Climate change increases risk of fisheries conflict

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A team of fisheries scientists and marine policy experts, led by a University of Rhode Island researcher, examined how climate change is affecting the ocean environment and found that the changing conditions

will likely result in increased fisheries-related conflicts and create new challenges in the management of global fisheries.

The team's research was published last month in the journal *Marine Policy*.

Elizabeth Mendenhall, URI assistant professor of marine affairs, said that ocean warming, acidification and sea level rise that are a direct result of climate change are causing populations of fish to shift, making fish increasingly scarce, shifting the boundaries of where nations can legally fish, and increasing the intensity of fishing pressure around the world. The result will be growing conflicts between individual fishermen, fishing communities, fishing nations and fishery managers.

"These conflicts exist at multiple scales," said Mendenhall, who is writing a book about geopolitics and ocean governance. "Some of it is one boat versus another, sometimes it's one country versus another, and it can get very complicated. It isn't just about overfishing any more. There are other drivers and other dynamics involved."

As warming temperatures shift fish populations to different areas, for instance, the bulk of those stocks may cross the borders of a nations' 200-mile exclusive economic zone, making it illegal for those who have fished those stocks for many years to pursue them any longer.

"We're seeing examples of fishermen crossing borders more often now because the stocks they feel they have a right to have shifted across the border," Mendenhall said.

Among the more challenging questions that climate change is raising for fishing nations is what happens when sea level rise submerges an island. Does that change the nation's maritime boundaries?

"It's an ongoing debate about whether you keep your maritime claim even though you have no land base to manage it from," said Mendenhall. "Or does your claim go away? There are a lot of nations that fish over long distances that are ready to exploit those areas if national boundaries no longer exist."

The tiny Japanese atoll of Okinotorishima is one such case. Located in the southernmost archipelago of Japan, its submergence is raising questions about whether Taiwan and China may legally fish in the area claimed by Japan.

"I argue that as sea level rises, Japan's argument gets weaker," said Mendenhall, noting that the countries have not challenged the boundaries based on the island's submergence yet. "The rules on where you can make your maritime claim are based on where the land is.

"The same problem applies to coastlines," she added. "Low-lying countries like Bangladesh and Vietnam could lose a lot of maritime territory as sea level rises. The outer edge of their claim could move closer to their coastline."

The research team makes a series of recommendations based on its findings designed to improve global fishery management. They recommend greater multilateral fishery monitoring, similar to what is in place off East Africa to combat piracy, which can help deter or catch illegal fishers, thereby reducing the chance that individual fishing boats will take matters into their own hands.

"We also suggest that marine protected areas be used, but it's critical that the area protected is one where habitats are still thriving despite climate change," Mendenhall said. "There is concern, however, that when you protect one area, it may displace the fishers to somewhere else and make the problem worse elsewhere. We need to think about the dynamics that

protected areas may cause and account for that in the site selection process."

Finally, the researchers recommend strengthening the global fisheries management regime by taking into account climate change and the new sources of fishery conflict. The management boundaries of many fish stocks were drawn decades ago, and some parts of the open ocean are not managed at all because no productive fish stocks were there many years ago, yet there may be fish stocks there in the future. Most importantly, they suggest that the regional fishery management organizations work together to develop coordinated governance systems to better manage fisheries as environmental conditions change and greater conflicts arise.

"These changes to how [regional fishery management organizations] manage fisheries, and how they coordinate and cooperate with one another, can make high seas fisheries management more resilient to shifts in stocks and users, and changes in relative abundance," the researchers conclude.

More information: Elizabeth Mendenhall et al, Climate change increases the risk of fisheries conflict, *Marine Policy* (2020). DOI: 10.1016/j.marpol.2020.103954

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