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Soon, genome sequencing of Indian oil sardine

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Kochi: The whole genome sequencing (WGS) of the Indian oil sardine is likely to be released this year by the Central Marine Fisheries Research Institute (CMFRI). This will help researchers understand sardine behavior, which is probably leading to falling marine stock or collapse of the fisheries in some areas. The fall in sardine production has affected the overall marine production in most coastal states.

According to the CMFRI researchers, the genome sequence is almost 80% complete and has already revealed several distinct characteristics of this commercially important fish which impacts fish production in the country. As the WGS is a process of determining the complete DNA sequence of an organism's genome at a single time, the DNA markers have already revealed three distinct sub-populations of Indian oil sardine in the Indian ocean region — Gulf of Oman, northwest coast of India and other coasts mainly southwest and southeast coast of India.

"The CMFRI will release a draft sequence of genome of Indian oil sardine soon. Even though the CMFRI has found that three types of sardines including Oman sardine have the same genetic structure, separate management strategies are required for these sardines as they live in different waters," said A Gopalakrishnan, director, CMFRI.

The Indian oil sardine fishery is characterized by large annual fluctuations and significant variability in reproduction. The reduction in stock complexity and genetic diversity will affect the resilience of fish stocks and their capacity to recover from extreme reduction in population size due to climatic or environmental effects. Considering these factors, fish stocks should be managed on a regional scale by assessing the number of spawning components and behavioral groups so that stock complexity is preserved and maintained.

"Our analysis revealed a population explosion of this species during the Pleistocene Epoch, due to the emergence of upwelling events in the Indian Ocean. In the future, if climate change brings about changes on current patterns and upwelling events, it will affect the abundance and dynamics of Indian oil sardines. Genetic and genomic tools will also provide clues to local adaptations to environmental conditions which are also important in conservation and management of these resources," said Sandhya Sukumaran, senior scientist, Marine Biotechnology division, CMFRI.

ABOUT INDIAN OIL SARDINE

- Major single species fishery in India accounts for 17-20% of the total marine fish landings
- Favoured table fish
- Rich source of fish oils
- Small sized fish forming medium to very large shoals in the near shore waters within a distance of 25 - 30km and within 50m of depth