

# A pan-European baseline



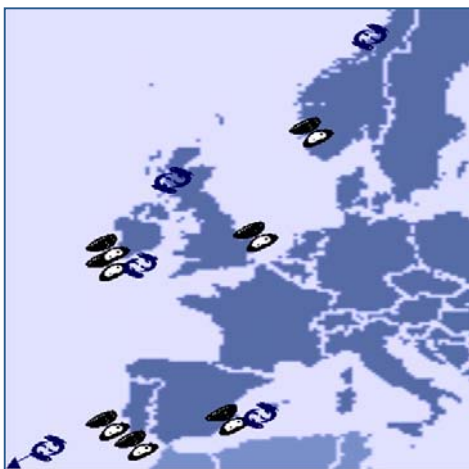
## CRAB

COLLECTIVE RESEARCH ON  
AQUACULTURE BIOFOULING

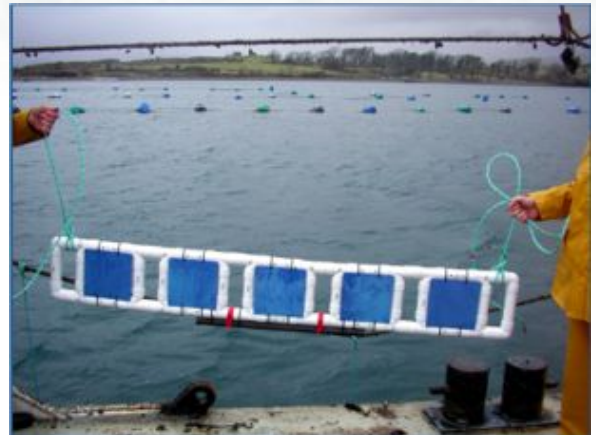
Biofouling is a complex and recurring problem in all sectors of the European fish-farming industry. Problem areas include biofouling on **INFRASTRUCTURE** (Immersed structures such as cages, netting and pontoons; **EQUIPMENT** and structures such as pipelines, pumps, filters and holding tanks) and **FARMED SPECIES** (mussels, scallops, oysters etc). In the next 10 years the choice and availability of biocides for use as antifoulants will become much more restrictive within Europe with the application of the Biocides Products Directive EC 98/8/EC.

*“CRAB is monitoring biofouling from Norway to the Canary Isles”*

Partners in the CRAB collective Research project are monitoring biofouling at finfish and shellfish production sites throughout Europe.



A series of standard panels submerged at a depth of 2m on each site are assessed monthly using digital photography to monitor recruitment and succession. Problematic biofouling species are identified, as well as the development of the biofouling community over the season.



Monthly data and photos are being collected and analysed using digital imaging by Dr. Simone Dürr of the University of Newcastle, UK, who developed the experimental set-up and assessment protocol. The monitoring work started in February 2005 and will continue until May 2007.

*“combined data from all sites is giving the first pan-European baseline on biofouling”*

At AQUA2006 in May and at the 13th Int. Congress on Marine Corrosion and Fouling in July 2006, Dr. Dürr presented some interim results of this baseline study.

collective research on aquaculture biofouling



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The identified fouling species of the first CRAB fouling season were segmented into 6 groups: Algae, barnacles, mussels, tubeworms, ascidians and hydroids.

Diatoms and algae were observed to be recruiting throughout the year at most sites, except in the far north. Hydroids recruit at many sites. Barnacle recruitment occurs throughout the year at the intertidal monitoring site, but with only 1 spatful in most areas, and 2 in north Norway. Mussel fouling occurs from late Spring in Ireland and in the summer in Norway.

***“ Fouling on short-term immersed equipment, infrastructure or stock is different from long-term immersed ”***

Calcareous tubeworms were observed at Irish sites in late spring and summer and at the Mediterranean site from summer to autumn.

Ascidians were found from April in southern sites and from summer (and into winter in the British Isles).



Ectocarpus sp and tunicates found on CRAB sites.

In terms of the succession of biofouling organisms, soft tube-forming amphipods and polychaetes dominate all year at southern sites. At the intertidal site, diatoms give way to crustose, coralline red algae.

At northern sites, Ectocarpus sp. dominates. Blue mussels appear from June and are present at most western sites by September. Tunicates are found in Scotland from June and later in north Norway.

The species groups and trends described here are based on one fouling season. As the monitoring progresses, so will our knowledge of these recruitment and succession processes.

*For further information concerning this newsletter information, please contact Dr. Simone Dürr at [S.T.Duerr@newcastle.ac.uk](mailto:S.T.Duerr@newcastle.ac.uk)*

CRAB partner Cudomar (ES). All photos courtesy of Dr. Simone Dürr

The objective of CRAB is to develop and implement effective biofouling prevention and management strategies for the aquaculture industry.

The CRAB consortium is composed of 4 RTD organisations, 4 industry associations and 14 small-medium enterprises, including 5 shellfish farms and 5 finfish farms.

**FP6 Collective Research  
CRAB**

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