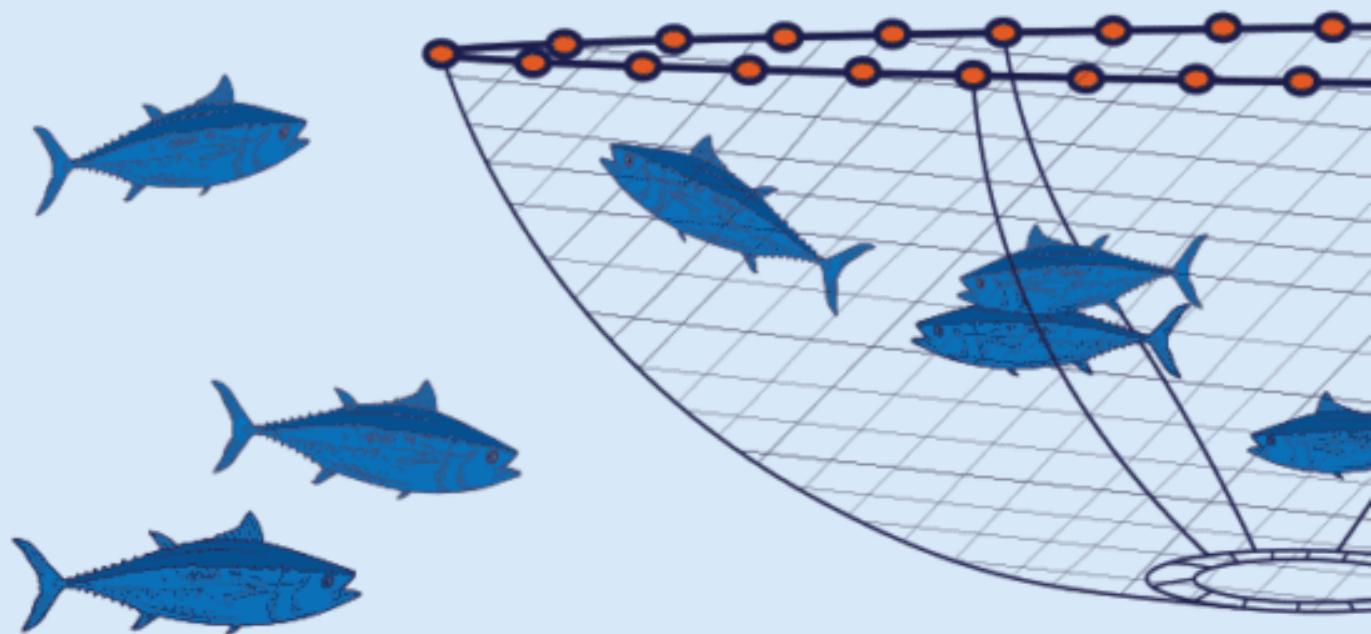




Chinese-owned and flagged ships are the largest distance-water fishing fleet in the world ...7000 ships... they fish every ocean.



These 10 nations account for 70% of all harmful fisheries subsidies



*If considered as a bloc, the EU would be the third-largest provider (\$2.0 billion).

[OCEANA.ORG/TOI](https://oceanconservancy.org/toi)

Agreement on Fisheries Subsidies

The WTO Agreement on Fisheries Subsidies, adopted at the 12th Ministerial Conference (MC12) on 17 June 2022, marks a major step forward for ocean sustainability by prohibiting harmful fisheries subsidies, which are a key factor in the widespread depletion of the world's fish stocks. This will result in no longer allowing countries to subsidize the overfishing of the oceans.

The US should deny countries access to the American market unless they can document that it was sourced entirely free of forced labor.



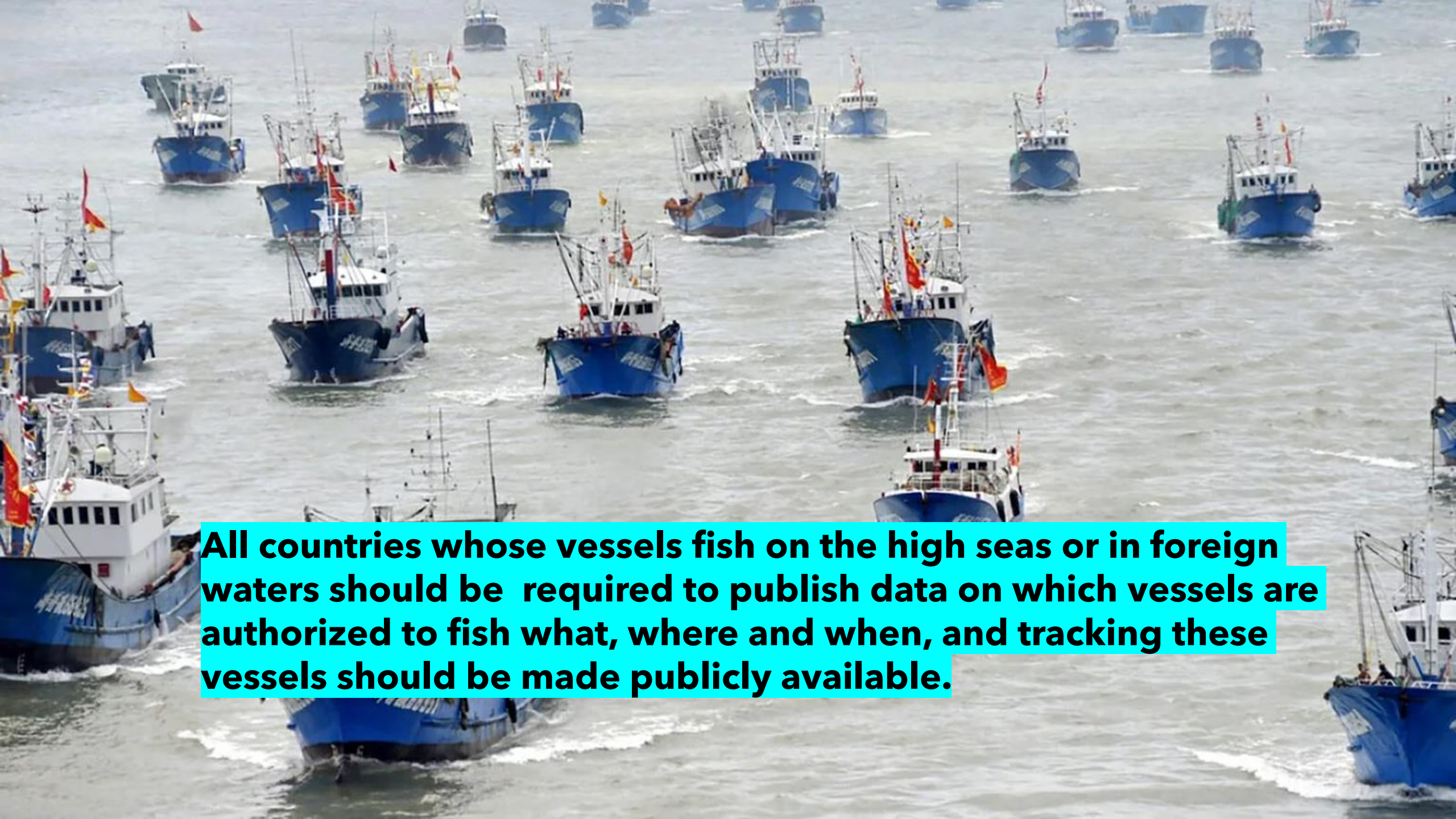
Do you eat at one of the more than 400,000 restaurants supplied by SYSCO?

- **Almost certainly.**
- **If so you've likely been served or sold seafood caught by Indonesian forced-labor victims on Chinese vessels or processed in China by Uyghurs.**
- **Some 79% of the seafood sold in the US is imported, according to the latest data from the National Oceanic and Atmospheric Administration. China alone supplies 10% of American seafood imports.**

Seafood: COOL! (Country of Origin Labeling)



Not only grocery stores but also restaurants, small markets and cafeterias should also be required to have COOL labeling of seafood.



All countries whose vessels fish on the high seas or in foreign waters should be required to publish data on which vessels are authorized to fish what, where and when, and tracking these vessels should be made publicly available.

SHARKS AND RAYS IN PERIL

1/4 OF SHARKS, RAYS AND CHIMAERAS ARE THREATENED

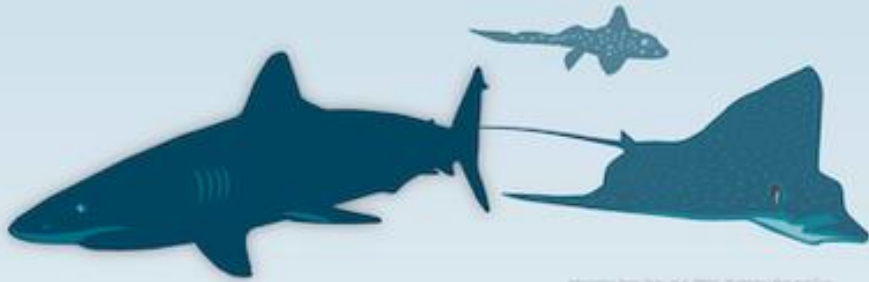
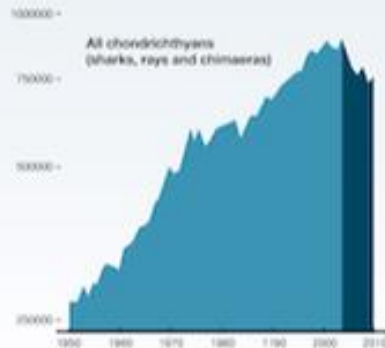


Illustration from Stepien et al. 2010, "Taxonomic Risk and Conservation of the World's Sharks and Rays" 2010

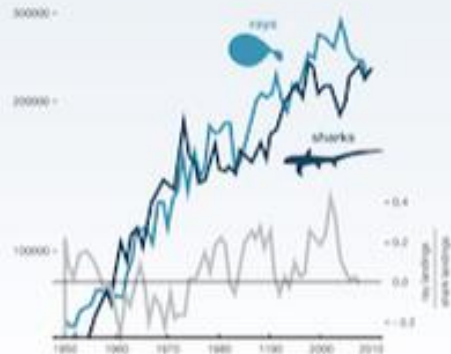
OVERFISHING THREATENS SHARKS AND RAYS

Around the world, overexploitation – through targeted fisheries and incidental catches – is taking a toll on chondrichthyan fishes (sharks, rays, and chimaeras). Rays are at greater risk than sharks. Habitat loss is also a major threat to many species.

Total catch, in tonnes, reported to the United Nations Food and Agriculture Organization (FAO)



Total catch of all taxonomically identified chondrichthyan fishes reported to the United Nations Food and Agriculture Organization (FAO), and the increasing contribution of rays to this catch



WHAT MAKES SHARKS SO VULNERABLE?

While intensive fishing is having an impact on all marine species, sharks are particularly affected because of their biology. Compared to commercial fish, they:

ARE SLOWER GROWING & LATER TO MATURE - as an extreme case the Greenland Shark can live ~400 years and doesn't reach sexual maturity until ~150 years! Many are killed before they've produced offspring.

HAVE LONGER PREGNANCIES - averaging between 9-12 months. The Greeneye Dogfish has the longest recorded pregnancy at 31 months!

PRODUCE FEWER YOUNG - varying from 2 pups for the Bigeye Thresher and up to 135 for the Blue Shark. Compare this to the reproduction potential of bony fish who release millions of eggs.

MAY NOT REPRODUCE EVERY YEAR - some species have a resting phase of 1-2 years.



Advantages of Sustainable Fishing

Sustainable fishing is a more artisanal and small-scale method with social, economic and environmental benefits, some of which are based on the FAO Code of Conduct for Responsible Fisheries. Some of these are summarized below:



Protects marine fauna

Sustainable fishing respects marine ecosystems and adapts to the reproductive rate of fish to maintain a balance and ensure the survival of all species.



Uses selective methods

Sustainable fishing rejects the indiscriminate capture of fry and endangered species or those without commercial value.



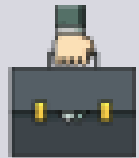
Avoids waste

In sustainable fishing, the bycatch is used, for example, to make fishmeal to minimize food waste.



Contributes to food security

Sustainable small-scale fisheries account for 66% of all catches destined directly for human consumption.



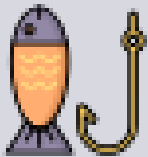
Generates jobs and is more responsible

Sustainable artisanal fishing provides employment for 90% of the global fishing industry and is the basis for the development of small fishing communities.



Reduces pollution

Sustainable fishing generates less waste, minimises energy consumption and reduces the use of chemicals that damage the ozone layer.



Certifies the sustainability of the catches

International standards such as the MSC (Marine Stewardship Council) Standard determine whether a fishery is sustainable and is being well-managed.

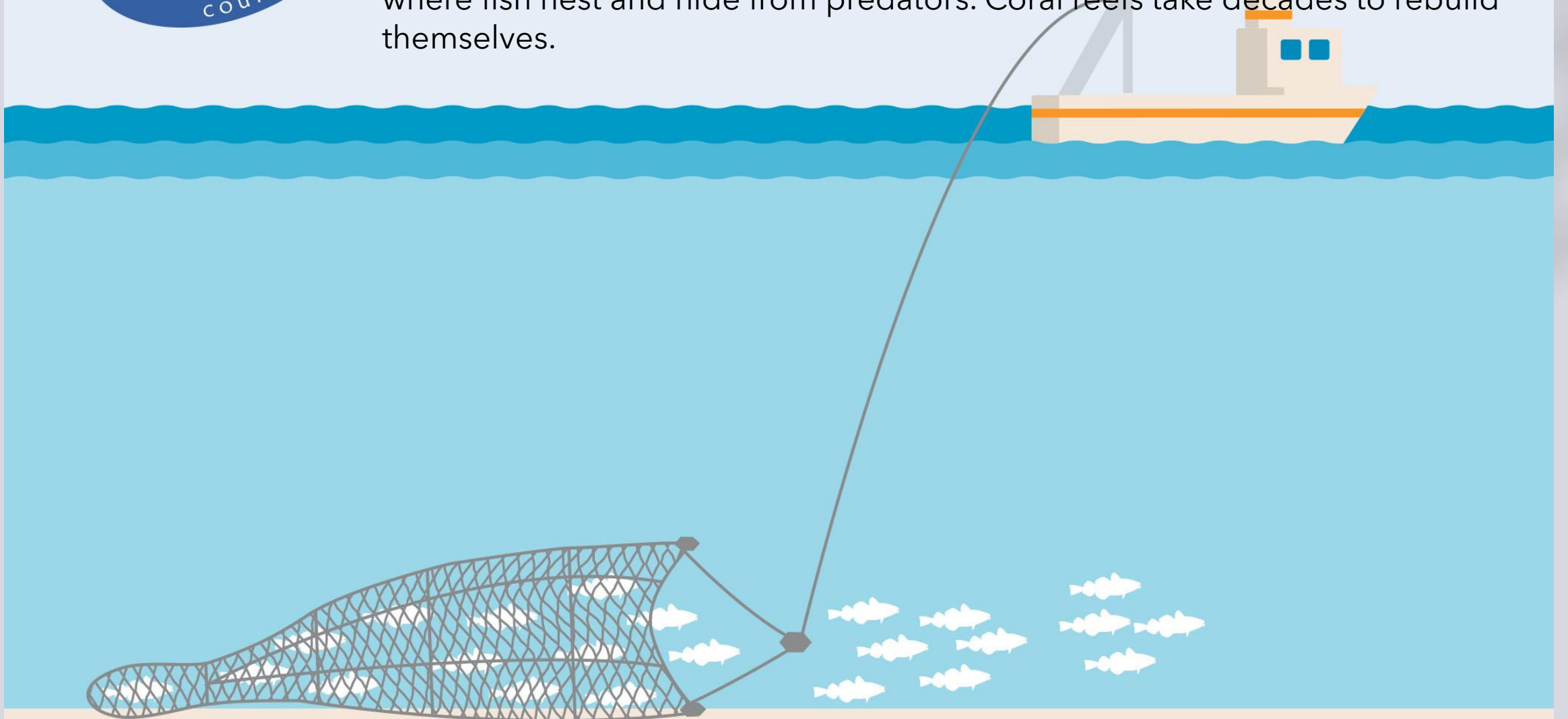


The opposite of sustainable fishing is the so-called **destructive fishing**. The latter uses more aggressive methods – such as trawling –, makes indiscriminate catches and prioritizes productivity over environmental protection. In addition, it only uses 60% of each catch and uses polluting gases such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs).

Bottom Trawling- Verdict? BAD



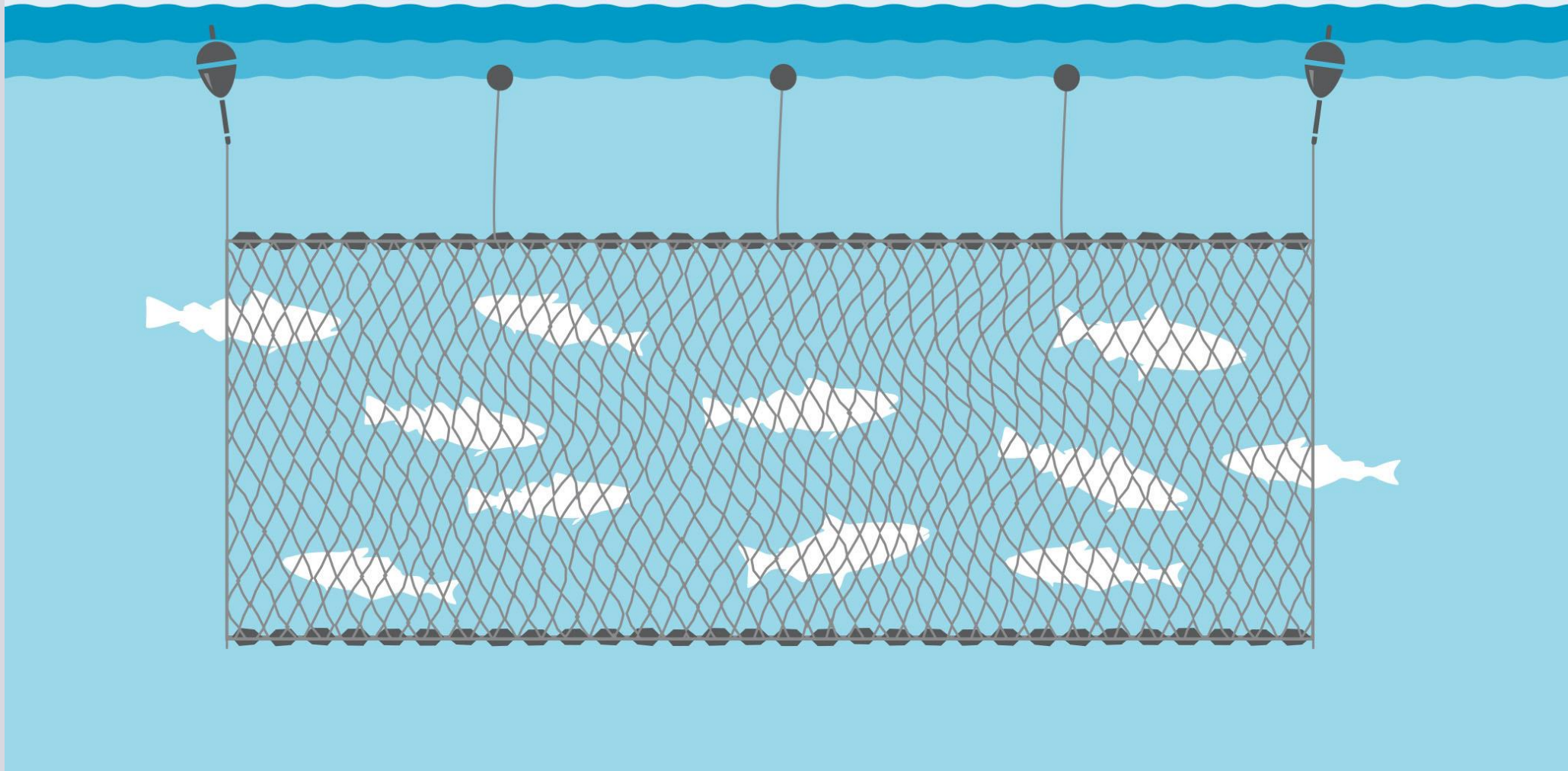
Definition: Bottom Trawlers are cone shaped nets with weights that are dragged by boats. The least discriminatory type of fishing, bottom trawlers scrape along the ocean floor sweeping up coral reefs and rock gardens where fish nest and hide from predators. Coral reefs take decades to rebuild themselves.





Gillnets- Verdict? BAD

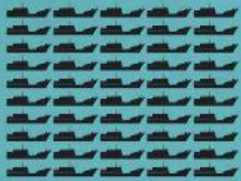
Definition: Gillnets are a wall of netting that hangs in the water and catches fish by getting them entangled in the holes. They are designed so that a fish can get its head, but not its whole body through the hole. When they try to back out their gills will get caught in the net.



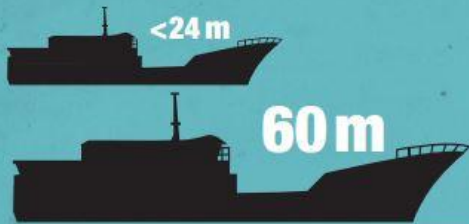
LONGLINER IN OPERATION

LONGLINE FISHING BOATS
 Nobody knows exactly how many longline boats are out in the ocean but estimates indicate there are over 5000 longline vessels fishing for tuna and tuna like species in the world.

OVER 5000 LONGLINE VESSELS



SIZE
 Longline fishing boats can be up to 60m long, however, most are so-called small scale vessels of less than 24m.



LONGLINES + HOOKS
 up to 150 km long



up to 3000 hooks

MARINE ANIMALS DYING
 300,000 sea turtles and at least 160,000 seabirds and millions of sharks die annually in longline fisheries.



OVERFISHING



All target tuna species now either overfished, being overfished or depleted.

SHARK FINNING

Sharks often targeted for their high value fins make up as much 50% of catches in some longline fisheries.



UP TO **50%**
 OF CATCHES CAN BE SHARKS

PIRATE FISHING AND TRANSHIPMENT
 Many vessels transfer their catches at sea resulting in high amounts of unreported and illegal fishing.



MISTREATMENT OF CREW
 Vessels can stay at sea for several years keeping their crew in a captive environment.

1 YEAR | 2 YEARS | 3 YEARS



SOLUTIONS

- Reduce fishing capacity and enforce sustainable catch limits
- Ban all at-sea transshipments
- proper monitoring and 100% observer coverage

MITIGATE BY-CATCH BY:

- Not targeting sharks and banning shark finning
- Use circle hooks and other best practise mitigation methods

Longlines- Verdict? BAD

Definition: Longlines are made up of long fishing poles (main lines) with a second line beneath it. The second line is clipped onto the main line at intervals and has several baited hooks on it. Depending on the fishery the longline can have up to 3,000 hooks on it and be 150 km long.

Why Invest in the Transition to Sustainable Fisheries?



3 billion people
rely on fish as their
primary source of protein

260 million people

globally are employed directly or
indirectly in fishing. **97%**
of these are in
developing
countries

Fisheries contribute
\$274 billion
a year to
global GDP

75%
of global
fisheries are
underperforming

Fisheries could
be worth an
extra \$50 billion
every year if managed
sustainably

The value of the
Pacific Halibut
fishery has

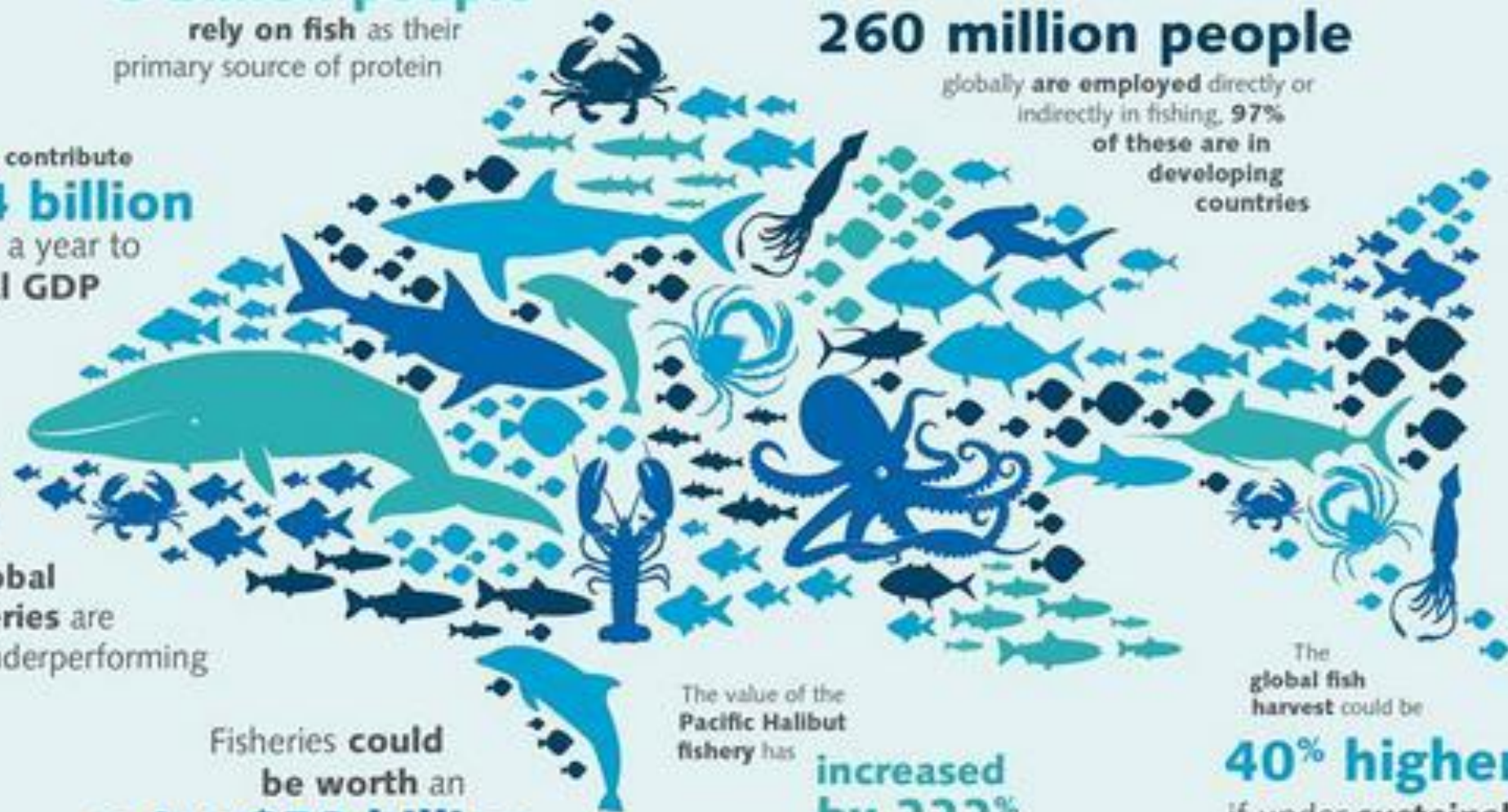
**increased
by 222%**

since the introduction of
sustainable management
measures

The
global fish
harvest could be

40% higher

if under sustainable
management



5 of the Least Sustainable Fish to Eat

SKIP



Striped bass



Atlantic cod



Mahi-mahi



Octopus



Spiny lobster



INSTEAD CHOOSE



Regular bass



Pacific cod



New Zealand salmon



California squid



King crab



10 of the most sustainable fish to eat

- **U.S. catfish**
- **Farmed clams**
- **Farmed Arctic char**
- **U.S. farmed bass**
- **Alaskan Pacific cod**
- **New Zealand salmon**
- **U.S. farmed shrimp**
- **U.S. farmed trout**
- **Albacore tuna**
- **King, snow and tanner Alaskan crab**

Aquaculture is a controversial fishing method that puts less stress on natural fisheries. However, critics say, the energy and resources required to maintain a fish farm may outweigh its benefits. These fish were harvested from a fish farm in Puducherry, India.



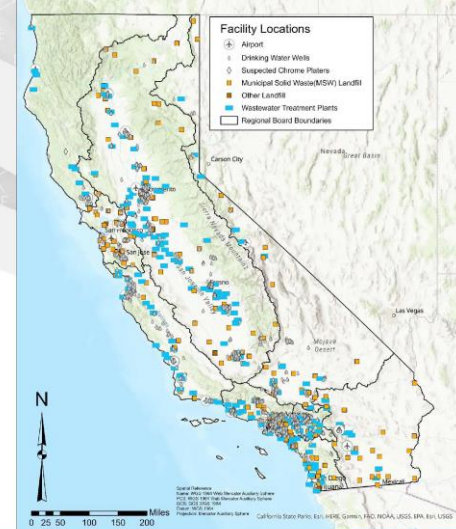
Local & Sustainable



**All information and images from Monterey Bay Aquarium Seafood Watch Reports*

Staggering amounts of toxic “forever chemicals” have been found in freshwater fish, but there is no federal guidance on what is a safe amount to eat. Eating a single serving of freshwater fish can be the equivalent of drinking water contaminated with high levels of PFAS for a year, according to a recent study from the Environmental Working Group.

Occurrence of PFAS at Industries is Being Gathered State-Wide



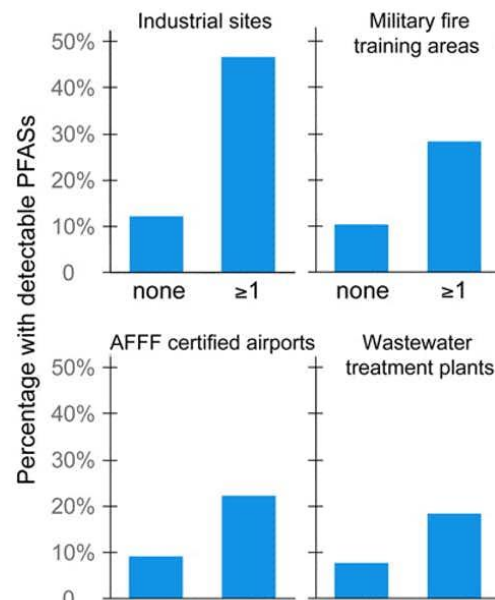
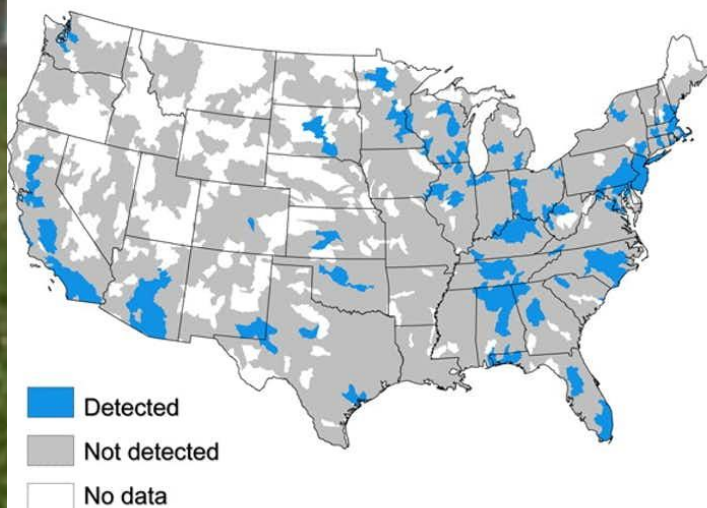
April 2022

4

California Water Boards

DO NOT EAT THE FISH

Hydrological units with detectable PFASs



Enjoy swimming, boating, and catch and release fishing. Touching the water is not a health concern.

Fishing like there's ^a~~no~~ tomorrow
That's what sustainable means



Look for this label on your seafood



Monterey Bay Aquarium: Seafood Watch Pocket Guides

- <https://www.seafoodwatch.org/recommendations/download-consumer-guides/national-consumer-guide>

- Best Choices -- Good Alternatives - Avoid

Buy first. These options come from fisheries or aquaculture operations that are well managed and caught or farmed responsibly.