As climate changes, our fish are at sea

CMFRI Study Finds That Fishes On Eastern Coast Of The Country Were More Vulnerable To The Effects Of Climate Change

Kochi: There is growing, substantial evidence that climate change has affected fish and other marine population over the last decades. A national study on the vulnerability of Indian fish stock to climate change showed that the Central and East coast were more vulnerable (75%) than those on the west coast (20%).

A team of scientists at the Central Marine Fisheries Research Institute (CMFRI) undertook the study in four coastal zones after assessing 126 Indian historical marine data and taking into account a host of parameters such as temperature, fish data, life history, reproductive capacity, food availability and different environmental indicators.

The study showed that changes in ocean currents, water column mixing that could alter larval dispersal and food availability were likely to impact fishery resources in the next few decades. The changes in primary productivity – which influences the abundance of several species – linked to a redistribution of fish stock, it said.

The study classified the vulnerability as high, medium and low for 64 species in India. Around 60% of the total species were found to be highly vulnerable, about 10% of the species were found to be vulnerable and the rest were found to be low.

The study found that around 90% of all the total species in the country were found to be highly vulnerable.

The study suggested that the vulnerability assessment should be considered as a basis for decision-making for the management of fishery resources.

Exploitation of commercial species still a concern

Kochi: While the changes in temperature do show bearing on food availability in marine waters, there is no denying that fishing pressures (over exploitation) have also contributed to the reduction in catch.

The report, ‘Vulnerability assessment of Indian marine fishes to climate change’, showed that fishing pressure and climate change are bound to interact and create multiple, simultaneous alterations within the marine ecosystem, particularly coastal waters. Exploitation rates for different, commercially important species are a major indicator about the future vulnerability of species to climate change impacts. Almost all fish species – anchovies, sardines and barracuda – are exploited by using trawl nets. But, even these fishes are susceptible to capture by trawl nets during their juvenile phase.

“Fisheries management is going to play a very important role in catch sustainability. Most of our policies are already being triggered or get impacted only when we are undergoing a crisis, like a sudden drop in the catch. For example, there was a huge drop in catch of anchovy and sardine in 1986. But there was no discussion or upgradation,” said Central Marine Fisheries Research Institute’s Principal Scientist Shankar Malook who is heading a study on productivity sustainability assessment (PASA).

“Over the last couple of years, we have seen a near complete model to estimate the status of marine resources in the coming decades. The model, similar to the DDM’s climate model but would further the above mentioned parameters. This tool helps in estimating species availability and its vulnerability changes in climate and environment. “Some countries have developed models, but we don’t have a successful model. We have to run the model akin to the DDM that has a strong base to evolve strategic management plans for highly vulnerable species and their likely impacts of a changing climate in the long run,” said CMFRI’s head of demersal fish research, Dr. Parameshwar Ghodke.

Another study by Central Institute of Fisheries Technology (CIFF) assessed the carbon emissions for different boats and fishing gear right from the production stage. “We have looked at carbon emissions involved in the production of the boats and fishing gear,” said Dr. Nishad, head, fisheries technology division, CIFF.