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**Timely UCSB Research May Help Managers Answer New Call from Federal Watchdog for Implementing Management Actions for More Resilient U.S. Fisheries**

*GAO urges fisheries managers to take management action to address climate change*

(DATELINE)— The University of California-Santa Barbara (UCSB) released [new research](https://www.researchsquare.com/article/rs-1979323/v1) this month that provides key recommendations for helping U.S. fisheries adapt to the impacts of climate change, and protect the livelihoods of fishermen. The UCSB recommendations come on the heels of new calls from the U.S. Government Accountability Office (GAO) for regulators to take action on climate change in their fishery management plans.

The [new report](https://www.gao.gov/products/gao-22-105132) from the GAO says U.S. fishing communities can enhance resilience if federal managers work with regional management bodies to improve data streams and use climate information in fisheries management decisions. The GAO report recommends that the federal fishery managers (1) regularly collect and share information on fishery management activities for enhancing climate resilience and (2) work with Regional Fishery Management Councils to identify and prioritize climate resilience opportunities and develop a plan to implement them.

“Our report lays out impactful steps fisheries managers can take now that can help improve the climate resilience of the nation’s fisheries and the communities that depend on them.,” said report lead author Chris Free, a research scientist at UCSB.

Free and the team of researchers at UCSB evaluated the management of over 500 fisheries across the United States, specifically examining what’s known as Harvest Control Rules (HCRs)—the rules that guide how much of a stock can be fished. The authors generated a suite of design recommendations for HCRs that can help ensure sustainable fisheries and fishing communities in a changing climate.

Across coasts, U.S. fishing communities are already dealing with the impacts of climate change. The UCSB report identifies actionable recommendations that can help in both the short and long term. These include using catch limits based on stock population size, accounting for potential impacts of climate change into the rules, and evaluating which management approaches are best for a specific fishery.

View the study [here](https://www.researchsquare.com/article/rs-1979323/v1) and a one-page summary of recommendations below.

* **Adjust fishing rates based on stock status**. Too often managers will simply allow a certain percentage of a fish stock to be caught regardless of the current size of the population. But use of what’s known as *ramped harvest control rules* aligns the percentage that can be caught with the current size of the stock. This helps avoid overfishing and makes harvest levels more responsive to changing conditions.
* **Better buffers**. Managers need to fine tune and adapt the precautionary buffers that are used when calculating catch limits. Precautionary buffers essentially set the catch limits lower than the maximum that could be caught before the stock is overfished. This helps avoid overfishing given increasing uncertainties due to climate change.
* **Some rules are better than none.** Even when budgets don’t allow for full stock assessments, managers can use indicators of stock health – like information from an ecosystem monitoring survey – to create harvest control rules that take current stock size into account, maintaining profits and reducing the risk of overfishing.
* **Consider climate change in the management of data-limited stocks**. Multiple tools, including climate vulnerability assessment, can be used to determine catch limits that consider climate change for even the most data-limited stocks.
* **Deprioritize rules that explicitly incorporate environmental factors.** Some species are known to do better under certain environmental conditions (like water temperature) which makes it tempting to adjust harvest strategies based on those conditions. But ecosystems are complicated, and relationships between stock size and environmental condition are often more challenging to account for than anticipated. In most circumstances, it is more effective to base harvest rules on stock abundance data at this point.
* **Explore ecosystem-based catch limits.** Instead of HCRs that are specific to a single species, managers can consider catch limits that account for the interactions between many species within an ecosystem.
* **Compare strategies.** A tool known as Management Strategy Evaluation (or MSE) can help managers and stakeholders transparently compare how different harvest strategies can meet the goals of the fishery and the comparative risks associated with each.

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