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## Ocean warming or fish "downsizing"


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As the global ocean temperature rises, the habits of marine life are also gradually changing, such as salmon migration is ahead of time, plankton are also changing their range of survival. At the same time, higher temperatures also mean higher body temperatures in fish and their metabolism will be faster.

"The acceleration of Metro metabolism means they consume more oxygen," said Daniel Pauly, a fisheries scientist at the University of British Columbia.

So, in order to intake more oxygen, fish will grow bigger fish gills it? Pauly did this physiologically and concluded that larger fish gills do not help fish inhale more oxygen. He explained that because the structure of fish gills is relatively flat, the gills can not meet the growing oxygen demand of the more solid body.

Instead, Pauly calculated that all the fish may shrink in size to meet their own growing oxygen needs under climate change. The study was published in the journal *Global Change Biology*.

At the same time, the water temperature will lead to reduced dissolved oxygen content in water. "That is to say, with the combination of increased demand for oxygen

and reduced supply of oxygen in the water, fishes will become smaller and smaller," said Pauly.

Earlier, R. Eugene Turner, a professor at Louisiana State University in the United States, also studied the body shape changes of herring living on the coast of Maine to Texas. He used the data collected by the National Marine Fisheries Agency to calculate the changes in weight and length of these herrings. The agency collected a total of about 500,000 Atlantic herring and 500,000 Gulf herring from 1955 to 2010. Data show that in the past 65 years, the herring body size has shrunk by about 15%.

"The change in body size is closely linked to changes in temperature, and as the Earth's atmosphere and the oceans continue to warm, the future of herring seems more confused," Turner said. As herring is an important source of food for birds, seals, whales and other animals, shrinking herring size may affect the entire food chain . **(Allin finishing)**

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