

# EURO-BASIN

BASIN SCALE ANALYSIS, SYNTHESIS AND INTEGRATION

## AT A GLANCE

### Title:

European Union Basin-scale Analysis, Synthesis and Integration

### Key Words:

Climate and anthropogenic forcing, ecosystem, key species, biological carbon pump, ecosystem based management, marine, international cooperation

**Instrument:** FP7, Collaborative Project

**Total Cost:** 9,652,000.74

**EC Contribution:** 6,996,407.00

**Duration:** 48 months

**Start Date:** 31/12/2010

**Consortium:** 24 partners from 9 countries



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## CURRENT CHALLENGES

The North Atlantic Ocean and its contiguous shelf seas are crucial for the ecological, economic, and societal health of both Europe and North America.

North Atlantic ecosystems support major fisheries as well as being important for the sequestration of green house gases. The dynamics of these ecosystems are driven by the interplay of climatically determined bottom up forcing driving the flux of nutrients to lower trophic levels and anthropogenic, top-down controls as influenced by the exploitation of marine fish stocks.

At present there is a significant lack of knowledge regarding how these modes of forcing impact North Atlantic marine populations and how impending climate changes may alter the ecology and biogeochemical cycling of the basin. Consequently the challenge for EURO-BASIN is, in collaboration with US and Canadian partners, to better understand the basin scale processes impacting upon these ecosystems, to be able to predict likely future ecosystem states due to climate change, and to be able to integrate from the basin scale to the local scales the economically important dynamics of basin and shelf ecosystems for the advancement of ecosystem based management strategies.

## OBJECTIVES:

The overarching objectives of the EURO-BASIN initiative are to understand and predict the population structure and dynamics of broadly distributed, biogeochemically and trophically important plankton and fish species of the North Atlantic and shelf seas, and assess the impacts of climate variability on marine ecosystems and their services including feedbacks to the earth system.

The project will develop understanding and strategies that will ultimately contribute to improve and advance management of North Atlantic marine ecosystems following the ecosystem approach.



## METHODOLOGY

EURO-BASIN will use a range of approaches. The project will use existing data, but will also fill data gaps through targeted laboratory and field studies, as well as the application of integrative modelling techniques.

The modelling approaches will range from simple to complex coupled ecosystem models (e.g. N,P,Z,D type), mass balance (e.g. ECOPATH & ECOSIM), dynamic higher trophic levels models (e.g. GADGET), fully coupled lower and higher trophic level models including fisheries and size spectrum models, as well as integrated assessment approaches.

These models will be used to create an ensemble approach to assess ecosystem responses that, through an extension of the Integrated Ecosystem Assessment approach, will be used to further our understanding of the impacts of climate variability on marine ecosystems and the feedbacks to the earth system.

## EXPECTED RESULTS

EURO-BASIN activities will enable us to assess the ramifications of climate and fisheries activities on the population structure and dynamics of broadly distributed, biogeochemically and trophically important plankton and fish species, producing the enhanced predictive capacities necessary to develop understanding and strategies that will improve and advance ocean management.

EURO-BASIN is expected to contribute to the realization of an ecosystem-based approach to the management of the North Atlantic basin, a major objective outlined in the revision of the European Common Fisheries Policy (CFP, COM(2009)163). It will also contribute to advance the ecosystem approach for marine management, by contributing to the implementation of the Marine Strategy Framework Directive (MSFD, Directive 2008/56) and the Maximum Sustainable Yield (MSY) concept (Green Paper; COM (2006) 360) as agreed upon by the World Summit on Sustainable Development (2002).



The project will provide maximum access to research data (via [www.pangaea.de](http://www.pangaea.de)) and open access to peer-reviewed research publications (via FP7 infrastructures [www.openaire.eu](http://www.openaire.eu)), so that developing countries, stakeholders, and society at large has the fullest possible access to the programme's output.

## PROJECT PARTNERS

Technical University of Denmark,  
National Institute of Aquatic Resources, DK  
University of Bremen, DE  
University of Hamburg,  
Institute for Hydrobiology and Fisheries Science, DE  
Fundacion AZTI, ES

Natural Environment Research Council, UK  
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The Secretary of State for the Environment,  
Food and Rural Affairs, UK

Uni Research AS, NO

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