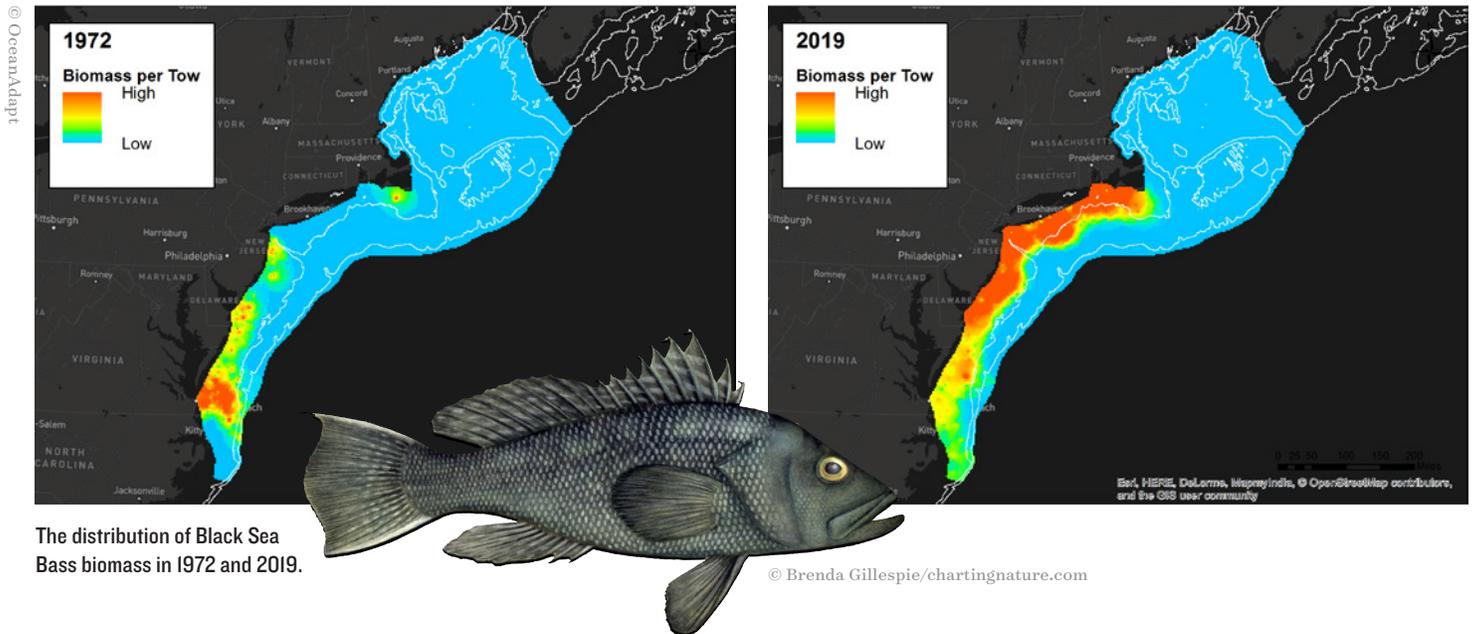


FACT SHEET

ON THE MOVE: HOW FISHERIES POLICY CAN ADDRESS SHIFTING FISH STOCKS

Our ocean is undergoing rapid transformations due to climate change, including rising acidity, shifting currents, and warming waters.¹ Fish, which are cold blooded and temperature sensitive, are responding by moving to cooler waters.²

The scale of this mass migration is striking. At least 70 percent of the commonly caught fish stocks along the U.S. Atlantic coast have shifted north or to deeper waters over the past 40 years.³ If climate change continues at its current rate, scientists predict some fish assemblages in the United States will have moved up to 1,000 miles by the century's end.⁴



The distribution of Black Sea Bass biomass in 1972 and 2019.

These changes have come so rapidly that they are outpacing fisheries science and policy. Climate-driven range shift creates a series of novel challenges for our fisheries management system. Federal fisheries policy must adapt and respond in order to ensure sustainability, preserve jobs, and maintain this healthy food supply. These challenges can be dealt with by improving federal fisheries policy in several specific ways:

INVEST MORE IN RESEARCH ON SHIFTING STOCKS

Successfully managing fish stocks requires sound science. But geographic shifts in fish populations can make fisheries science more difficult. Routine fish surveys that have been taken at the same time and place for many years may no longer fully capture an accurate picture of the population. With limited information, it becomes more difficult to know how a fish population is behaving, such as whether it is declining in one spot and increasing in another, or whether populations are splitting apart or merging.⁵

© Robert F. Bukaty/AP



Inaccurate assumptions about these changes can lead scientists to overestimate or underestimate the abundance of fish, which can lead to undesirable fishing levels. The chief concern is that we will begin to fish at levels significantly higher than what a given population can sustain, undoing decades of hard work to rebuild our fisheries.

To prevent this, we must enhance data collection and research programs that target fish populations on the move. As part of its strategy for developing climate-ready fisheries, NOAA Fisheries has laid out a comprehensive plan to enhance ecosystem monitoring and to better understand and project climate impacts on key fisheries.⁶ However, this plan requires additional financial support.

RETHINK THE WAY WE REGULATE NEW FISHERIES

Federal regulations currently allow the creation of new fisheries with minimal oversight.⁷ This default green light for fishing lets new fisheries develop without adequate science or management and risks unsustainable and costly boom-and-bust cycles of fishery mismanagement.

For example, in less than a decade, spiny dogfish along the Atlantic coast went from a minor fishery to one netting 60 million pounds a year—without triggering any regulatory oversight. The result was overharvesting and the eventual implementation of stringent catch limits that put gillnetters and fish processors out of work.⁸ Likewise, a fishery developed seemingly overnight for a small forage fish called chub mackerel, without any stock assessment or information on sustainable catch levels. In 2012 commercial fishermen caught 312,777 pounds of Atlantic chub mackerel; this haul spiked to more than five million pounds in 2013.⁹ Lacking any scientific guidance, such a rapid rise in catch could jeopardize the future of a valuable fishery.

Climate change will exacerbate these risks to emerging fisheries. As a fish population moves into a new location, fishermen often are eager to catch the newly available resource. And current federal law allows heavy fishing of newly arriving populations of fish precisely when they are trying to colonize a new area, potentially delaying or preventing the establishment of a productive, long-term fishery.¹⁰

In this era of climate-driven range shift, policymakers should reverse this risky policy and replace it with a regulatory pathway for emerging fisheries that ensures their sustainability. Key elements of such a policy would include a definition of what it means to be managed, a list of all managed species, and a defined set of procedures for bringing unmanaged species into management.

REQUIRE MANAGEMENT REGIONS TO WORK TOGETHER

Federal waters are divided into management regions with different governing bodies. However, federal law currently lacks adequate requirements for coordination across management regions, which means that when a fish population shifts its range and crosses a management boundary, it can lead to jurisdictional confusion and a regulatory vacuum.

For example, blueline tilefish have historically been found primarily in the coastal waters of the southeastern United States. When they began to be caught in substantial numbers in the mid-Atlantic region in the early 2010s,



© Khairil Azhar Jumes/Shutterstock



states and regional councils did not immediately coordinate their handling of the species. As a result, this fishery was left exposed to heavy and unregulated fishing. It took federal emergency regulatory action to close harvest loopholes and safeguard the tilefish.¹¹

Conflicts can also arise over stocks that already straddle management boundaries but are undergoing a spatial redistribution. Summer flounder, scup, and black sea bass are currently managed across the entire Atlantic coast by the Mid-Atlantic Fishery Management Council. But as these species moved northward, the New England Council requested management authority.¹² The Mid-Atlantic Council rejected the request, although it did make small concessions that have at least temporarily dissipated the conflict. Range shift for these species is ongoing, however, and tensions around their management are likely to flare up again.

To avoid these conflicts and jurisdictional gaps, policymakers should consider requiring comprehensive management coverage for straddling stocks, as well as a framework for cross-regional cooperation and the handing-off of authority as stocks shift range across management boundaries.

FACILITATE RESOLUTION OF ALLOCATION CONFLICTS

Fishery managers allocate catch within a fishery among different states through quotas, which are usually based on historic catch data. However, when fish populations move into new areas, historical allocations of catch become strained and unstable.

When fish populations shift their range, it can leave invested communities in a quandary. Coastal communities build multimillion-dollar fishing fleets, onshore processing infrastructure, and a network of related businesses to

support specific fisheries. When stocks migrate, these fishing communities are left to either reinvent themselves or venture farther to find the seafood they have traditionally pursued.¹³ They are understandably reluctant to relinquish the historic allocations in which they are so invested. At the same time, fishermen seeing newly arrived species in their nets may view those species as an economic opportunity. This can lead to a dynamic in which multiple users lay claim to the same fish.

For example, as summer flounder populations move north, regulations still require that roughly half of the fish be landed in southern states.¹⁴ Black sea bass have also shifted north, yet an outsize portion of the allowable landings are allocated to a handful of mid-Atlantic states.¹⁵ The misalignment between fish allocations and their geography is generating frustration in the fleets, causing fish to be discarded, and even leading to legal action. New York has sued the federal government for a bigger slice of the summer flounder catch, arguing that 80 percent of these bottom fish are caught off Long Island, while the state has just 7 percent of the annual quota.¹⁶

Allocation conflicts generate political pressure and can threaten the conservation provisions in the law. In 2017 the secretary of commerce acceded to New Jersey's request for more lenient regulations for summer flounder caught in state waters, despite scientists' warnings of a high risk of overfishing.¹⁷

Given the increase in allocation conflict expected as range shift redistributes our nation's fish stocks, policy makers should consider providing guidance on how to address these changes. Possibilities could include incorporating climate change as a factor in allocation decisions, or conducting reallocations in cases of range shift across management boundaries. More sweeping solutions, like an independent body for making allocation decision, are also possible.

ENDNOTES

- 1 Intergovernmental Panel on Climate Change, *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, H.-O. Pörtner et al., eds., 2019, https://www.ipcc.ch/site/assets/uploads/sites/3/2019/12/SROCC_FullReport_FINAL.pdf.
- 2 Malin L. Pinsky et al., “Marine Taxa Track Local Climate Velocities,” *Science* 341, no. 6151 (2013): 1239-1242, <https://science.sciencemag.org/content/341/6151/1239>.
- 3 Janet A. Nye, “Changing Spatial Distribution of Fish Stocks in Relation to Climate and Population Size on the Northeast United States Continental Shelf,” *Marine Ecological Progress Series* 393 (2009): 111-29, <https://doi.org/10.3354/meps08220>.
- 4 James W. Morley et al., “Projecting Shifts in Thermal Habitat for 686 Species on the North American Continental Shelf,” *PLoS ONE* 13 (2018): e0196127, <https://doi.org/10.1371/journal.pone.0196127>.
- 5 Jason Link, Janet Nye, and Jon Hare, “Guidelines for Incorporating Fish Distribution Shifts Into a Fisheries Management Context,” *Fish and Fisheries* 12, no. 4 (2011): 461-69, <https://doi.org/10.1111/j.1467-2979.2010.00398.x>.
- 6 Jason Link, Roger Griffis, and Shalin Busch (eds.), *NOAA Fisheries Climate Science Strategy*, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-155, August 2015, https://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/NCSS_Final.pdf.
- 7 See Magnuson-Stevens Fisheries Conservation and Management Act, 16 U.S.C. § 1855(a).
- 8 Mid-Atlantic Fishery Management Council and New England Fishery Management Council, *Spiny Dogfish Fishery Management Plan*, February 1999, https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/53e3c49ee4b08bd3408a6a50/1407435934901/Spiny_Dogfish_FMP.pdf.
- 9 Joseph Gordon, “With Chub Mackerel Plan, Managers Can Get It Right From the Start,” Pew Charitable Trusts, November 30, 2018, <https://www.pewtrusts.org/en/research-and-analysis/articles/2018/11/30/with-chub-mackerel-plan-managers-can-get-it-right-from-the-start>.
- 10 Malin L. Pinsky and Nathan J. Mantua, “Emerging Adaptation Approaches For Climate-Ready Fisheries Management,” *Oceanography* 27, no. 4 (2014): 146-59, <https://doi.org/10.5670/oceanog.2014.93>.
- 11 Malin L. Pinsky et al., “Preparing Ocean Governance for Species on the Move,” *Science* 360, no. 3694 (2018): 1189-91, <https://doi.org/10.1126/science.aat2360>.
- 12 Letter from Thomas A. Nies, executive director, New England Fishery Management Council, to John Bullard, Greater Atlantic regional administrator, National Marine Fisheries Service, July 5, 2016. Letter from David E. Pierce, director, Massachusetts Division of Marine Fisheries, to E.F. “Terry” Stockwell, chairman, New England Fishery Management Council, June 10, 2016.
- 13 Talia Young et al., “Adaptation Strategies of Coastal Fishing Communities as Species Shift Poleward,” *ICES Journal of Marine Science* 76, no. 1 (2019): 93-103, <https://doi.org/10.1093/icesjms/fsy140>.
- 14 Mid-Atlantic Fishery Management Council, “Summer Flounder: Commercial Allocation Modifications Fact Sheet,” March 2019, <https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5c993b7a104c7b839328ab19/1553546107064/SF+Allocation+Revisions+Fact+Sheet+March+2019.pdf>.
- 15 Jessica Kuesel, “2018 Review of the Atlantic States Marine Fisheries Commission Fishery Management Plan for the 2017 Black Sea Bass Fishery: Black Sea Bass (*Centropristis striata*),” Atlantic States Marine Fisheries Commission and Black Sea Bass Plan Review Team, 2018, <http://www.asmfc.org/uploads/file/5b72ee102018BlackSeaBassFMPreview.pdf>.
- 16 Leslie Kaufman, “Climate Change Is Reshaping Atlantic Fisheries And Sending This Fluke Fight to Court,” *Bloomberg Green*, February 18, 2020, <https://www.bloomberg.com/news/features/2020-02-18/climate-change-is-reshaping-atlantic-fisheries-and-sending-this-fluke-fight-to-court>.
- 17 Peggy Parker, “ASMFC Blasts Secretary Ross Decision on Summer Flounder in Favor of New Jersey’s Recreational Sector,” *SeafoodNews*, July 17, 2017, <https://www.seafoodnews.com/Story/1068827/ASMFC-Blasts-Secretary-Ross-Decision-on-Summer-Flounder-in-Favor-of-New-Jerseys-Recreational-Sector>.