Session IV

Climate change and fishing pressure : consequences in french Guyana and how can we manage it?

Fabian BLANCHARD, Antoine RIVIERRE
Ifremer, BP 477, 97331 Cayenne Cedex
Fabian.Blanchard@ifremer.fr

Ranking the factors altering the marine ecosystems

The main factors altering coastal marine communities were acknowledged at the global scale : pollution, invasive species, habitat degradation, overexploitation and climate change. At regional scale and especially in tropical context, there is a lack of knowledge available to come up with a hierarchy of the factors allowing ranking them. It is however necessary to make this hierarchy available for managers in order to tackle the problems to solve it or to adapt the economical activities when the problem can not be solve at a local or regional scale (such as climate change).

In Guyana, the first 3 factors are probably of less importance, except the mercury issue (ongoing studies), because of the low number of habitants and level of economic activity. However, climate change and fishing effects remain unknown.

Fishing effects in temperate areas

Overexploitation and ecosystem effects of fishing are well known in temperate and boreal areas : depletion of exploited stocks, decrease of mean individual size in the populations and communities, species with opportunist diet favoured that benefit from fisheries discards, r-strategy species favoured as compared to k-strategy species, decrease of large macro-benthos organism with fragile external skeleton broken by fishing gears (trawl, dredge)….

Climate change effects in temperate areas

Temperature of waters increased significantly during the two last decades in all the oceans. In the north-east Atlantic northward shifts in plankton and fish distribution were observed correlatively.

In Guyana ?

The way communities are modified and the magnitude of changes may depend on their ecological structure (diversity, dominance, functional groups, size structure…). In tropical estuary areas, the community characteristics are different from those in temperate areas so that resilience may be greater or lower. The bottom community structure observed in 2006 was compared to that observed in 1994 with field data from trawl surveys carried out with the same protocol. The changes observed were described and related to temporal variations of fishing effort and sea surface temperatures.

How to manage it?

Because of the resilience of the climatic system, even if the emission of greenhouse gas were totally stopped, climate warming would continue for at least one century. In this condition we have to identify the consequences and adapt the fisheries for example avoiding important investment in fisheries targeting species potentially unfavoured by warming. Mitigation of ecosystem effects of fishing can be achieved by improving selectivity, and reduce the effort or avoiding spatial concentration of the effort.