

Too hot to handle: Impacts of climate change on mussels

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Climate change is causing higher air and water temperatures along the east coast of the United States. These changes have shrunk the geographic region where blue mussels are able to survive, according to findings by University of South Carolina researchers published in the *Journal of Biogeography*.

Mytilus edulis, or blue [mussels](#), a popular seafood, used to live along the East Coast as far south as Cape Hatteras, North Carolina, but now exist only as far south as Lewes, Delaware, according to Sierra Jones, a PhD student in the Department of Biological Sciences at USC.

Most [plants and animals](#) have geographic ranges defined by northern and southern limits. In many cases, ranges are thought to be controlled by temperature, and if it becomes too hot, the limits will shift. However, linking changes in geographic range to changes in climate is difficult unless long-term records in distribution are compared to equally long-term records of weather.

Spanning over 300 miles of coastline, Jones and colleagues explored how survival of mussels changed across latitudes and decades with respect to temperature. As recently as sixty years ago, these mussels thrived as far south as North Carolina. Due to air and water temperature increases over the past sixty years, they no longer survive throughout the year south of Lewes, Delaware, and populations to the north now experience higher rates of mortality than in the past.

The findings are significant because they show that recent [climate change](#) is affecting the organisms along our coast. "These mussels are a very important part of the [food chain](#), help clean the water, and are farmed commercially. If temperatures continue to increase, we can expect range changes of species like blue mussels to continue, and the health of our oceans is at risk," said Jones.

"Understanding the link between organism and environment is essential for making predictions of how future climate change will affect species and ecosystems," concluded Jones. "Where organisms might be in the future is crucial to planning for marine reserves and the future of the fishing and aquaculture industries."

More information: Jones, S.J., Lima, F.P., and D. S. Wethey, "Rising environmental temperatures and biogeography: poleward range contraction of the blue mussel, *Mytilus edulis* L., in the western Atlantic," *Journal of Biogeography*, August 2010. [DOI 10.1111/j.1365-2699.2010.02386.x](#)

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