

# Sardine genome may explain climate change impact on small pelagics

TIMES NEWS NETWORK

**Kochi:** Scientists have decoded the genome of Indian oil sardines, one of the most sought-after fish in the country, as part of the efforts to ascertain the climate change impact on the fish species. This is the first time that the genome of a marine fish species from the Indian subcontinent has been decoded. The decoding of the sardine genome would help them understand the fish response to changes in the marine ecosystems, said scientists at the Central Marine Fisheries Research Institute (CMFRI) who decoded the fish genome.

The fall and rise in the availability of sardines often impacts the overall marine production in many coastal states. It is considered the backbone of the marine fishery of several states.

Small pelagic fishes like sardines are considered as model organisms to study the climatic as well as fishing impacts on the Indian Ocean resources, as they respond to variations in environ-



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mental and oceanographic parameters.

Moreover, they are an ecologically important part of the marine ecosystem, as they form an intermediate link in the food web and serve as prey for larger predators.

The team led by Sandhya Sukumaran, principal scientist, marine biotechnology division used the cutting-edge next generation sequencing technology to decode the genome. She has been part of the whole genome sequencing project for the last few years. The study has been published in the journal *Scientific Data of Nature Research*.

CMFRI director A Gopalakrishnan described the development as a milestone in Indian marine fisheries, saying that the decoded genome will be a valuable resource for understanding the biology, ecology and evolution of the oil sardine.

“This critical genome data could be used to improve the management strategies for the conservation and sustainable utilisation of the fish,” he said.

The decoded genome is 1.077 gigabases in size and contains a total of 46,316 protein coding genes. Gopalakrishnan said the fish is a trans-boundary resource and the genome information can also be utilised for certification and identification of the origin of catch for monitoring clandestine trade and tracking fish movement.

The researchers have also identified the genes involved in the biosynthesis of polyunsaturated fatty acids of the oil sardine, offering insights into the genomic mechanisms behind the high nutritional quality of the fish.