

Contribution to the Secretary-General's report on oceans and law of the sea.

Intergovernmental Oceanographic Commission (IOC) of UNESCO

Part I : The Role of Seafood in global food security

Whilst fish and fishery products are a vital and affordable source of food and high-quality protein – in 2008 fish supplied over 4.2 billion people with at least 15% of their average animal protein intake, the capacity of the ocean to feed the planet is being challenged by human activities such as overfishing and climate change. Ocean ecosystem services are being subjected to human activity that is having a measurable impact in reducing ocean productivity. A reduction can also be attributed to global climate warming that is increasing ocean stratification and reducing nutrient mixing, thereby reducing the natural productivity services that can lead to significantly diminished food security from fisheries, particularly in the warmer latitudes around the globe. It is within these latitudes (tropical and sub-tropical) that evidence from the Global Ocean Observing System (GOOS) coordinated by IOC, is already showing significant warming trends, for which model projections from the years 2040 to 2060 forecast a steady decline in ocean productivity¹.

Large Marine Ecosystems (LME) of the world produce about 80% of the annual world's marine fisheries catch. Globally they are centers of coastal ocean pollution and nutrient over-enrichment, habitat degradation (e.g. sea grasses, corals, mangroves), overfishing, biodiversity loss, and climate change effects. Through the support of the Global Environment Facility to which has invested in 17 LMEs since 1998, IOC and partners (UNDP, UNEP, FAO, IUCN, NOAA) are actively engaged in taking remedial actions toward the recovery and sustainability of degraded goods and services provided by the marine environment. As part of the LME approach, common strategies for assessing, managing, recovering, and sustaining LME marine living resources are being developed with the support of coastal nations. These efforts contribute to building food security by promoting sustainable use of marine resources within ecosystems' capacity.

Another challenge affecting coastal waters of nations relates to the proliferation of toxin producing microalgae in marine or brackish waters, which can cause massive fish kills, contaminate seafood with toxins, and alter ecosystems in ways that humans perceive as harmful; so called 'Harmful Algal Blooms' (HAB). The impact of HAB is particularly evident when marine food resources, aquacultured or wild, are affected. Shellfish and finfish may accumulate algal toxins. Toxins may subsequently be transmitted to humans and through consumption of contaminated seafood become a serious health threat. Some HAB result in extensive fish kills with major economic losses. Additional losses may be inferred from public discredit of seafood products. When HABs contaminate or destroy coastal resources, the livelihoods and food security of local residents are threatened and the sustenance of human populations is compromised. In developing economies, seafood often constitutes a particularly important source of food or income. With increasing problems of overfishing, aquaculture becomes increasingly important for the supply of food and protein. To minimize the impacts of HAB on food safety and security, it is necessary to establish HAB surveillance and mitigation. IOC of UNESCO has for two decades, through training, research and knowledge sharing, provided capacity enhancement opportunities for Member States to improve HAB management and mitigation capabilities.

¹ Boyce D.G., M. R. Lewis & B. Worm. (2010). Global phytoplankton decline over the past Century. *Nature*, doi:10.1038: 591-596