

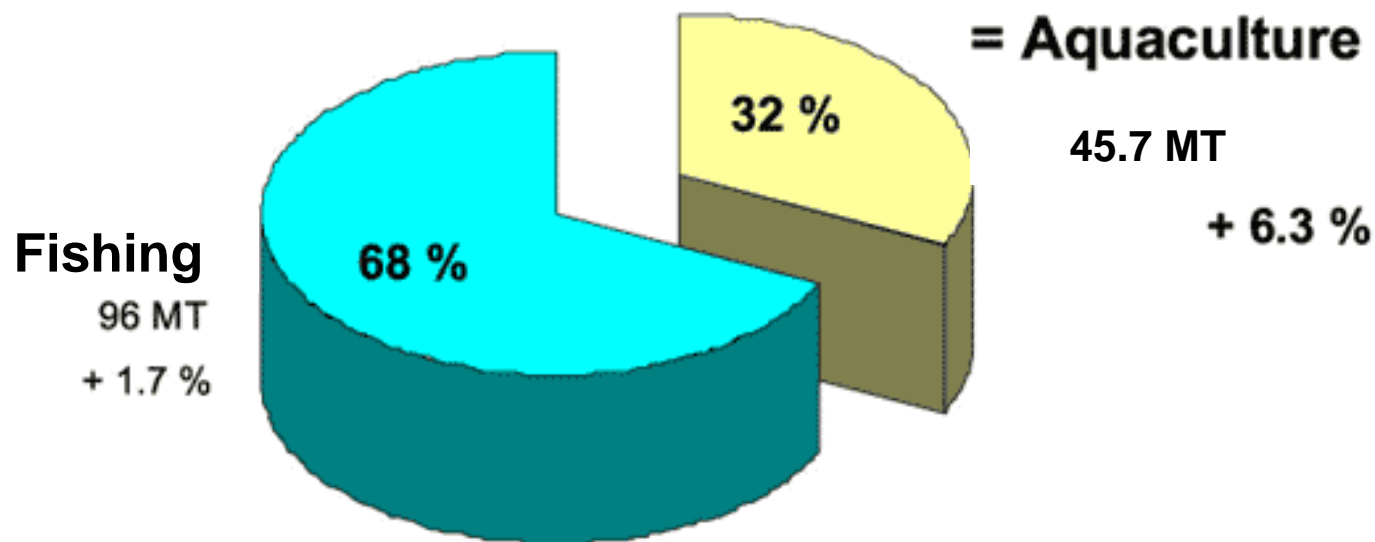
DIPNET

Disease Interactions and Pathogen Exchange NETWORK



World aquatic living resources (2000)

141.8 Million tons



In Europe:

- 1980: 0.64 millions tons
- 1990: 0.94 million tons (+47%)
- 2000: 1.32 million tons (+39.3%)

1.32 million of tons = 3% of world aquaculture production

Main species

Fish: trout, salmon, sea bass, sea bream

Molluscs: oysters, mussels and clams

Marginal production of **Crustaceans** (except for crayfish)

- ✓ Importance of Aquaculture in the EU policy
- ✓ Aquaculture improvement is one the priority measures of the DG FISH to accomplish environmental integration

DIPNET: European project

Scientific support to the development of EU Policy :

1/ control and reduce the impact of diseases in wild animals and ecosystems,

2/ reduce constraints on aquaculture,

3/ prevent and respond to new, emerging or re-emerging diseases.

DIPNET

- * a co-ordination action
- * started on the 1st of October 2004
- * Project duration : 24 months



Nantes 1-2 February 2005



Objectives

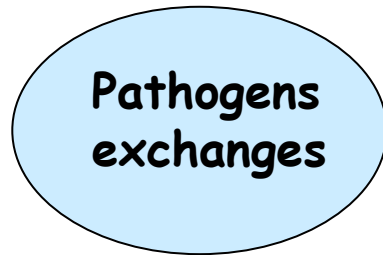
- ✓ To integrate and strengthen current scientific knowledge on the potential transfer of pathogens and diseases between wild and cultured aquatic animal populations
- ✓ To give support to the development of European policies protecting the health of aquatic animal populations while allowing responsible use of the aquatic environment for aquaculture purposes
- ✓ To disseminate the current knowledge towards knowledge users, other stakeholders and the wider European public



Impact on fishing activities:
decreasing catches, economical losses

Wild exploited populations

Cultured populations



Impact on aquaculture production: mortalities, Economical losses

Wild non exploited populations

Impact on environment:
reduction of biodiversity



Gyrodactylosis caused by *Gyrodactylus salaris*:

- pathogenic parasite of wild and farmed Atlantic salmon parr (*Salmo salar*) and smolt
- originally found in some Baltic stocks of Atlantic salmon (western Sweden, northern Finland and Northern Russia), less susceptible as Atlantic stocks
- probably introduced in Norway via salmon parr imported from Sweden in the early seventies.

It has been widely spread within Europe with the movement of live Rainbow trout



Bonamiosis, caused by *Bonamia ostreae*

- suspected to be introduced in France and Spain with infected *Ostrea edulis* oysters imported from California at the end of the seventies
- now occurred from Spain to The Netherlands including Britain and Ireland
- spread by means of cultural practices and commercial exchanges
- caused the decline of flat oyster production (aquaculture and natural beds)



Astacus astacus



Procambarus clarkii

Crayfish plague caused by the fungus-like agent *Aphanomyces astaci* introduced into Europe in the mid-nineteenth century

- Role of North American crayfish as vectors (natural hosts of the fungus and subclinical carriers)
- The disease had spread and affected crayfish populations in most of European countries
- Disease spread facilitated by North american crayfish introduction and fish transfer (*A. astaci* remains viable on fish scales and in cuticles in fish gut)

Project consortium

IFREMER (French Research Institute for Exploitation of the Sea) co-ordinator of the project: **Dr Laurence Miossec**

VESO (Centre for Veterinary Contract and Commercial Services - Norway): **Dr Paul Midtlyng and Dr Ase Helen Garseth**

FRS (Fisheries Research Services - UK): **Dr Rob Raynard**

CEFAS (Centre for Environment, Fisheries and Aquaculture Science - UK): **Dr Ed Peeler**

UZ (University of Zaragoza - Spain): **Dr I. de Blas**

5 work packages

WP1: Literature review of disease interactions and pathogen exchange **Rob Raynard**

WP2: Risk assessment and modelling of pathogen exchange
Ed Peeler

WP3: Epidemiology of infectious diseases in wild fish and shellfish **Ignacio de Blas**

WP4: Network building and knowledge dissemination
Ase Helen Garseth

WP5: Project management **Paul Midtlyng and Laurence Miossec**

Expected results (1)

Scientific publications and technical papers

- ✓ **WP1:** Review of the literature on disease interactions and pathogens exchange (published and unpublished data)
- ✓ **WP2:** Review on risk assessment of disease exchange between farm to wild populations
- ✓ **WP3:** Review on methods for monitoring and surveillance of diseases and pathogens in wild and farmed population

Expected results (2)

Seminars for user groups and stakeholders:

- ✓ **WP2:** On risk assessment and modelling
- ✓ **WP3:** On disease epidemiology, surveillance and gene banking

Knowledge, dissemination and popularisation (WP4):

Through Web site, leaflets, posters, communications, newsletters

Website DIPNET: www.dipnet.info/



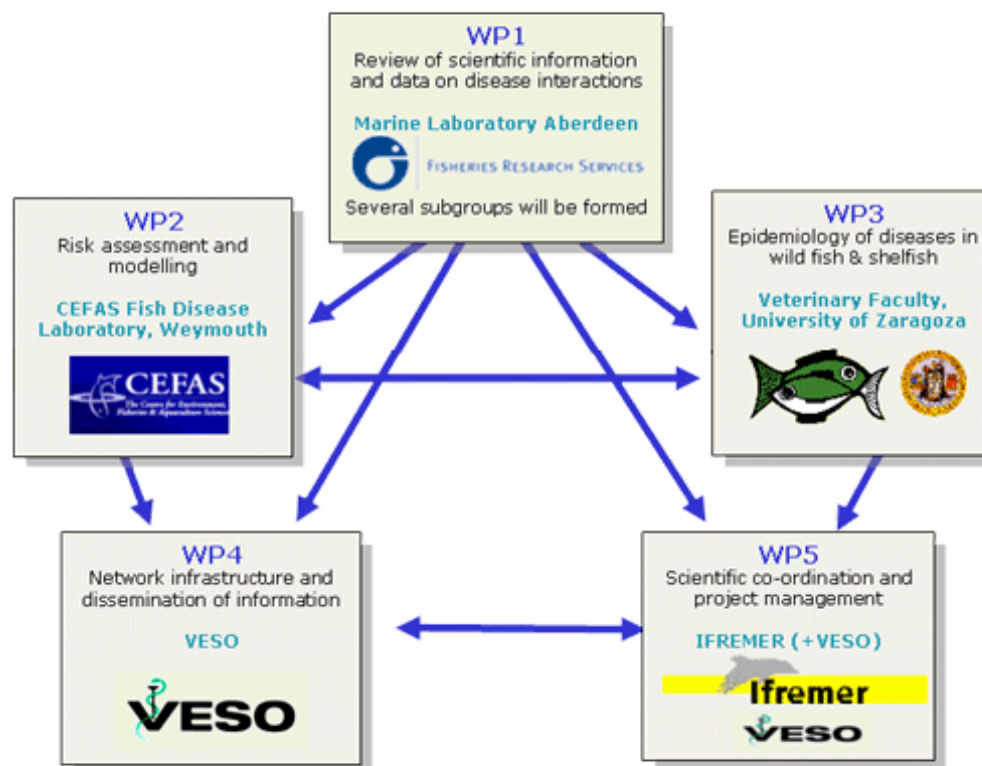
Disease Interactions and Pathogen exchange between farmed and wild aquatic animal populations - a European network

[Home](#)[Register](#)[Contact us](#)

The **principal objective** of this project is to integrate and strengthen the current scientific knowledge on the potential transfer of pathogens and diseases between wild and cultured aquatic animal populations, and thereby to support to the development of European policies protecting the health of wild aquatic animal populations while allowing responsible use of the aquatic environment for aquaculture purposes. Integration of on-going research activities and dissemination of current knowledge towards knowledge users, other stakeholders and the wider European public are further aims of the project.

[About DIPNET](#)[Activities](#)[Newsletters](#)[Documents](#)[Bibliography](#)[Links](#)[PANDA](#)

500 visits
from 01/12/2004



DIPNET ©2004

Web designer: Ignacio de Blas ; Web administrator: Ase Helen Garseth

démarrer

2 Netscape

Microsoft Word

2 Explorateur Wi...

Complex - Harrap...

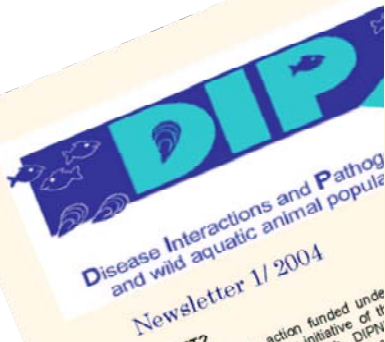
Microsoft PowerPoint

FR

16:16

Newsletters publication (twice a month)

from



DIPnet
Disease Interactions and Pathogen exchange between farmed and wild aquatic animal populations - a European network
Newsletter 1/2004

What is DIPNET?

DIPNET is a coordination action funded under the Scientific Support to Policy initiative of the 6th Framework programme for research. DIPNET addresses important issues concerning disease interaction and pathogen exchange between farmed and wild aquatic animal populations through September 2006.

Farming of new species and expansion into new regions is associated with changes in the species and population structure of many of these ecosystems wild fish in close contact with their farmed cousins exchange of pathogens, to the detriment of the latter, is inevitable and raises a number of issues relating to its control. The European Commission has provided scientific support in order to further policy related to this issue.

Principal objectives

- To strengthen the co-operation between wild and farmed fish
- To strengthen the co-operation between wild and farmed fish through reviewing on-going research
- To give scientific support to the development of a network between wild and farmed fish
- To support the development of a network between wild and farmed fish



Disease Interactions and Pathogen exchange between farmed and wild aquatic animal populations - a European network

Newsletter 4

Pathogen exchanges in shellfish aquaculture: a complex situation

by Laurence Miossec, IFREMER

With 10.7 million metric tons, the world's mollusc production represents about 23% of marine aquaculture in the world (FAO, 2002). This production has greatly increased in recent decades, in part due to the introduction of exotic species to balance the decrease of native stocks and to develop new aquaculture products. Concurrently, the trade of live molluscs has expanded.

Shellfish transfers are recognised as the major cause of disease spread which is further facilitated because shellfish are cultivated in the open sea. Introduction of infected molluscs into non-infected shellfish areas can have tremendous consequences for native stocks. There are numerous examples of mass mortality which illustrate this problem. The parasite *Bonamia ostreae* (which is notifiable to the Office International des Epizooties, and subject to control under the fish health regime of the European Union) is thought to have been introduced into France and Spain with infected *Ostrea edulis* oysters imported from California at the end of the 1970's. Consequently, mass mortalities of flat oysters were first observed in south Brittany (France) in association with the detection of the parasite. Then the disease spread to nearly all the oyster farming areas and native oyster beds through farming practices and commercial exchanges. Another notifiable parasite of molluscs is the parasite *Haplosporidium nelsoni*, which has been responsible for high mortalities of *Crassostrea virginica* in the Chesapeake Delaware bays (USA) at the end of the 1950's. The origin remains uncertain, but DNA analysis indicates that *H. nelsoni* was introduced to the east coast of the U.S.A. from California or from Asia via imported plantings of *C. gigas*. This species, as a carrier of this pathogen, seems to be more relevant to the disease.



Prophylaxis and treatment of shellfish aquaculture



DIPNET is a coordination action funded under the Scientific Support to Policy initiative of the European 6th Framework programme for research.

Veterinærmedisinsk oppdragscenter, Norway
January 21st 2005



Disease Interactions and Pathogen exchange between farmed and wild aquatic animal populations - a European network
Newsletter 2

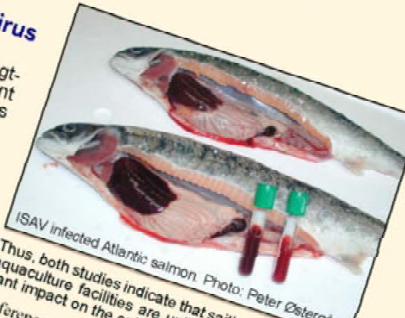
Saithe *Pollachius virens* - unlikely a reservoir for ISA virus

A recently published scientific article strengthens the evidence that saithe are resistant to infectious salmon anaemia (ISA) virus and incapable to support its replication.

Saithe Pollachius virens is a marine species of the Gadoid family, distributed in the east Atlantic from the Barents Sea and Spitsbergen to Bay of Biscaya; west Atlantic and southwest Greenland; and in the Saithe *Pollachius virens* are commonly found in and around salmon cages, and their close association with the salmon make them a potential viral reservoir.

Canadian authors have recently published the results from a study to determine the presence and prevalence of ISA virus in saithe cohabitating with ISA virus infected farmed Atlantic salmon *Salmo salar*. All the 93 saithe tested were ISA virus negative using RT-PCR.

These results corroborate earlier findings of European scientists, who performed trials during which wild-caught saithe were experimentally exposed to a Norwegian isolate of infectious salmon anaemia virus (ISAV). ISAV related mortality did not occur following intra-peritoneal (i.p.) injection of virus nor by cohabitation with ISAV-infected Atlantic salmon *Salmo salar*. In total 120 exposed saithe tested ISAV virus negative using RT-PCR. ISAV exposed saithe remained incapable of transmitting ISA virus when subsequently transferred to tanks with naive Atlantic salmon.



ISAV infected Atlantic salmon. Photo: Peter Østergård
Thus, both studies indicate that saithe in and around aquaculture facilities are unlikely to have a significant impact on the epizootiology of ISA virus.

References:
McClure CA, Hammett KL, Dahoo JR, Gagne N (2004). Lack of evidence of infectious salmon anaemia virus in pollock cohabitating with infected farmed Atlantic salmon *Salmo salar*. *Diseases of Aquatic Organisms* 61: 149-152
Snow M, Raynard R, Bruno DW, van Nieuwstadt AP, Olesen NJ, Lavold T, Wallace C (2002). Investigation into the susceptibility of saithe *Pollachius virens* to infectious salmon anaemia virus (ISAV) and their potential role as a vector for viral transmission. *Diseases of Aquatic Organisms* 50: 13-18

Are you interested in disease interactions between wild and farmed fish and shellfish? Do you want to attend workshops and shellfish receive our newsletters? For more information and subscription: Visit our web site: www.dipnet.info Send an E-mail to: info@dipnet.info

VESCO, Norway
January 5th 2005

Expected results (3)

PIP (Policy Implementation Plan) for the commission:

Application of the results at the fishery policy
management level