



## North Atlantic Fisheries Research

Seafood has played a significant role in human diet for ages. As the marine resources are exploited an essential question arises: is this performed in a responsible manner? Today we are to focus on the condition of North Atlantic marine ecosystem and latest change trends in the fisheries sector.

This is a part of EUR-OCEANS Network of Excellence scientific quest to learn more about global change and relevant reaction of marine ecosystems.

The biological system of the North Atlantic is very diverse. It consists of a number of components: sea floor communities, plankton -the microscopic animals and plants drifting in water, fish, birds and marine mammals.

Fishing and fish farming are nowadays the two most important uses of the sea. Not only do they provide healthy and enjoyable source of food but they create jobs in coastal areas and promote the social and economic well-being as well.

**Tomasz Linkowski:** *The North Atlantic fisheries developed on the base on diverse fish species and stocks. Looking from a historical perspective the most important role in development of deep-sea fisheries in this region plaid herring and cod stocks. On the other hand a variety of flatfish and shellfish species were targeted by coastal fisheries.*

Recent scientific opinion considers that some of the North Atlantic fish stocks are outside safe biological limits meaning the rate of their removal is faster than they can be replaced. Since the 97 Bergen ministerial meeting on the integration of fisheries and environmental issues a so-called 'ecosystem approach' to marine environment has been agreed upon. This imposes we mustn't take too many fish out of the sea, otherwise their stocks will be depleted, and the ecological balance will be upset; in other words, we must allow the fish to replenish their stocks continuously. It is not only the quantity of fish taken from the sea that is important, but also the species and sizes, and, indeed, the areas where they are caught and the techniques used in catching them.

Marine habitats are changing continuously due to human activities but also due to natural forcing. Short term climate variability has an effect on the abundance of plankton and thus on fish distribution. As the environment changes fish stocks migrate. This affects the reproduction of birds and marine mammals.

Habitat changes finally ...affect fishermen catches.

These are the Faroe Islands – overseas Danish territory in the North Atlantic. The Faroes are an example of a fishing-dependent community;



The surrounding open water reservoirs are characterized by intense water oscillation. Here water masses are in motion because of the Gulf Stream – one of the biggest and still fastest-moving ocean currents in the world. This current is one thousand meters deep, it moves 55 million cubic meters of water per second.

Water here travels 200 kilometers a day. The current retains several thousand gigawatts of energy and acts as Europe's radiator giving a 15°C difference between the Canada's Eastern seaboard and the relative climate mildness of Western Europe both laying at the same latitudes. Research shows this huge river of marine heat has slowed down significantly over the last 50 years as a consequence of global warming.

North Atlantic perfectly oxygenated waters make it possible for the underwater life to be opulent. Various varieties of Sea weed are harvested for human consumption, sheep feed, pharmaceuticals and cosmetics. Cultivating seaweed next to a fish farm helps to keep the fish in healthy condition.

The past 15 years have witnessed intensive research on fish ranching followed by rapid expansion in world aquaculture. Fish farming has become the fastest growing sector in world food production. The Norwegian coast is a leading region in European aquaculture and related research.

This is 'Matre' - Marine Research Station of the Norwegian Institute of Marine Research, a EurOceans partner institute that performs research on the environment and interactions among living organisms in coastal waters and on updating knowledge of marine resources.

**Tom Hansen :** *The main research activities of the station are fish welfare, fish nutrition, fish quality and fish reproduction. And we have several international projects in these areas. But the station is also designed to do studies on fisheries related activities and at the moment we have studies on herring and horse macrel and Atlantic cod.*

The seas and oceans are held in one common ownership. Humans exploiting these ecosystems have therefore a duty to steward them.

It is thus vital to understand the ways to exploit them in a responsible, sustainable manner. Research has a fundamental part to play in the marine sector.

The European framework programmes provide funding for, among other things, studies in fisheries and aquaculture This constantly contributes to our knowledge of changes in the environment and ecosystems. Understanding the ecosystem as a whole allows managers, scientists, environmentalists and the fishing industry to make better decisions about the impacts of fishing activities. Integration of science and relevant data allows integration of policies. This will, in the long run, benefit not only the environment but



also the fishing sector because fish resources need healthy marine ecosystems to flourish for the generations to come.