

# Increasing sea temperatures associated with higher bull shark abundance

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Bull shark (Bahamas). Credit: Wikimedia Commons, CC0

Increasing sea surface temperatures over the past 20 years in Mobile Bay—an estuary in the US state of Alabama—have coincided with five-fold increases in the abundance of juvenile bull sharks (*Carcharhinus leucas*), according to a study [published](#) in *Scientific Reports*.

Bull sharks are found globally in warm, shallow coastal waters in both fresh and saltwater environments. They help balance and maintain the health of coastal ecosystems by regulating prey populations. Along with [great white shark](#) (*Carcharodon carcharias*) and [tiger shark](#) (*Galeocerdo cuvier*), they are among the shark species that are most likely to negatively interact with humans.

Lindsay Mullins and colleagues measured changes in the distribution and abundance of bull sharks in Mobile Bay using data from 440 bull sharks captured and released during surveys conducted between 2003 and 2020. They investigated the environmental factors associated with these changes using remote sensing data collected throughout the same period.

The authors found that the number of individuals captured per hour of surveying increased five-fold between 2003 and 2020 and that all bull sharks surveyed during the study period were juveniles. This coincided with an increase in the mean sea surface temperature in Mobile Bay from 22.3 degrees Celsius in 2001 to 23 degrees in 2020.

Computer modeling performed by the authors revealed that sea surface temperatures above 22.5 degrees Celsius were associated with an increased likelihood of bull shark presence. The average probability of capturing a bull shark during surveys increased throughout Mobile Bay between 2003 and 2020, despite increases in coastal urbanization since 2000, and was highest near the city of Daphne and along the western shoreline of the bay.

The findings highlight the resilience of the juvenile [bull shark](#) population in Mobile Bay in response to [climate change](#) and urbanization; however, the authors note that it is unclear how the population may respond to further increases in sea surface temperature.

They speculate that the increasing abundance of bull sharks near the Alabama coastline could affect fishing opportunities—for example through sharks preying on fish caught on fishing lines—and could lead to increases in [human interactions](#) with bull sharks.

They suggest addressing the potential concerns by educating the local fishing industry on the role bull sharks play in maintaining the health of coastal ecosystems.

**More information:** Lindsay Mullins, Warming waters lead to increased habitat suitability for juvenile bull sharks (*Carcharhinus leucas*), *Scientific Reports* (2024). DOI: [10.1038/s41598-024-54573-0](https://doi.org/10.1038/s41598-024-54573-0). [www.nature.com/articles/s41598-024-54573-0](https://www.nature.com/articles/s41598-024-54573-0)

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