

**BIODIVERSITY:
Dwindling Fish Catch Could Leave a Billion Hungry**

Stephen Leahy

UXBRIDGE, Canada, Oct 9 (IPS) - Fish catches are expected to decline dramatically in the world's tropical regions because of climate change, but may increase in the north, said a new study published Thursday.

This mega-shift in ocean productivity from south to north over the next three to four decades will leave those most reliant on fish for both food and income high and dry.

"The shift is already happening, we've been measuring it for the last 20 years," said Daniel Pauly, a renowned fisheries expert at the University of British Columbia (UBC).

"Major shifts in fish populations will create a host of changes in ocean ecosystems likely resulting in species loss and problems for the people who now catch them," Pauly told IPS.

In the first major study to examine the effects of climate change on ocean fisheries, a team of researchers from UBC and Princeton University discovered that catch potential will fall 40 percent in the tropics and may increase 30 to 70 percent in high latitude regions, affecting ocean food supply throughout the world by 2055.

The study, published in the journal *Global Change Biology*, examined the impacts of rising ocean temperatures, changes in salinity and currents resulting from a warming climate.

"Many tropical island residents rely heavily on the oceans for their daily meals. These new findings suggest there's a good chance this important food source will be greatly diminished due to climate change," said lead author William Cheung, a researcher at the University of East Anglia in Britain who conducted the study while at UBC.

Countries facing the biggest loss in catch potential include Indonesia, the United States (excluding Alaska and Hawaii), Chile and China.

Pauly told IPS that the recently documented rises in ocean acidity and anoxia levels in many parts of the ocean were not part of this study but will be part of future reports. Nor were the observed changes in plankton production.

"This estimate is conservative," he explained. "We will likely project significant additional reductions in fish catch."

Many oceanographers predict severe loss of coral reefs in coming decades due to rising acidity from emissions of carbon dioxide into the atmosphere. Corals support about 25 to 33 percent of the oceans' living creatures. Some one billion people depend directly and indirectly on reefs for their livelihoods.

"If the poor people in this region cannot eat what they grow or catch or what their neighbour grows or catches, they don't eat," Pauly said.

Meanwhile, industrial fisheries operating in tropical regions are scooping up enormous amounts of fish anchovies, herring, mackerel and other small pelagic forage fish to feed to farmed salmon or turn into animal feed or pet food, another study reported this week.

In 2006, aquaculture consumed 57 percent of fish meal and 87 percent of fish oil, the study published in the journal *Ambio* reported.

This has pushed the price of fish up and reduced the amount of protein available to hundreds of millions of people mainly in tropical regions, according to authors Albert Tacon of the University of Las Palmas, Spain and Marc Metian of the University of Hawaii.

These small pelagic forage fish contribute more than 50 percent of the total food fish supply in more than 36 countries in Africa, Asia and elsewhere. Especially hard-hit is sub-Saharan Africa, where more than half of the population receives 25 percent or more of its protein from fish.

In the competition between food and feed, the poor are losing. In Mexico, a fish called the California pilchard traditionally was used for fishmeal and processed for direct human consumption. Now, due to increased demand from tuna aquaculture operations, the price of California pilchard has shot up, making it too expensive for many Mexicans to eat.

Human nutritional demands in impoverished communities needs to be a priority, Tacon and Metian write. "National government must also set limits on the use of fish as animal feed".

Previous studies looking at impacts of climate change on the global food supply have only considered land-based food sources and these concluded that tropical areas will see a decline in land productivity. The most recent and comprehensive study, reported by IPS, projects significant declines in crop yields and major price increases.

The negative effects of climate change are especially pronounced in Sub-Saharan Africa and South Asia, the International Food Policy Research Institute study concluded.

Add in the projected shift in fish catch from south to north and climate change will likely bring major reductions in the food supply in tropical regions.

Industrialised countries should not be surprised this is coming and should be prepared to assist developing countries and small island states adapt, the University of East Anglia's Chueng told IPS in an interview from Norwich, England.

The study also projects that warmer waters will boost fish catches substantially in Norway, Greenland, Alaska and the east coast of Russia. While greater catch potential in colder regions might appear beneficial, the authors caution that more research is needed to account for the multitude of dynamic factors that affect every ecosystem.

"While warmer waters might attract new species to colder regions, the rise in temperature might make the environment inhospitable to current species in the region that cannot move to even higher latitudes," said Pauly.

Even if the northern ocean increases in productivity in the future, it will barely be enough to maintain current levels of fish consumption. "There will be no transfer of 'surplus' fish from the north to south," he said.

And without major reductions in carbon emissions, "We are facing the end of civilisation as we know it," he said. "The collapse of fisheries in much of the world would be a sideshow."

(END/2009)