
Activity Highlights within the MARBEF Fish RMP (MarFish)

Brian MacKenzie¹ and Pascal Lorance²

1 Danish Institute for Fisheries Research, Department of Marine Ecology and Aquaculture, Charlottenlund, Denmark

2 IFREMER, Brest, France

This RMP is investigating the causes and consequences of changing marine biodiversity from a fish and fisheries perspective. Fish and many other marine species are being overexploited and are stressed by human-induced environmental changes including global climate change and eutrophication. The abundance of many species in local areas is changing and in some cases entire local populations have become extinct (Myers & Worm 2003). At the same time, the mean trophic level and sizes of the remaining species has decreased (Steinmetz et al. 2006; see poster at GA).

Changing environmental conditions are also challenging fish populations. Compilations and reconstructions of daily sea surface temperatures measured in the North Sea and Baltic Seas since the 1860s show for example that temperatures are now higher than at anytime since measurements began (MacKenzie & Schiedek 2006; see poster at GA). As a result the geographic distributions (Genner et al. 2004; Poulard & Blanchard 2005; Perry et al. 2005), productions rates (Beaugrand et al. 2004; MacKenzie & Köster 2004), and lifehistories (Greve et al. 2005) of fish species are changing. For example, the anchovy was absent from waters near Denmark for many decades but has recently (2002, 2003) been caught at nearly half the stations occupied during fishery research surveys in the Kattegat and Belt Sea, partly as a result of increasing sea temperatures (MacKenzie & Nielsen 2006; see poster at GA).

The changes being brought about by fishing and environmental change will have major impacts on fish communities and how fish species interact with the remaining components of the ecosystem (e. g., other fish, benthic invertebrates, plankton). Understanding these changes and predicting the consequences for fish populations, ecosystems and human societies are therefore two of the key objectives of this RMP.

The presentation during the GA will briefly summarize the participating institutes, work tasks of the RMP and the upcoming activities in 2006-2007. Additional information will be available in an accompanying poster and from the project website (<http://www.marbef.org/projects/marfish/index.php>).

Reference List

Beaugrand G, Brander KM, Lindley JA, Souissi S, & Reid PC (2004) Plankton effect on cod recruitment in the North Sea. *Nature* 426, 661-664. Genner MJ, Sims DW, Wearmouth VJ, Southall EJ, Southward AJ, Henderson PA, & Hawkins SJ (2004) Regional climatic warming drives long-term community changes of British marine fish. *Proc R Soc Lond B* 271, 655-661. Greve W, Prinage S, Zidowitz H, Nast J, & Reiners F (2005) On the phenology of North Sea ichthyoplankton. *ICES J Mar Sci* 62, 1216-1223. MacKenzie BR & Köster FW (2004) Fish production and climate: sprat in the Baltic Sea. *Ecology* 85, 784-794. MacKenzie BR & Nielsen E (2006) Recent and historical occurrence of anchovy, *Engraulis encrasicolus*, in waters near Denmark and the role of climate variability. In prep. MacKenzie BR & Schiedek D (2006) Daily ocean monitoring since the 1860s shows unprecedented warming of northern European seas. In prep. Myers RA & Worm B (2003) Rapid worldwide depletion of predatory fish communities. *Nature* 423, 280-283. Perry AL, Low PJ, Ellis JR, & Reynolds JD (2005) Climate change and distribution shifts in marine fishes. *Science* 308, 1912-1915. Poulard J-C & Blanchard F (2005) The impact of climate change on the fish community structure of the eastern continental shelf of the Bay of Biscay. *ICES J Mar Sci* 62, 1436-1443. Steinmetz F, Thébaud O, & Blanchard F (2006) A preliminary analysis of long-term changes in the value of landings by French fishing fleets operating in the northeast Atlantic. IET 2006 Conference, University of Portsmouth, July 2006.