(https://news.ubc.ca/wp-content/uploads/2023/08/fer-nando-vm5fZxsv-NI-unsplash-scaled.jpg)

Fish buffered from recent marine heatwaves, showing there's still time to act on climate change

SCIENCE, HEALTH & TECHNOLOGY

Aug 30, 2023 | For more information, contact **Alex Walls**   (#contact-box)

Fish were surprisingly resilient to marine heatwaves before 2019, highlighting the need to keep seas from warming further, according to new research published today in *Nature*   (https://www.nature.com/articles/s41586-023-06449-y) .

Marine heatwaves can have devastating effects on marine ecosystems and have been linked to widespread coral bleaching, harmful algal blooms, and abrupt declines in fish species. However, marine heatwaves before 2019 had little to no effect on the amount and type of marine fish affected, demonstrating that oceans have some resilience left if we can keep to 2019 temperatures, the researchers say.

"There is an emerging sense that the oceans do have some resilience, and while they are changing in response to climate change, we don't see evidence that marine heatwaves are wiping out fisheries," said lead author Dr. Alexa Fredston, assistant professor of ocean sciences at UC Santa Cruz.

The study used data from scientific bottom trawl surveys in North America and Europe from 1993 to 2019, which included 248 marine heatwaves.

The researchers looked for effects on the number and types of fish in the year following a marine heatwave. To their surprise, they found that marine heatwaves in general could not be distinguished from natural variability of ocean life.

"Our findings contrast with my previous studies projecting that heatwaves under a high emissions scenario will have major effects this century, including a six per cent drop in potential catches per year per country, or hundreds of thousands of tonnes of fish, on top of projected decreases from climate change," says co-author Dr. William Cheung, professor in the UBC Institute for Oceans and Fisheries (IOF). "It could be that marine fish will have a better chance to survive through marine heatwaves if we stay the course and keep global warming to 1.5 degrees Celsius or less."

Although declines in biomass did occur after some marine heatwaves, the researchers say these cases were the exception, not the rule. "Marine populations vary enormously in nature as it is, and in some places, fish populations increased after a heatwave, while in others, they declined. We found no overall, consistent effects, across populations which suggests that the impacts of marine heatwaves vary substantially depending on local conditions," says Dr. Juliano Palacios Abrantes, a postdoctoral fellow at UBC IOF.

In addition to the surveys, catch data from the Sea Around Us database were used to test trends in biomass, or the weight of a given fish population in the water, said co-author Maria 'Deng' Palomares, project manager of the *Sea Around Us* at UBC. "Our research did not pick any strong signal that the biomass of fish populations was adversely affected by marine heatwaves. There are numerous drivers of course, and it might well be that there are hidden signals that were not picked up."

The researchers also looked at whether marine heatwaves were causing changes in the composition of fish communities, such as a loss of species associated with cold water and an increase in species associated with warm water, known as "tropicalization." "Tropicalization has been associated with long-term warming of the oceans, but we saw no consistent signature of that associated with marine heatwaves," Dr. Fredston said.

The data set included some notable examples of marine heatwaves, such as the 2014-2016 marine heatwave in the Northeast Pacific known as "the Blob," one of the largest on record. While "the Blob" led to a 22% loss of biomass in the Gulf of Alaska, a 2012 marine heatwave in the Northwest Atlantic led to a 70% biomass gain. The authors also noted that these were not large changes compared to natural variability in biomass, and similar effects were not seen after most other marine heatwaves.

The results highlight that the impacts of marine heatwaves on fish are sporadic, Dr. Cheung said. "Thus, the increasing frequency of marine heatwaves with intensifying global warming will likely heighten the occurrences of declines in fish. A safe bet to avoid loss of marine life is to reduce the number of marine heatwaves by mitigating climate change. "

Interview language(s): English (Cheung, Palacios-Abrantes), Cantonese (Cheung), Spanish (Palacios-Abrantes), Portuguese (Palacios-Abrantes)
Find other stories about: Dr. Juliano Palacios-Abrantes (https://news.ubc.ca/tag/dr-juliano-palacios-abrantes/) , Dr. William Cheung (https://news.ubc.ca/tag/dr-william-cheung/) , fish (https://news.ubc.ca/tag/fish/) , fisheries (https://news.ubc.ca/tag/fisheries/) , Marine heatwaves (https://news.ubc.ca/tag/marine-heatwaves/)

Contact

Alex Walls
UBC Media Relations
Tel: 778-984-6173
Email: alex.walls@ubc.ca   (mailto:alex.walls@ubc.ca)

News Tips

 (https://news.ubc.ca/category/news-tips/)

Looking for story ideas?
Check out our latest News Tips! (https://news.ubc.ca/category/news-tips/)

Find UBC Experts

An information source that gives journalists access to UBC's expertise.

Enter search terms

Search

Explore

ARTS & HUMANITIES (HTTPS://NEWS.UBC.CA/CATEGORY/BEATS/ARTS-HUMANITIES/)

BUSINESS, LAW & SOCIETY (HTTPS://NEWS.UBC.CA/CATEGORY/BEATS/BUSINESS-LAW-SOCIETY/)

SCIENCE, HEALTH & TECHNOLOGY (HTTPS://NEWS.UBC.CA/CATEGORY/BEATS/SCIENCE-HEALTH-TECHNOLOGY/)

UNIVERSITY NEWS (HTTPS://NEWS.UBC.CA/CATEGORY/BEATS/UNIVERSITY-NEWS/)

Q&AS (HTTPS://NEWS.UBC.CA/CATEGORY/QA-S/)

MEDIA ADVISORIES (HTTPS://NEWS.UBC.CA/CATEGORY/MEDIA-ADVISORIES/)

LATEST NEWS (HTTPS://NEWS.UBC.CA/CATEGORY/LATEST-NEWS/)

Subscribe & receive news by e-mail ✉ (/media-resources/digital-subscriptions/)

View UBC's Okanagan News Room (https://news.ok.ubc.ca/)

(https://www.facebook.com/ubcpublicaffairs/)