

**TCP/RER/3301 Sustainable development of
aquaculture sector from a post harvest perspective
with focus on quality, safety, traceability**

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Major themes covered

- Regulatory requirements for fish exports
- International standards and Guidelines eg. Codex
- Implementation of good hygienic practices from farm to fork in aquaculture sector
- Disease problems, use of veterinary drugs in aquaculture, requirements for export of live fish
- Application of HACCP, traceability in fisheries sector
- Aquaculture certification requirements
- EU market for farmed fish, labeling, market promotion
- Bivalve safety management, depuration



Seabass



Seabream



Rainbow trout



Carp



Mussels



Oysters

OUTPUTS AND INDICATORS OF ACHIEVEMENTS

- Major constraints for market access for aquaculture products and key interventions required in Albania, Croatia, Montenegro and Turkey identified.
 - National assessment reports from the four countries
 - Curriculum of the national workshops based on the constraints identified in National assessment reports

Training Workshops

Country	Venue	Dates
Turkey	Bodrum	13-16 February, 2012
Turkey	Cesme	17-19 April, 2012
Croatia	Daruvar	26-28 October, 2011
Croatia	Zadar	8-10 May, 2012
Albania	Saranda	26-28 June, 2012
Montenegro	Podgorica	25-27 September, 2012



Seabream processing- Turkey



Seabass processing - Turkey



Seabass/Seabream hatchery, Croatia



Rainbow trout processing - Croatia



Bivalve depuration facility, Albania



Bivalve - Montenegro



Smoked fish - Montenegro

OUTPUTS AND INDICATORS OF ACHIEVEMENTS

- Bivalve mollusc safety management in Albania and Croatia improved and selected fish processing companies in the four countries implement HACCP system and comply with international market requirements
 - Joint Workshop for Albania/Montenegro held in Saranda focussed on bivalve safety management
 - Biotoxin analysis training for two Montenegro scientists is being arranged
 - One national Workshop in Croatia (Split) focussed on bivalve safety management.
 - HACCP was a component in all national workshops in which representatives of processing companies participated.

OUTPUTS AND INDICATORS OF ACHIEVEMENTS

- Selected aquaculture and fish processing companies implement traceability and improve market access through packaging, labelling and branding.
 - Traceability was a part of curriculum in national training workshops
 - Labelling is a topic to be covered in Regional workshop
 - Aquaculture certification was a part of curriculum in all national workshops.

OUTPUTS AND INDICATORS OF ACHIEVEMENTS

- Aquaculture products from Albania, Croatia, Montenegro and Turkey move up the value chain through knowledge and experience sharing.
 - Regional workshop for knowledge and experience sharing
 - EUROFISH website provides access to presentations made in all national workshops
 - National reports evaluating trade performance at the end of project period?

OUTPUTS AND INDICATORS OF ACHIEVEMENTS

- Did we accomplish all that was planned?
- Possibility of no cost extension for 6 months to cover any aspects that have not been adequately addressed
- HACCP and traceability training for selected companies that are currently not in EU list?
- Regional training on any specific topics?
- Development of technical documents – case studies, lessons learnt ?

WAY FORWARD?



THANK YOU

GLOBEFISH and FIN network activities

Audun Lem, Coordinator, GLOBEFISH

Aina Afanasjeva, Director, EUROFISH

TCP Regional Workshop

31 October-2 November, 2012, Bodrum, Turkey



GLOBEFISH

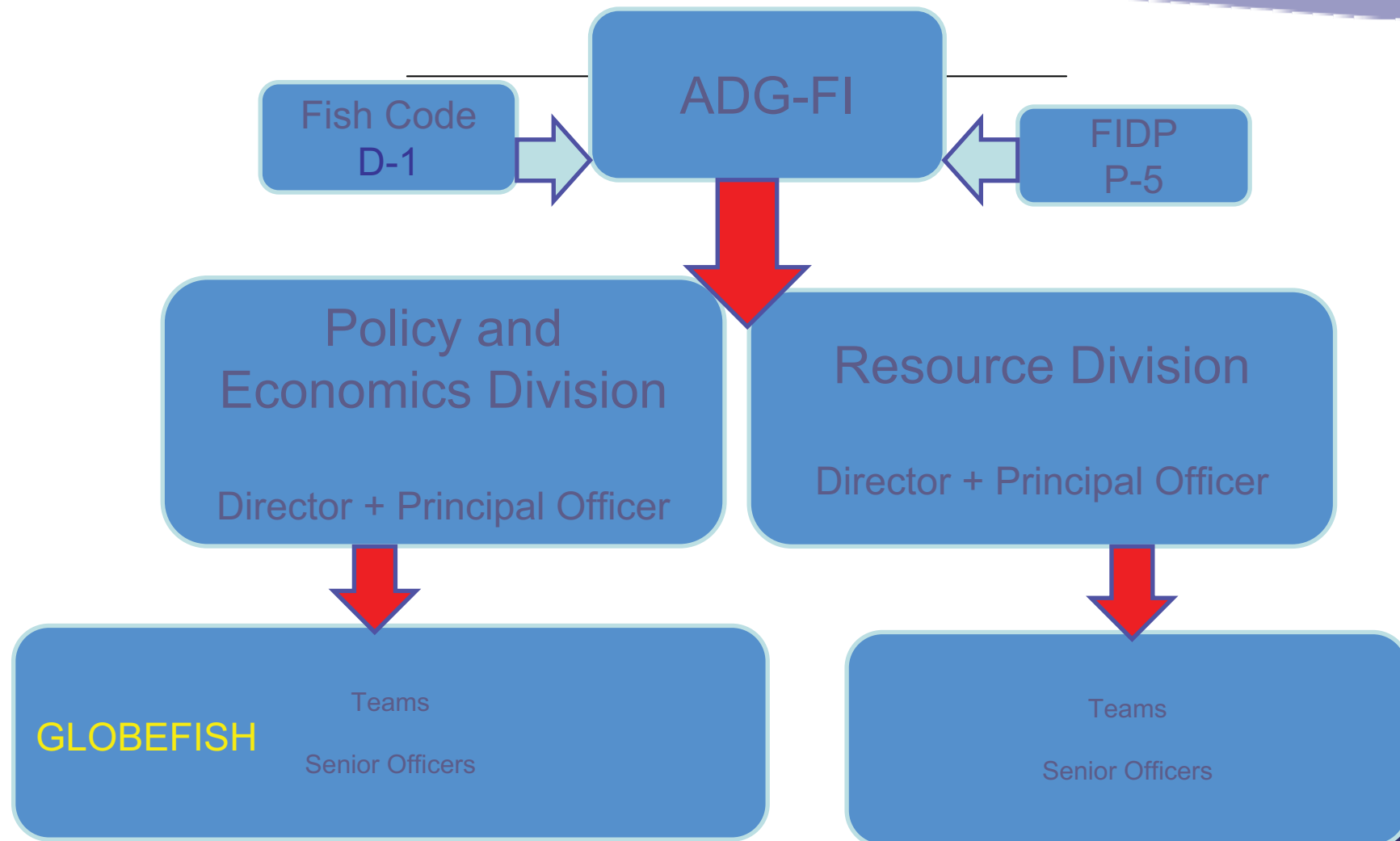


Structure

- GLOBEFISH activities;
- Fish Info Network activities;
- EUROFISH activities

FAO FISHERIES AND AQUACULTURE DEPARTMENT

3 of 37



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INTERNATIONAL ORGANISATION



FAO FISHERIES AND AQUACULTURE DEPARTMENT

Post harvest aspects:

Team 1:
trade/marketing:

- ✓FAO Subcommittee on fish trade
- ✓GLOBEFISH
- ✓FISH INFO Network
- ✓WTO/OECD/World Bank

Team 2:
quality/safety/nutrition/
technology/utilization

- ✓CODEX
- ✓WHO issues
- ✓SPS/TBT

GLOBEFISH partners

PARTNERS:

- ✓ Alaska Seafood Marketing Institute
- ✓ Denmark
- ✓ European Commission
- ✓ France Agrimer
- ✓ NMFS (NOAA)
- ✓ Norwegian Seafood Council
- ✓ Spain

ASSOCIATES:

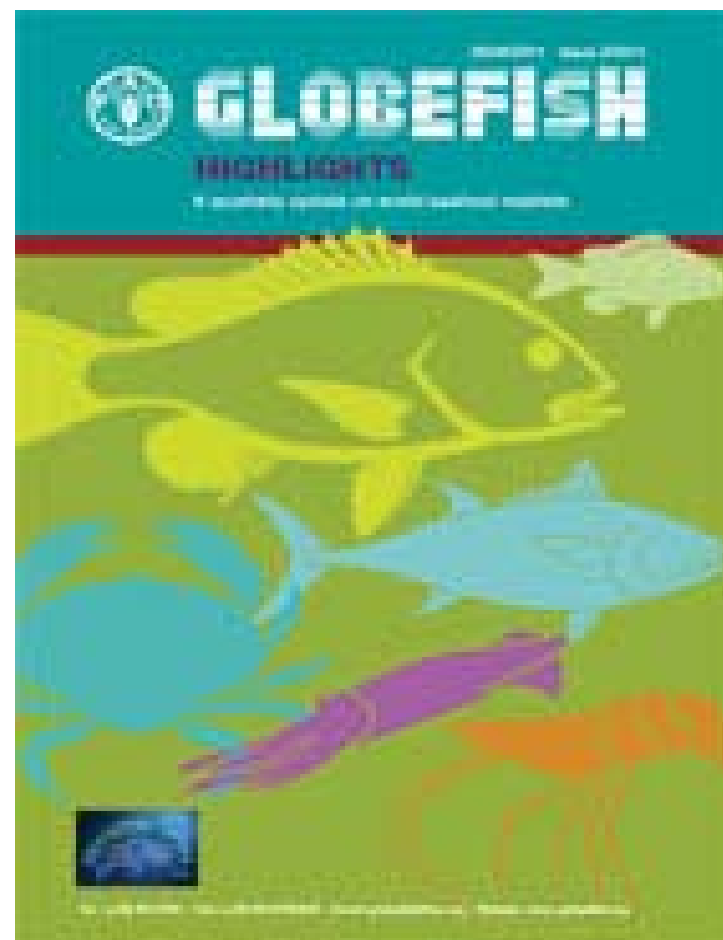
- ✓ Aalesund University
- ✓ CEIPA (Ecuador)
- ✓ ISSF
- ✓ Multivac
- ✓ Portsmouth University
- ✓ Seafish UK

GLOBEFISH

- FAO and GLOBEFISH funded 9 staff members;
- Interns from:
 - ✓ Fulbright scholarship programme
 - ✓ Princeton University
 - ✓ Northwestern University, USA
 - ✓ Trinity College, Ireland
 - ✓ University of North Carolina
 - ✓ University of Sweden
- Volunteers

GLOBEFISH HIGHLIGHTS

- Quarterly
- Expanded issue
- New layout
- Includes price index
- More statistics



GLOBEFISH RESEARCH PROGRAMME

A wide ranging series of studies on topics of current importance to the fishery industry

2012 volumes:

- *El mercado de productos pesqueros en España* - The seafood market in Spain;
- *El eco-etiquetado de productos pesqueros en España* - Ecolabelling of fish products in Spain;
- The European market for shrimp



Commodity Update

- 10-12 commodities
- Update every 18 months on the average
- Tuna/Shrimp/Salmon more frequently



FAO FOOD OUTLOOK

- Every 6 months
- Fish now included on a permanent basis
- Fish statistics
- Fish price index



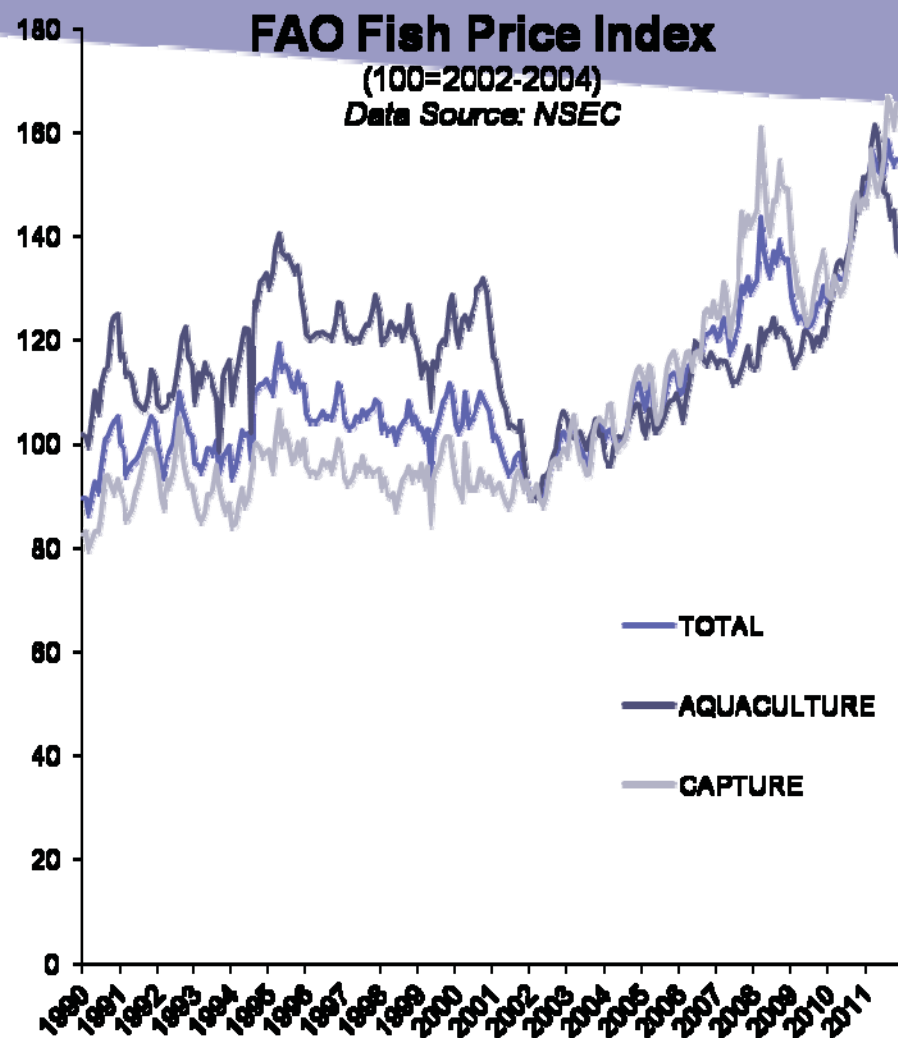
OECD-FAO Agricultural projections

- Fish included first time in 2011
- Again included in 2012
- Aim: integration of fish model in food model
- Fully funded by FAO
 - Initial support from World Bank
 - Model presented to OECD countries in 2011 and 2012
 - Projections discussed at OECD's Fisheries Committee



FAO Fish Price Index

- University of Stavanger
- Norwegian College of Life Sciences
- Universidad de Peru
- Data support: Norwegian Seafood Council



FISH INFO Network (FIN)

- The FIN network was created in late 1970's by the Food and Agriculture Organisation of the United Nations;
- GLOBEFISH is the founder organisation of the FIN and performs a co-ordinating role;
- Network consists of 7 independent intergovernmental organisations:
 - INFOPESCA – South America;
 - INFOPECHE – Africa;
 - INFOSA – Southern Africa;
 - INFOSAMAK – Near East and North Africa;
 - INFOFISH – Asia;
 - INFOYU – China;
 - EUROFISH - Europe



FISH INFONetwork



FISH INFO Network (FIN)

- It was created to assist the fishery sector, particularly in developing countries and countries in transition;
- 50 national governments have signed/ratified international agreements with different FIN services;
- FIN has more than 80 full time staff members and works with over 100 international consultants in all fields of fisheries;
- FIN covers all aspects of post-harvest fisheries and aquaculture;
- Each centre reflects strenght and weaknesses of its region: e.g., INFOFISH – dynamic Asia; INFOPECHE – difficult West and Central Africa

FISH INFO Network (FIN)

- Provide support to fisheries and aquaculture sector in each region;
- Carry out market analysis by commodity, price development and statistics;
- Provide information on market access to export markets and facilitate trade contacts;
- Disseminate relevant technical and market information;
- Organise conferences, seminars, workshops and business-to-business meetings;
- Remains privileged partner in the region for implementation of TCP and Common Fund for Commodities (CFC) projects;
- Through its link to FAO Globefish and Fisheries and Aquaculture Department it also has access to the latest information and knowledge on fisheries policy and management issues worldwide

FISH INFO Network (FIN)

- Specialised magazines provide relevant technical and market related information;
- The FIN pages are a regular feature in the four network magazines – Infofish International, Infopesca Internacional, Eurofish Magazine and Infosamak Magazine;
- They present the FIN-wide spectrum of activities, showing actions ar



FISH INFO Network (FIN)

- Joint EUROFISH and INFOFISH participation at the Future Fish Eurasia Expo, 7-9 June 2012, Izmir, Turkey;
- A visit of INFOFISH to the wholesale market was organised by Hayri Deniz, Chairperson of EUROFISH

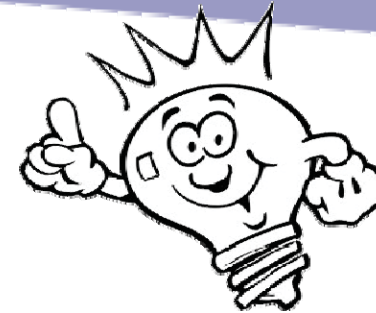


FISH INFO Network (FIN)

- EUROFISH advertisement package provides customers with a possibility to advertise in four magazines – EUROFISH Magazine, INFOFISH International, Infopesca Internacional and INFOSAMAK Magazine for a favourable price;
- Four partner magazines have a distribution in Europe, Asia, Africa and South America;
- Circulation and frequency of the magazines:
 - EUROFISH Magazine (6 issues/year), English, 2 500 copies;
 - INFOFISH International (6 issues/year), English, 6 600 copies;
 - Infopesca Internacional (4 issues/year), Spanish, 2 400 copies;
 - INFOSAMAK Magazine (4 issues/year), English, French and Arabic, 5 000 copies

FISH INFO Network (FIN)

- There is a need for:
 - More flexible network;
 - More integration and coordination;
 - Strengthening strategic partnerships;
 - Strengthening of technical expertise;
 - Focus on partnering and joint activities;
 - Involvement of private sector;
 - Stronger linkages between FAO/Globefish and FIN priorities;
 - Focus on what we can do better than others



EUROFISH – Who we are?

www.eurofish.dk

- Regional inter-governmental organisation for fisheries and aquaculture sector in Europe
- Information, advice and training focusing on trade and markets, fish processing and aquaculture
- Member Countries: **Albania, Croatia**, Denmark, Estonia, Italy, Latvia, Lithuania, Norway, Poland, Romania, Spain and **Turkey**

What we do?

- Publications (e.g., Market reports, guides for the industry)
- Dissemination of information through:
 - ✓ EUROFISH Magazine
 - ✓ EUROFISH website www.eurofish.dk
 - ✓ EUROFISH Magazine website www.eurofishmagazine.com
- Advertising and promotion
- Organising of seminars, workshops, business-to-business meetings
- Project management

Project management

Key areas

- Industry, trade and markets
- Aquaculture
- Seafood safety and quality assurance
- Dissemination of information

Activities

- Market and sector studies and surveys
- Workshops, seminars and conferences
- Business to business meetings



Project management

- EUROFISH is a partner in projects launched by:
 - International organisations: FAO, EU – DG Mare, DG Research (FP7 accessible for non-EU countries)
 - Regional organisations: Nordic Council of Ministers, Baltic Sea Region programme
 - National governments and institutions (Norwegian Seafood Council, Norway Innovations, Spanish Cluster of fishing companies, etc.)

Project management

- Project ideas have to be submitted by a certain deadline
- Comply with clearly defined themes
- Have the required partnership structure
- Funding will be awarded only for the best project proposals within the limits of the total available budget

International organisations – case study

Sustainable development of the aquaculture sector from a post harvest perspective with focus on quality, traceability and safety

- FAO Technical Cooperation Programme (TCP)
- Partners: FAO REU, Budapest and FAO FIPM, Rome
- Countries: Albania, Croatia, Montenegro and Turkey
- Transfer of knowledge through organising national and regional workshops
- Training
- Technical assistance



International organisations – case study

European Market Information Service for fisheries and aquaculture products

- Price monitoring along the supply chain, from first sales to retail
- Duration: 2 ½ years, 3 phases
- Phase 1: state of the play in 27 EU Member States and proposals for the Observatory design
- Phase 2: design of the Observatory and IT solutions
- Phase 3: test and hand-over to the European Commission
- 27 countries: EU 27, Norway and Iceland
- Cooperation with GLOBEFISH



International organisations – case study

Interim evaluation of implementation of the European Fisheries Fund (EFF)

- Interviews with national Management, Certifying and Audit authorities, and local fisheries groups
- Proposals for future financial instrument (2014-2020) in fisheries sector in the EU
- Evaluation of the national interim evaluation reports of the European Fisheries Fund



International organisations – case study

Aqualnnova

- Research under the Seventh Framework Programme
- Create an international framework to facilitate the development of vision documents and strategic research agendas of the European aquaculture
- EATIP (European Aquaculture Technology and Innovation Platform), FEAP, EAS, AquaTT (Ireland), SINTEF (Norway)
- Dissemination of Community funded RTD project results providing dedicated fora

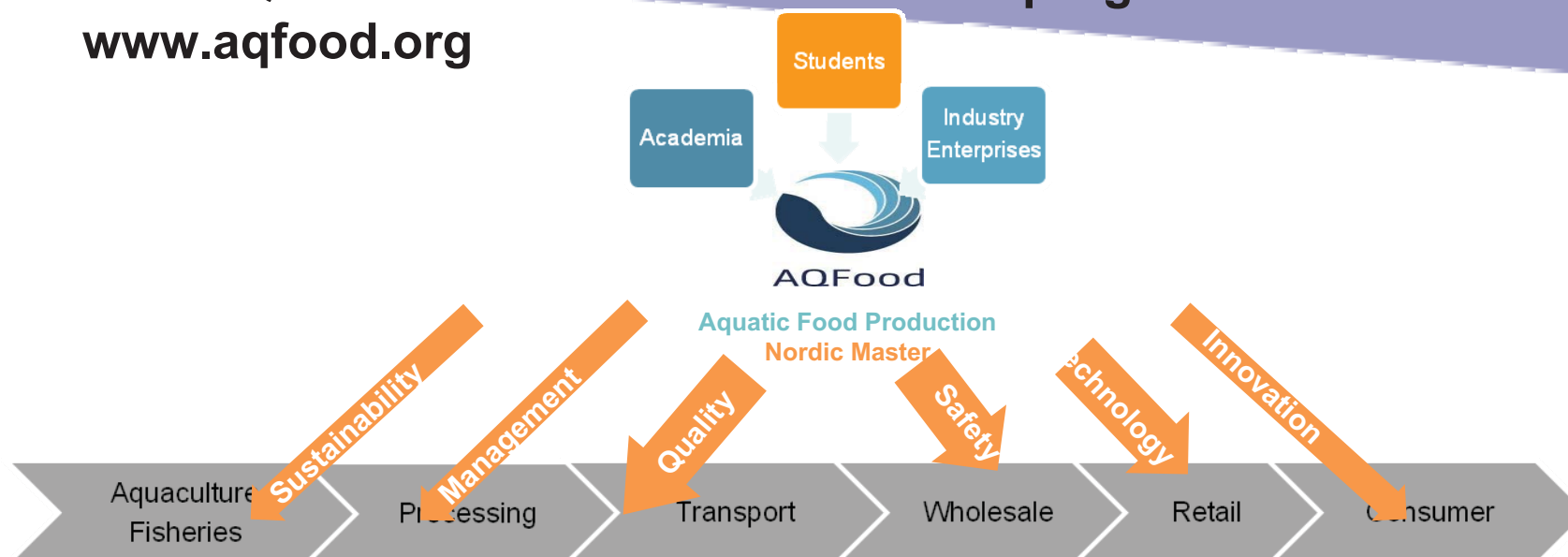


Aquafima – Integrating aquaculture and fisheries management towards a sustainable regional development in the Baltic Sea Region

- To integrate aquaculture and fishery management towards a sustainable regional development in the BSR, applying an eco-system approach
- Develop strategies and implement actions that will result in a more sustainable use of marine resources and also benefit the economic competitiveness of coastal areas
- **Partners:** State Development Cooperation Mecklen-burg-Vorpommern (DE), Rostock Business and Technology Development GmbH (DE), University of Rostock (DE), EUCC-The Coastal Union of Germany (DE), Fishery Local Action Group „Rybacka Brac Mierzei” (PL), Institute for European Initiatives (PL), Klaipeda University (LT), Environmental Development Association (LV), Ministry of Environment Protection and Regional Development of Latvia (LV), Norwegian Seafood Centre (NO), Estonian University of Life Sciences (EE)



New AQ Food Nordic master education programme www.aqfood.org



- Motivate industry – academia interaction
 - **Apply** new approaches / communication strategies
 - Reshape curricula and build better business-university links
 - Enhance the interest of students
 - Motivate recruitment of highly qualified staff in industry
- ⇒ Structured education programs linked to visible career opportunities in the industries
- ⇒ **Enhanced innovation potential in the North Atlantic marine sector**

National governments/institutions – case study

Workshop on Recirculation Technologies

- Latest developments in recirculation technologies and environmental friendly methods
- Market opportunities for fish from recirculation aquaculture
- 70 participants from Turkey, Azerbaijan, Kyrgyzstan, Tajikistan, and Uzbekistan
- Partners: FAO (FishDev Central Asia), Ministry of Agriculture and Rural Affairs (Turkey), Billund Aquaculture Service, Ejstrupholm Fish Farm (Denmark)



National governments/institutions – case study

Development of high-value marinated herring products

- Increase the value of Danish standard marinated herring products
- Desktop supermarket survey on the Russian, Ukrainian and German markets
- Consumer survey on the Danish market
- Development of Pelagic Information Programme software
- Partners: Pelagic Skagen, Kattegat Seafood, Food Tag, Metro Cash and Carry, Danish Technical University, Danish Technological Institute



National institutions – case study

Joint Ventures

- Identification of opportunities for Spanish-Russian joint ventures for the Cluster of Fishing Companies in the Third Countries (Madrid)
- Russian legal and regulatory system in fishing (e.g. quota management, taxation, profitability)
- Potential scenarios and recommendation for creation of joint ventures
- Participation at the International Fishery Congress, Vladivostok



Why to be a partner?



- Transfer of know-how (new technologies, innovations, etc.)
- Access to latest technical and economic information (e.g. markets, prices, quality and safety issues, etc.)
- Participation of national institutes, universities, associations, SME's in international and regional projects
- Exposure of national experts and consultants to international projects and fora
- Networking

Thank you for your attention!

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**FAO TCP/RER/3301(D)
SUSTAINABLE DEVELOPMENT OF THE AQUACULTURE
SECTOR FROM A POSTHARVEST PERSPECTIVE WITH
A FOCUS ON QUALITY, TRACEABILITY AND SAFETY**

PROJECT ACHIEVEMENTS IN CROATIA

Bodrum, Turkey, 2012





-
- ☐ **Croatian Aquaculture**
 - ☐ **National report**
 - ☐ **Project outcomes**
 - ☐ **Conclusions**

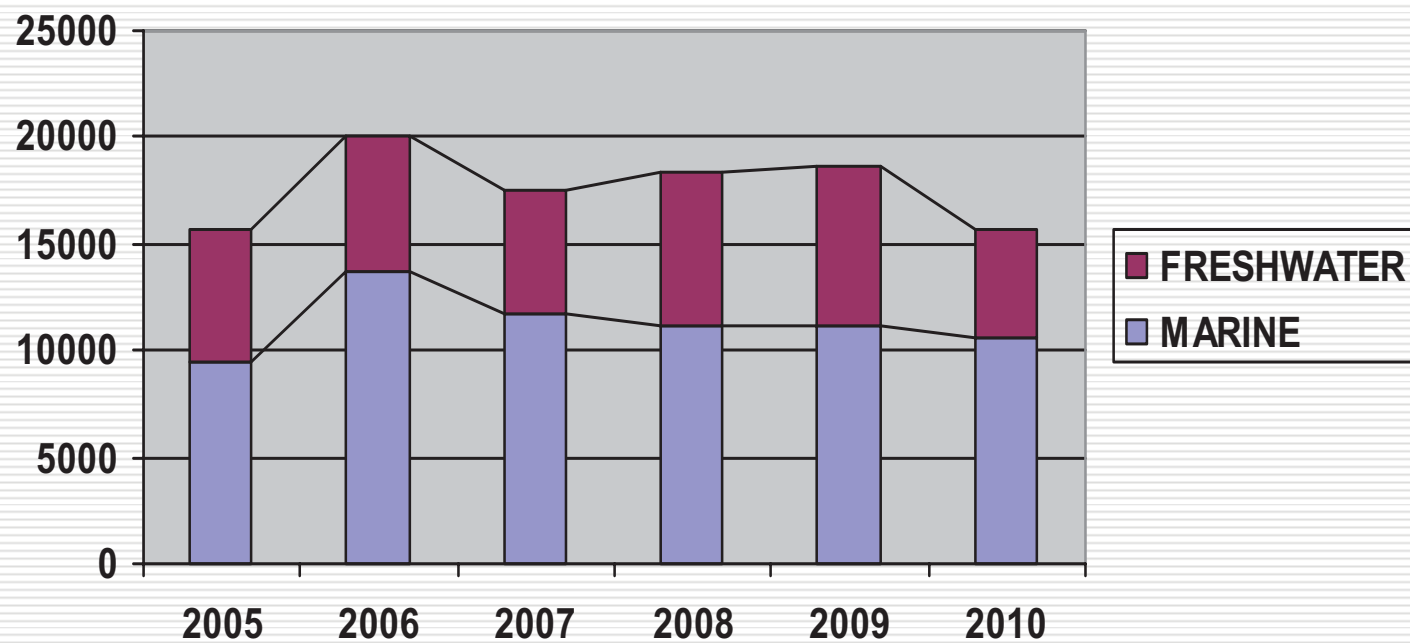




☐ Croatian Aquaculture



Aquaculture production 2005 - 2010



2010 PRODUCTION BY AQUACULTURE

☐ MARINE AQUACULTURE (tons):

<input type="checkbox"/> European sea bass	2800
<input type="checkbox"/> Gilthead sea bream	2400
<input type="checkbox"/> Atlantic bluefin tuna	3368
<input type="checkbox"/> European flat oyster	60
<input type="checkbox"/> Mediterranean mussel	2000
<input type="checkbox"/> Other	2

☐ TOTAL: **10630**



2010 PRODUCTION BY AQUACULTURE

☐ FRESH WATER AQUACULTURE (tons):

<input type="checkbox"/> Rainbow trout	2482
<input type="checkbox"/> Common carp	1811
<input type="checkbox"/> Silver carp	73
<input type="checkbox"/> Bighead carp	309
<input type="checkbox"/> White amur	231
<input type="checkbox"/> Northern pike	8
<input type="checkbox"/> Cat fish	29
<input type="checkbox"/> Perch	7
<input type="checkbox"/> Other	93

<input type="checkbox"/> <u>TOTAL</u>	<u>5043</u>
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2010 AQUACULTURE PRODUCTION BY CURRENT MARKETS

- ☐ **Aquaculture BFT: 100% export to Japan & USA**
- ☐ **Aquaculture Bass and bream: 30% export to EU; domestic market**
- ☐ **Aquaculture Shellfish: 100% domestic market**
- ☐ **Aquaculture Carp & trout: 20% export to Bosnia, Serbia, Montenegro, EU; domestic market**





















☐ National report



In 2008 when this project was designed, Croatian national issues were:

- ☐ **Lack of knowledge of EU regulations and criteria**
- ☐ **Insufficient control on bivalve molluscs safety**
- ☐ **Poor implementation of HACCP**
- ☐ **Need for training on labeling and traceability**



But as it took 2 years to start the project, in the meantime Croatia:

- ☐ **Has transposed all EU legislation to the national legislation**
- ☐ **Has implemented complete control on bivalve molluscs safety**
- ☐ **Has implemented HACCP in all establishments**



Recommendations for the National Training Workshops under the TCP (National report)

- ☐ **Develop guidelines of aquaculture good practices**
- ☐ **Support certification and labelling procedures to improve market approach**
- ☐ **Develop Croatian Brand scheme to increase export**
- ☐ **Support organic production and development of domestic sea food organic market**
- ☐ **Establish continuous promotional activities about characteristics and advantages of farmed fish to increase domestic consumption**
- ☐ **Support educational activities in order to increase total domestic sea food consumption**



Recommendations for the National Training Workshops under the TCP (National report)

- ☐ **Finalise legal framework and continue with educational and promotional activities regarding establishment of producers' organisations**
- ☐ **Introduce continuous economical and financial analysis of the sector in order of better understanding and more realistic planning**
- ☐ **Develop official marketing strategy for the sector**
- ☐ **Develop system of communication within industry**
- ☐ **Develop system for data collection and dissemination on consumption, distribution channels, market trends and trade information**



Recommendations for the National Training Workshops under the TCP (National report)

- ☐ **Develop Guidelines for FBO for fisheries industry regarding hygiene, hazards, labeling etc**
- ☐ **Ensure Official samples of end products in establishments and on the market**
- ☐ **Ensure official controls at fishing vessels accordance with food legislation**
- ☐ **In HACCP include all relevant hazards in risk assessments**
- ☐ **Educate official person in purification centers for live bivalve mollusc about systems of purification and hazards**
- ☐ **Educate freshwater warm species farmers about food legislation and international market standards**





☐ Project outcomes



INCEPTION WORKSHOP, Zagreb, March 03-04, 2011



1. National workshop Daruvar, October 2011: "Food safety management in carp farms and processing"



PROGRAM

**FAO i EUROFISH Zajednički tehnički projekt
RADIONICA "Sigurnost hrane na ribnjačarstvima i
objektima za preradu ribe"**

Daruvar, 26-28 listopada 2011

1. National workshop Daruvar, October 2011: *"Food safety management in carp farms and processing"*

Participants:

- ☐ **Industry 27**
- ☐ **Administration 5**
- ☐ **Extension service 1**
- ☐ **University 2**
- ☐ **Speakers: 2 FAO + 2 EUROFISH + 2 NATIONAL**



1. National workshop Daruvar, October 2011: *"Food safety management in carp farms and processing"*

Subjects:

- ☐ **General requirements for export of fish and fishery products to EU**
- ☐ **EU Hygiene package – application in carp farms and in carp processing**
- ☐ **Market for carps in Europe and types of products**
- ☐ **Health management of carps, use of chemicals and veterinary drugs in carp aquaculture**



1. National workshop Daruvar, October 2011: “*Food safety management in carp farms and processing*”

Subjects:

- ☐ **Export of live fish to EU- requirements and how to meet them**
- ☐ **Principles of GHP, HACCP and their application in fish processing**
- ☐ **Field visit to approved establishment**
- ☐ **Field visit to fish farm**









2. National workshop, Zadar, May 2012: *Market Requirements for the Aquaculture Industry in Croatia*



PROGRAM

FAO TCP/RER/3301(D)

**Održivi razvoj akvakulture s posebnim težištem na kvaliteti,
slijedivosti i zdravstvenoj ispravnosti konačnog proizvoda**

Zadar, 08-10 svibnja 2012

2. National workshop, Zadar, May 2012: *Market Requirements for the Aquaculture Industry in Croatia*

Participants:

- ☐ **Industry 10**
- ☐ **Administration 5**
- ☐ **Extension service 2**
- ☐ **University 2**
- ☐ **Speakers: 2 FAO + 2 EUROFISH + 2 NATIONAL**



2. National workshop, Zadar, May 2012: *Market Requirements for the Aquaculture Industry in Croatia*

Subjects:

☐ Markets, promotion and trade:

- **Updates on aquaculture status, farmed fish products and markets**
- **Communication and Marketing promotion in EU**
- **General requirements for export of fishery products to the EU**
- **Implementation of EU regulations**

☐ Standards, rules and implementations:

- **Traceability practices - Case studies from EU**
- **Labeling of fishery products**
- **Certification schemes for aquaculture**



2. National workshop, Zadar, May 2012: *Market Requirements for the Aquaculture Industry in Croatia*

Subjects:

- ☐ **Products, strategies and consumers:**
 - Niche markets and new products
 - Supermarkets in fresh fish distribution
 - Promotion of farmed fish in Europe
 - GHP, HACCP and quality management schemes
 - Croatian fish consumer preferences

- ☐ **New opportunities and evaluation:**
 - Best aquaculture practices in bass/bream farming in Croatia
 - The role of producer organizations
 - Field visit to the bass/bream hatchery













3. National workshop, Split, October 2012: *Official sampling and analyses of fishery products and LBM*

- ☐ **9 veterinary inspectors attended**
- ☐ **Official sampling and delivering of fishery products and LBM in laboratory for chemical analyses**
- ☐ **Methods for analyses of fishery products for histamine, TVB, heavy metals and biotoxins for LBM**
- ☐ **Official sampling and delivering of fishery products and LBM in laboratory for microbiological analyses**
- ☐ **Methods for analyses of fishery products for E.coli, Salmonella**
- ☐ **Norovirus, Vibrio spp.**



Equipment for Croatian Veterinary Institute

Aim: control of aquaculture products (both from freshwater and marine) to the presence of serious human pathogens:

- ☐ different genus of *Mycobacteria*
- ☐ human viruse like genus *Astrovirus*, *Enterovirus*, *Norovirus* or *Cobuvirus*
- ☐ human parasites like *Giardia* and *Cryptosporidia*



Equipment for Croatian Veterinary Institute

- ☐ **PCR Thermocycler**
- ☐ **(BIOMETRA, TProfessional Gradient)**
- ☐ **Checking of mollusks (mussels and oysters) and fish from freshwater and marine farms to presence of human pathogens (mycobacteria, enteroviruses, Cryptosporidia, Giardia)**
- ☐ **QIAamp DNA Mini QIAcube Kit**
- ☐ **Kit for isolation of parasitic, bacterial or viral DNA from samples**
- ☐ **EmeraldAmpMaxHS PCR Master Mix**
- ☐ **Kit for highly specific amplification in all applications**
- ☐ **PrimeScript One Step RT-PCR Kit**
- ☐ **For detection and analysis of RNA molecules (viruses) by RT-PCR from samples**



Study visit to Italy: Inspection in purification centers for LBM

- ☐ **Training of vet inspectors and official veterinarian about official controls in purification centers**
- ☐ **Procedure for inspection of bivalve depuration plants,**
- ☐ **Verifying implementation of HACCP**





☐ Conclusions



CONCLUSIONS

- ☐ **Freshwater farmers trained on food legislation and international market standards for freshwater warm species**
- ☐ **Marine fish farmers trained on marketing, promotion and trade strategies**
- ☐ **Official veterinarians trained on official sampling methods**



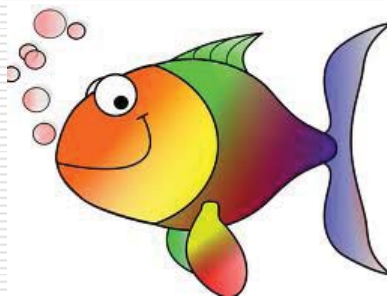
CONCLUSIONS

- ☐ **Official veterinarians trained on official controls in bivalve purification centers**
- ☐ **Equipment for control of aquaculture products to the presence of serious human pathogens supplied to Croatian Veterinary Institute**



CONCLUSIONS

- ❑ **This project was the very first technical aquaculture project in Croatia.**
- ❑ **Croatia is grateful to EUROFISH and FAO for all the efforts they have made to make this project successful.**



Thank you for your attention!

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Product /development/innovation



Cromaris



- Cromaris was created on the long-standing tradition of Cenmar, Marimirna and Marikultura Istra, companies which have been operating in the aquaculture for almost 30 years
- Today, Cromaris is the largest company in terms of white fish farming in Republic of Croatia – farming, processing and marketing of fresh fish and processed fish products



Cromaris production sites

- Cromaris locations:
 - 1) Lim (North Adriatic/Istra)
 - 2) Lamjana (Middle Adriatic)
 - 3) Košara (Middle Adriatic)
 - 4) Budava (North Adriatic/Istra)
 - 5) The Company seat is located in the Zadar in new facility built in 2012
 - 6) Hatchery at Nin (Middle Adriatic)
- Capacity – more than 5.000 tons
- Farming sites are located in the coves that are entirely protected from any type of pollution.



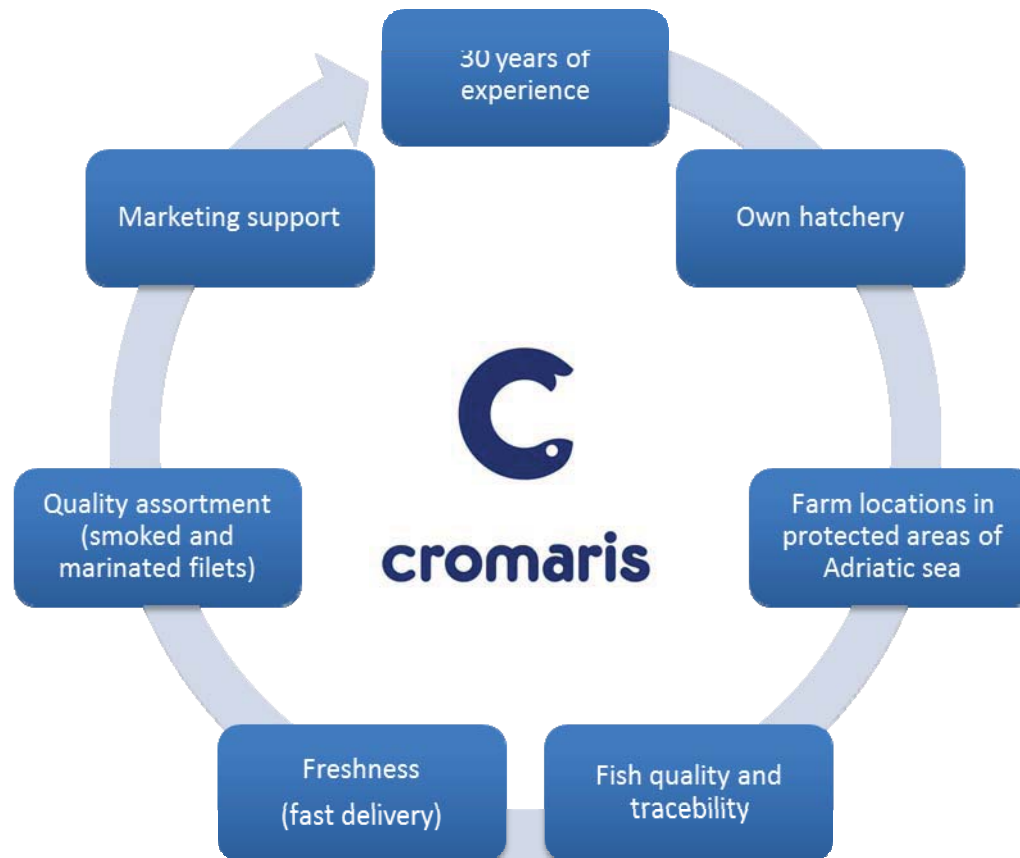


Cromaris in numbers



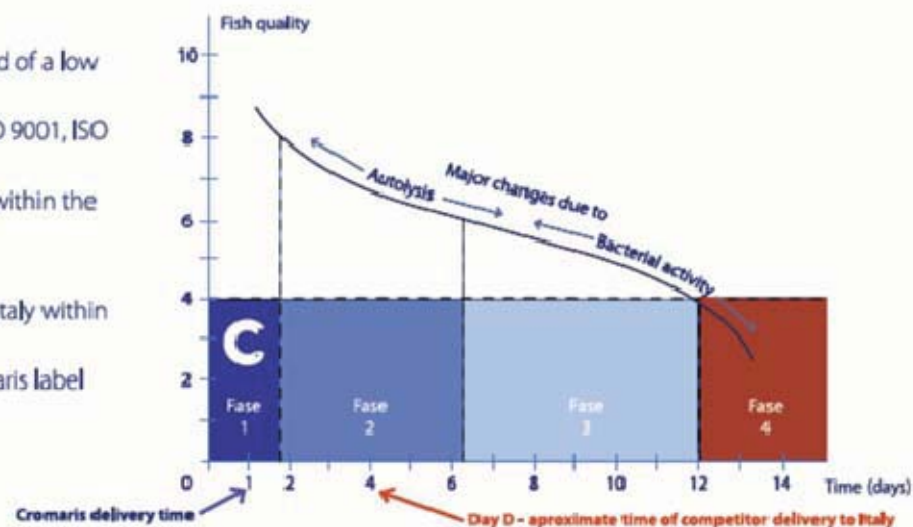
- Turnover: 17 million EUR
- Sales in 2012.: 2.500 tons
- 60% of total sales exported
- Main export market Italy, presence in Slovenia, Serbia, Poland ,Gremany and other
- Long-term plan: increase of sales to over 7.000 tons
- Number of employes: 240
- Own fishmongers: 6





Fresh and healthy from Adriatic Sea

- High quality (natural farming method of a low density open sea cages)
- Strict production control (HACCP, ISO 9001, ISO 14001, ISO 22000)
- Virgin farming sites on the Adriatic (within the preserved nature parks)
- 30-year experience in farming
- Freshness, fresh product delivery to Italy within 24-36 hours from the catch
- All products are branded with Cromaris label



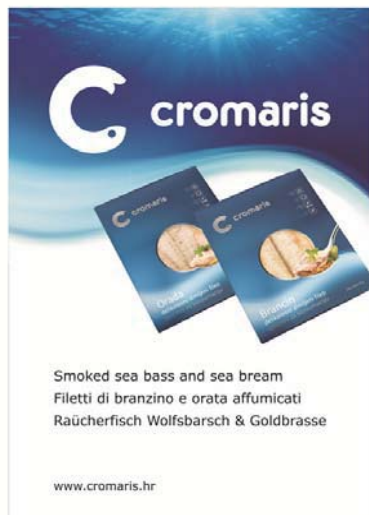
- Order to Italy example:







Range of products





Cromaris – fresh fish and shellfish

- Fresh sea bass, sea bream and adriatic meagre (stone sea bass) (NEW)
- Packaged sea bass and sea bream – packaged in a special, modified atmosphere, which holds the freshness of fish (product available both as gutted and ungutted)
- Shellfish (mussels) from park of nature Lim/Istria



Fresh and healthy
from **Adriatic sea!**





Cromaris – Deli fillets



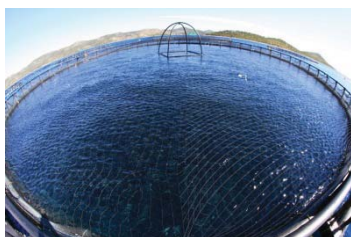
- **Cromaris smoked seabass and seabream fillets** are delicious specialties from the Adriatic sea. They are prepared in a traditional, natural way using the method of slow smoking, after being seasoned with Mediterranean spices
- **Cromaris marinated seabass and seabream fillets** are not thermically processed but seasoned with the mix of Mediterranean spices. They represent European answer to japanese sushi.
- None of our products contain preservations or colorants.

Fresh and healthy
from **Adriatic sea!**





WAYS OF ADVERTISING



Activity	Coments
Branding	In-depth analysis of the brand "Cromaris", defining the direction of the brand, choosing advertising strategies , made brand signature "Fresh and healthy from the Adriatic Sea."
Certification	Certification (HACCP,ISO 9001, 14001, 22000, KOSHER) and their promotions.
Marketing research	Cromaris constantly analyze market and update its database. Some of the most important studies are "Kontali" (European market report sea bass and sea bream), "Omnibus: Consumer Trends," "Changing the brand signature", "Exploring the German market."
Company presentations to customers	Preparation of promotional materials (in 5 languages), development company presentation videos, go to the company's presentation at international fairs, branding company facilities like buildings, cars..
PR activities	More guest appearances in TV and radio shows , different business journals, guest on the tv- show
www.cromaris.hr	redesign every year

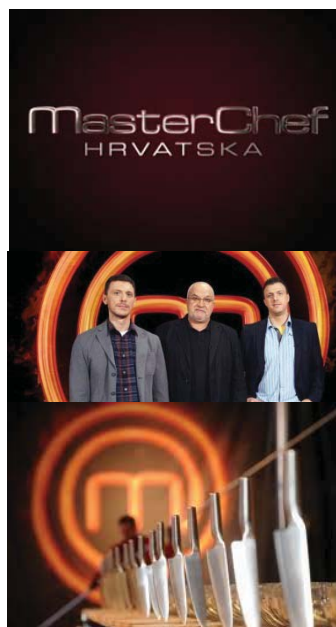


Activity	Comments
Print activity	Large print activities in magazines like, "Food & Drink", "Doctor in the House"Jumbo posters
Promotional activities in Croatia, Italy and Slovenia	Products promotion and degustations in shopping malls where customers can find Cromaris products
Fairs in Croatia and other countries	participation at the largest fair of seafood: „ Seafood” in Belgium, „Sapore” Rimini and participating in three national fairs (Opatija, Split and Zagreb)
Opening new fishmongers	Editing and opening 4 new fishmongers accompanied with 4 separate local campaigns



Stand at the fair





Activity	Comments
TV show	Advertising in the culinary reality show „Kod Ane,, Cromaris participated in 42 shows during the season. Participation in the most watched cookery show Masterchef in prime time slot on the most viewed TV channel.
Radio shows	Radio activities on National Radio in the heart of the season connected with maintenance events in 6 cities on the Adriatic coast .
Magazine „Masterchef for fish”	Edition of 50,000 books to educate the market (how to clean a fish, how to make filets etc.) Recipes in magazine are prepared by famous chefs





MARKETING - Identification





Smoked sea bass and sea bream
Filetti di branzino e orata affumicati
Raucherfisch Wolfsbarsch & Goldbrasse

www.cromaris.hr



Marinated sea bass and sea bream
Filetti di branzino e orata marinate
Marinierter fisch Wolfsbarsch & Goldbrasse

www.cromaris.hr



Development plans



Kampanja	Komentar	
'ECOBBLUE ' - eco fish from nature park Lim	Creating a new sub-brands Cromaris "Ecoblue. First step is certification. Farm in Lim bay is already certified, certification of hatcheries in progress	
Deli spread of sea bass and sea bream	In new processing facility has opened possibilities to create new products such as fish spread. Design and formulation of new products are ready	
Fish soup , bass and sea bream	Project exploiting remains from the process of fish filleting fish (bones and head). Utilization rate of industrial fish would be increase to 80% from current 45%. The final product would be a "domestic" fish soup without preservatives	
Fresh fillets	Fresh sea bass and sea bream fillets seasoned with different mix of Mediterranean spices. – packaged in special, modified atmosphere	
Common Dentex	Last two seasons experimental rearing	
New standards	IFS- International Food Standard FSSC-International Standard developed for the certification of Food Safety Management Systems for food manufacturers	

An underwater photograph showing a large school of small, silvery fish swimming in a deep blue ocean. The fish are concentrated in the lower half of the frame, moving towards the right. The upper half of the image shows the water surface with sunlight filtering through, creating a bright, shimmering effect. The text "THANK YOU FOR YOUR ATTENTION" is centered in the middle of the image, underlined.

THANK YOU FOR YOUR ATTENTION



FAO-Technical Cooperation Programme

**SUSTAINABLE
DEVELOPMENT OF THE
AQUACULTURE SECTOR
FROM A POST HARVEST
PERSPECTIVE WITH FOCUS
ON QUALITY,
TRACEABILITY AND
SAFETY**

Impacts to Albanian Aquaculture

AQUACULTURE SECTOR

- *Albania as whole is a rich country in water resource, natural inland waters, and artificial lakes for hydroelectrically power purposes, a number of rivers, abundant agriculture reservoirs framework and coastal lagoons along the western part of country, with a well developed hydrographical network and with a largest lakes in Balkan Peninsula, we can consider the aquaculture a reality of today and a potential of the future, interweaving social, economical, biological, ecological and environmental aspects.*



AQUACULTURE SECTOR

- *Aquaculture in Albania is an energetic sector and indicate a good prospective in the future.*
- *Aquaculture main categories:*
 - *Floating cage farming of marine finfish;*
 - *Trout aquaculture;*
 - *Mollusk Aquaculture ;*
 - *Aquaculture in Coastal lagoons;*
 - *Carp family farming*



AQUACULTURE SECTOR

- *Total production from aquaculture in Albania is and is showing increased interest from fish farmers.*
- *But running after increasing number of farms and consequently the amount farmed, brought the necessity of developing policies towards supporting the certification of fish products of aquaculture industry.*
- *This regional project came in befitting demand: “focus on post harvest aspects related to market access with the objective to upgrade the industry’s ability to produce and export in conformity with new requirements in key markets such as the European Union (EU)”*




FAO-TECHNICAL COOPERATION PROGRAMME

Trout Safety Management, Podgorica, Montenegro-Workshop


- *The first step consisted in making an in-depth analysis of the present situation of Albanian Aquaculture Products Certification and the authorities in those identified needs.*
- *The main issues, which were anticipated to result from the analyses, were quality assurance, traceability and safety demands, market analysis and marketing strategy issues.*
- *Specific joint workshops (Albania & Montenegro) adapted to the results of the in-depth analysis, in:*
 - *Bivalve Safety Management, Saranda, Albania, June 2012;*
 - *Trout Safety Management, Podgorica, Montenegro, September, 2012.*



Bivalve Safety Management, Saranda-Workshop

- *Has been participating all Butrinti mollusk producers, as well as others from Shengjini Bay.*
 - *The lecturers (experts from FAO and “Eurofish” Organization) highlighted the paths of new challenges in:*
 - *mollusk marketing to guaranty the standards on Quality and Safety Management for domestic consumption and (hopefully soon) exportation.*
 - *Market requirements and specific knowledge in food safety, traceability and quality assurance through regular monitoring of cultivation areas, quality schemes implementation, HACCAP System and a correct products certification.*
- 

Trout Safety Management, Podgorica, Montenegro-Workshop

- *Increased knowledge from the lecturers and exchanges information between countries in the field of:*
 - *Post harvest handling of aquaculture products, especially in Quality, traceability and safety requirements,*
 - *Product diversification, which can be achieved through the use of different marketing tools such as branding or labelling but also by stimulating product innovation and development in response to increased demand for added value and convenience products on export as well as domestic markets.*
 - *Sustainable way and in accordance with international requirements, which encompass not only the post harvest aspects but also the environmentally sustainable production*
- 

TROUT SAFETY MANAGEMENT, PODGORICA, MONTENEGRO-WORKSHOP

- As finally:
- the aquaculture as a human activity that, provide impacts in economic, social, poverty reduction, high quality nutrition, in Albanian reality need to be estimated seriously because is a potential real that has a great possibility which need to further develop.
- Two workshops dedicated Albania Aquaculture provided such knowledge and experiences that highlighted the importance Aquaculture Sector Developing through a sustainable way, in accordance with international requirements, together with the good post harvest management abilities, which are the premises to have high perquisites from throughout the entire value chain .

THANK YOU!

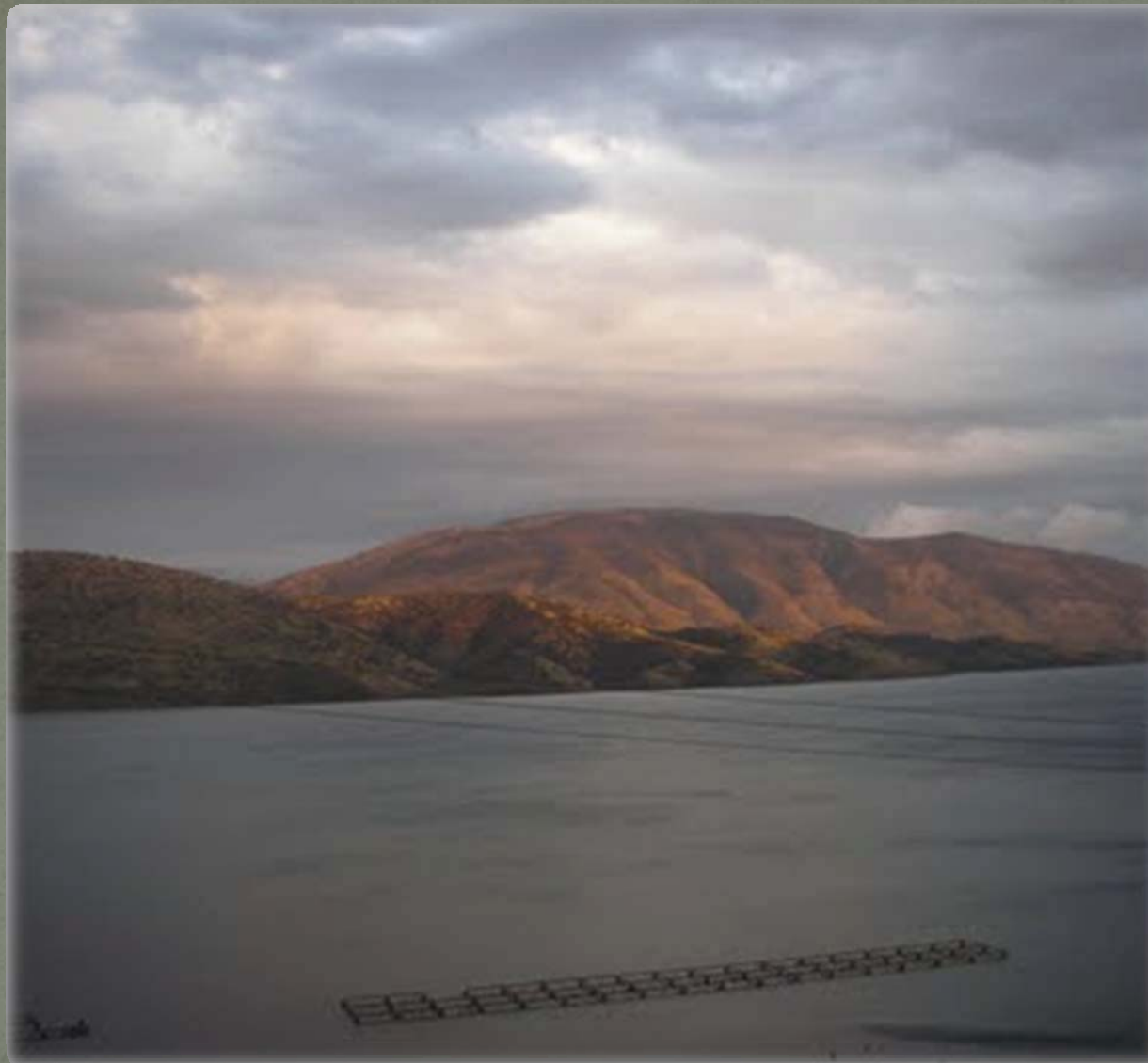




**CHALLENGE
IN
ALBANIAN
SAFE
MOLLUSK
PRODUCTION**

**BUTRINTI
LAGOON

CASE
STUDY**



Importance

Is very important among aquaculture products in Albania.

Main production happens in the Butrinti Lake (an area of 1600 ha).

The quantities produced are sold only in national and local markets.

Last 20 Years showed a fluctuation of harvest; sharp declining in 1992 (by closing export to UE, the quality standards), increasing recently.

BUTRINTI LAGOON MOLLUSC HISTORY



**Started in 1980,
by building the 80
equipments
(trays).**

**From 1980 until
1990 production
varied from 2000-
3000 t.**

**In 1989, this
production
peak 5000 ton.**

**From this year
this production
has a sharp
decreasing:**

**In 2011 was
1500 tons.**



Zone Clasification

Production area is in
continuously
monitoring by analyses:

Biotoxines
(ASP,DSP,PSP)

Heavy metals (zh,
PB,Cr,Cd)

Pesticides

Physical and Chemical

Phytoplankton

Mollusk diseases.



**Albanian Control
Authorities
Competent Authority**

**(GDPFSCP) General
Directorate of Food
Safety Policies and
Consumer Protection
in Ministry of
Agriculture, Food and
Consumer Protection,
responsible for drafting
and adoption the food
safety policy, strategy
and legislation.**

**(NAF) National Food
Authority, since 1
September 2010 is
responsible for
performing official
controls and enforcing
the legislation.**



Clasification zone

**From National
Veterinarian
Institute & Auto-
control laboratory
of D.M.S.F. of
Butrinti, Saranda.**

**Zone A go to the
market without
deuration
process.**

**Zone C is not
allowed for
consume, while
zone B pass to the
deuration
process.**



Mollusks , came from Zone B

There are about 79 trays in Butrinti lagoon.

From concrete trays, production land to the mollusk mole.

Clean the tandems from mechanical sedimentations and mud, by pressure water.



**Mollusks , came
from Zone B**

Weight the
product.

Names of
producer
and date
collected

Sampling for
analyzing
from
Veterinarian



Depuration

There are 3 pools for depuration.

Water comes source, passing in the filter and then through UV disinfection to the depuration pools.

Pool depuration capacity: 750 kg mollusk.

Time depuration process: 48 hours



Cold Storing

Re-analyzing the product after 48-hors

Cold Storage while the analyses result.

This Center has two Cold Store by capacity 40 Ton.

If the analyzes result with Decreasing the amount of Coli-bacteria and salmonella the product go to further steps.



Further
procedures.....

Disentanglement

Selectioning

For mollusk
disentangled.....



This Center
use this
packing
machine.

Packs are of
2,5,10 kg
measures and
can be
calibrated as
requested



For molluscs
in row
tandem....

The Center
use this
machine.

This,
according
the market
request



Labelling

Labeling machine is the last step for depuration procedure.

The label contain the name of product, date of harvest, date of depuration, the quantity and limit time for consume



THANK YOU

FOR

ATTENTION!



Ministry of Agriculture and Rural Development

Sustainable development of the aquaculture sector from a post harvest perspective with focus on quality, traceability and safety

* Project achievements in Montenegro

Milena Krasić
E mail: milena.krasic@mpr.gov.me



*** Aquaculture sector overview**



- Area - 13.812 km²
- Population - 630.000 inhabitants
- Population density - 45 habitants/ km²
- Coast length - 294 km
- Territorial sea area - 2.098 km²

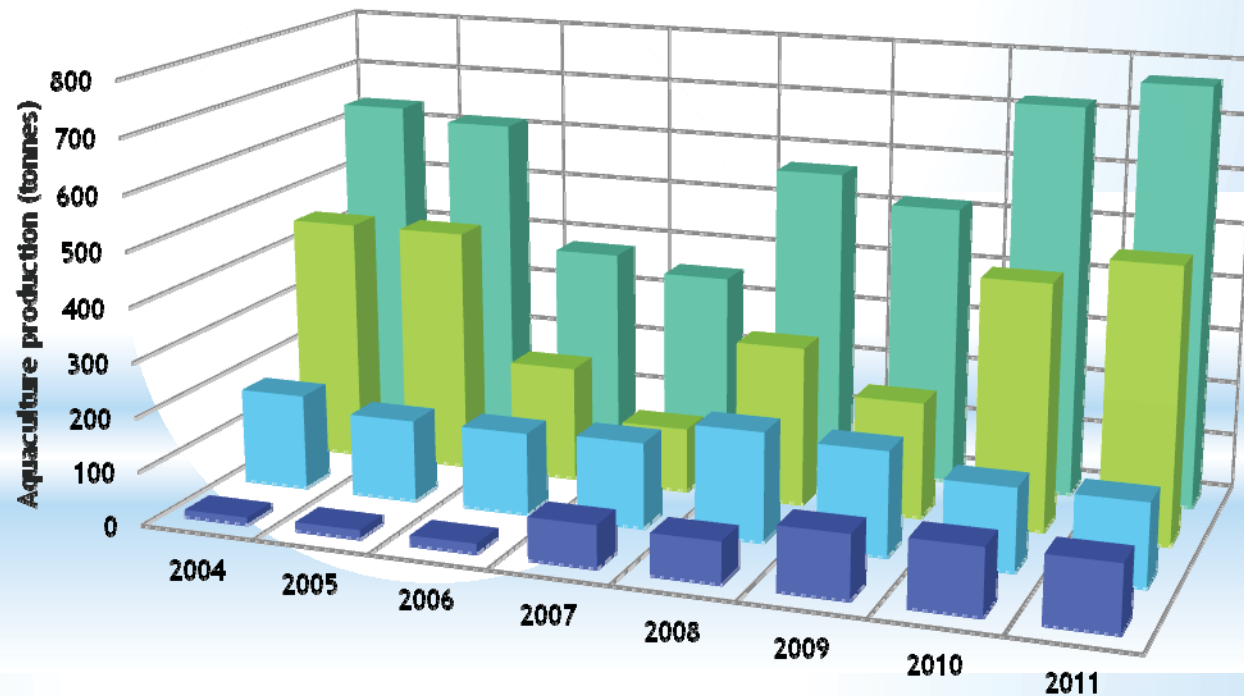
*** MONTENEGRO**

- Development of Montenegrin aquaculture represents a strategically very important issue in the programs of food production for the home market and exportation.
- Very favorable conditions for aquaculture farming in Montenegro.
- Aquaculture have significant contribution to the development of fisheries sector in Montenegro as one of the future strategy activities.

*Production

- Present aquaculture production (2011) is about 770 t/year.
 - In last 8 years (2004 - 2011) average aquaculture production was 570 t.

Aquaculture production

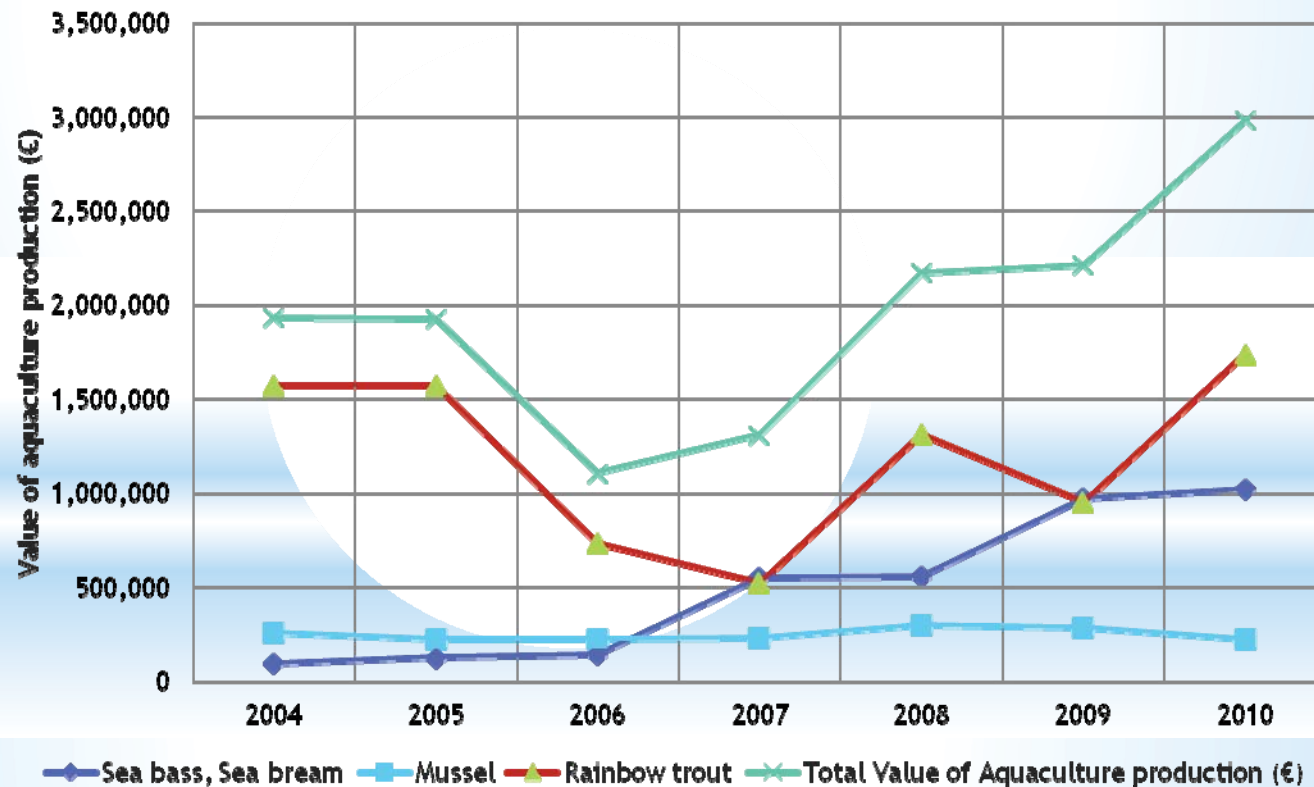


■ Sea bass, Sea bream ■ Mussel ■ Rainbow trout ■ Total Aquaculture production

*Production

- Total value of aquaculture production (2011) was 3,195,000.00 €
 - Average value (2004-2011) was 2,107,131.00 €

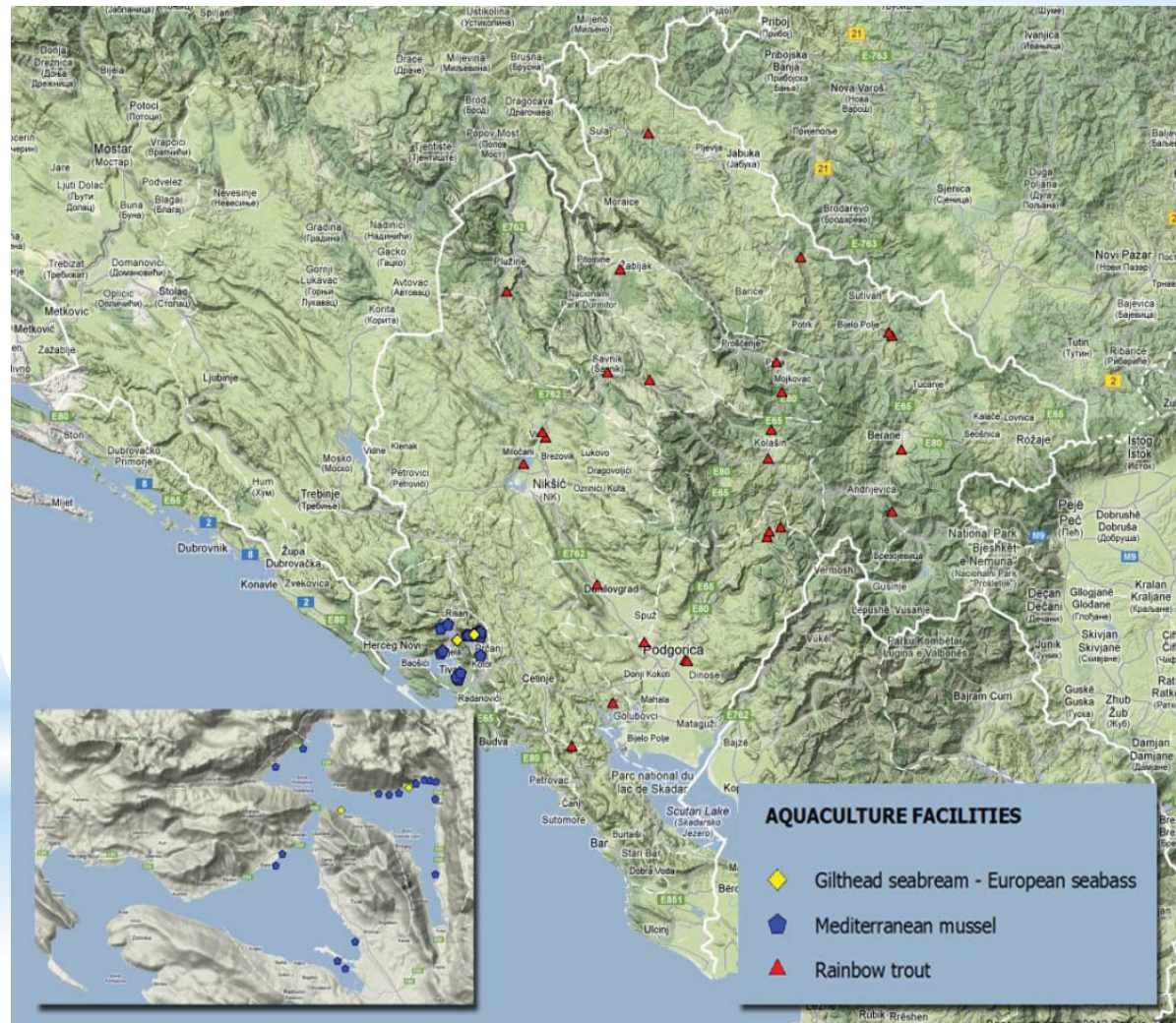
Value of Aquaculture production



* Production

■ Producers:

- 26 *Rainbow trout*
- 16 *Mediterranean mussel*
- 1 *European flat oyster*
- 2 *Gilthead seabream, European seabass*



*Production

■ Fish processing

“Ribarstvo” - Rijeka Crnojevića

- Canning fish
- Long tradition in fish processing - established 1957
- sardines and mackerel
- fish from Lake Skadar (Bleak, rudd, carp, trout, perch)
- Modernization in 2009
- Capacity 32- 40 000 cannns/day



*Production

■ Fish processing



“Ahileas” - Golubovci

- established 2010
- Smoked fish
- Trout, carp, mackerel, bleak
- HACCP certified
- Capacity 100-120 tonnes
- Production in 2011 - 30 tonnes

*Legal Framework

■ Law on Marine Fisheries and Mariculture (2009)

- Regulates general affairs in marine fishery
- Territorial waters and living resources as a state property
- Regulates fishing licenses and mariculture activities

■ Law on Freshwater Fisheries (2007)

This law governs the method of use, protection, preservation, farming and catch of fish in fishery waters.

*Legal Framework

■ Law on Food Safety (2007)

- Rulebook on Hygiene Requirements for Food of Animal or Plant Origin
- Rulebook on Special Hygiene Requirements for Food of Animal Origin

This Law regulates the basis and principles for assuring the high level of protection of human life and health and consumers' interest, and requirements for production and circulation of safe food and feed

■ Veterinary Law (2012)

This Law governs the conditions and method of performing the animal health protection, veterinary public health measures, veterinary environmental protection as well as other issues of relevance for carrying out veterinary activities

*Development Plan

- FISHERIES DEVELOPMENT STRATEGY
- NATIONAL FISHERIES DEVELOPMENT PROGRAM 2009-2013

Sustainable development of the aquaculture sector

- Increase production (1,000 t/year trout; 2,500 t/year mussel)
- Technological modernization of farms
- Reduced production costs
- Improved market competitiveness
- Safety and quality product
- Traceability of products
- Increased earnings of employees in aquaculture

*Institutional Capacities

- The Ministry of Agriculture and Rural Development of Montenegro

- Fisheries unit - number of employees - 4
- Fisheries inspection: 3 (coast) + 6 (mainland)

- Veterinary Directorate,
- Veterinary Diagnostic Laboratory,
- Institute for Marine Biology in Kotor
- Faculty of Natural Sciences and Mathematics - Biology department
- Centre for Ecotoxicological research,
- Institute of Public Health.

* **Project achievements**

- **Phase 1: Assessment of National requirements**
- **Phase 2: National capacity building**
- **Phase 3: Regional networking and strengthening marketing channels**

* **Assessment of National requirements**

■ **National Assessment report prepared**

➤ **Analysis of the food chain and market requirement for aquaculture products of Montenegro** - analysis of the present situation in aquaculture sector in Montenegro including domestic and export market demands

➤ **Carried out by the EUROFISH and FAO consultants**

➤ **Recommendations for the National Training Workshops**

* National capacity building

Workshop Bivalve safety Management (Albania- Saranda)

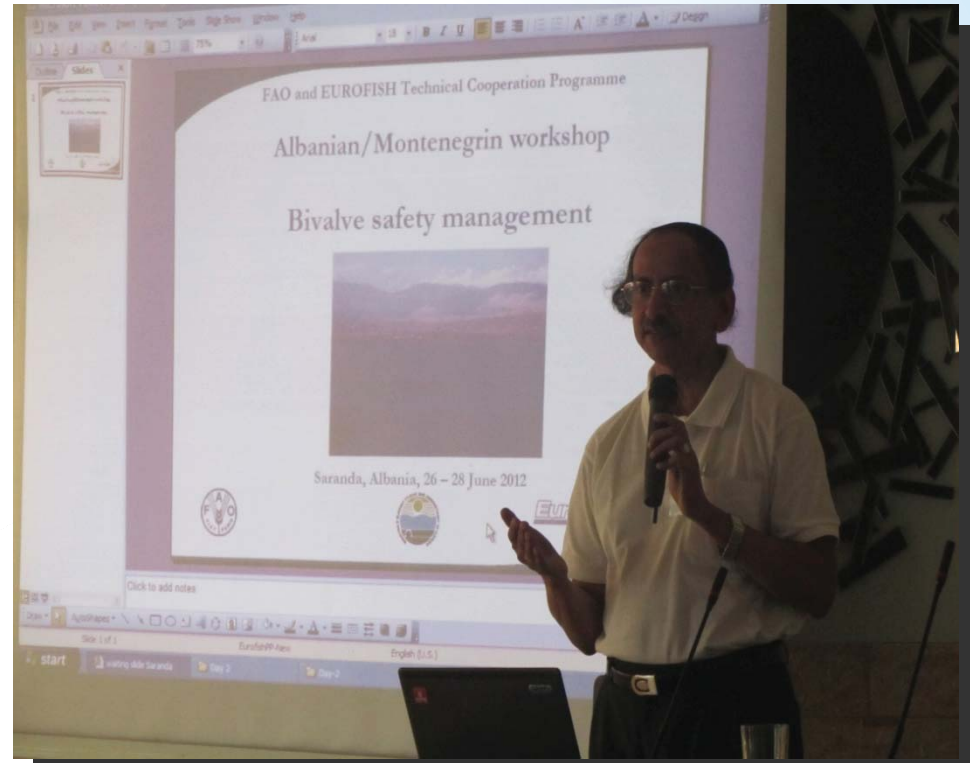
- Training and capacity building in bivalve safety management

- Topics:

- EU production, trade, hazards, market and consumption trends
- Biotoxins of concern to EU and monitoring practices
- HACCP principles and implementation in purification centers
- Bivalve depuration practices; visit to depuration center in Butrinti
- Traceability

- 9 participants:

- Bivalve producers / Association “Marefarm”
- Competent Authorities:
 - Ministry of Agriculture and Rural Development,
 - Veterinary Administration,
 - Diagnostic Veterinary Laboratory,
 - Institute of Marine Biology



* National capacity building

Workshop

Food safety in rainbow trout production (Podgorica- Montenegro)

- Training and capacity building in rainbow trout production

- Topics:

- **EU** market and current trends, export to EU
- **Primary production** (use of chemicals and drugs, compliance with market requirements and Recirculated aquaculture)
- **Fish processing industry** (Principles of HACCP, Smoking industry and Small scale processing)
- **Good Aquaculture Practices (GAP), traceability, inspection and certification**

- 26 participants:

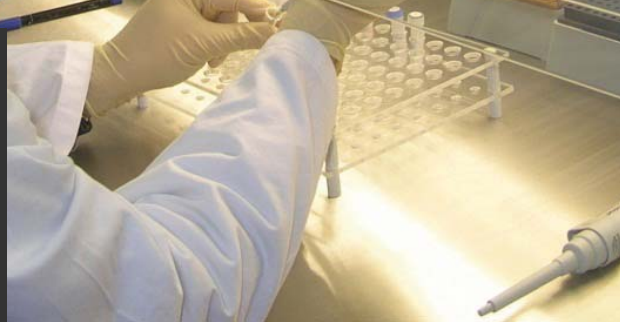
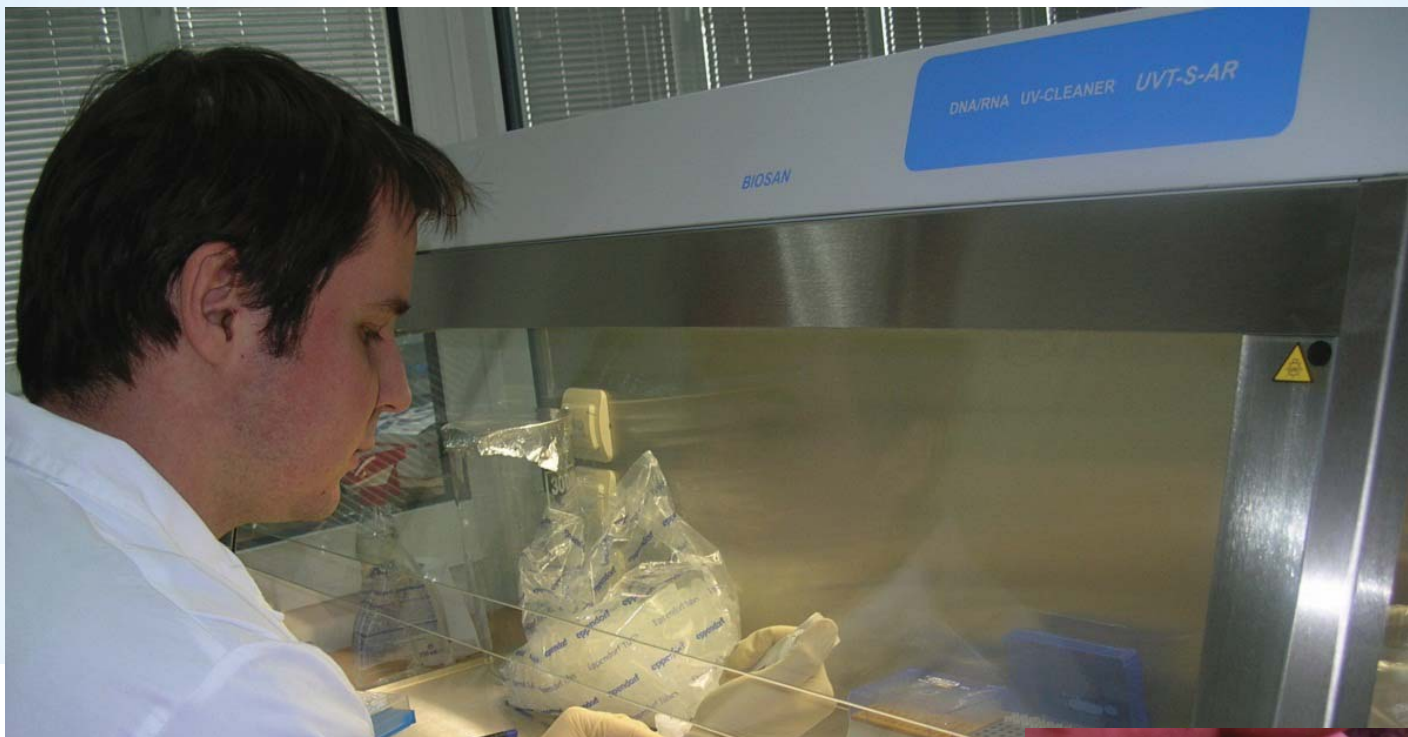
- Trout producers
- Fish Processors
- Competent Authorities: Ministry of Agriculture and Rural Development, Veterinary Administration, Diagnostic Veterinary Laboratory, National Parks of Montenegro



* Supply of lab. equipment and reagents

Adopting new method for diagnostic
marteilliosis and **bonamiosis**

- **Beneficiary:** Veterinary Diagnostic Laboratory
- *Marteillia refringens* and *Bonamia ostereae* - very dangerous pathogens of mollusks
- Marteilliosis and Bonamiosis must be reported (World Organisation for Animal Health)
- The equipment will be used to start this diagnostic method



* Training

Training on Analysis of Biotoxins

■ Beneficiary: Institute of Marine Biology

- Institute will be national institution responsible for performing the analysis of biotoxins.
- Laboratory for Water quality analysis for mariculture is recently reconstructed through the World Bank support.
- Two research assistants from Institute will be trained in Marine Institute, Galway, Ireland



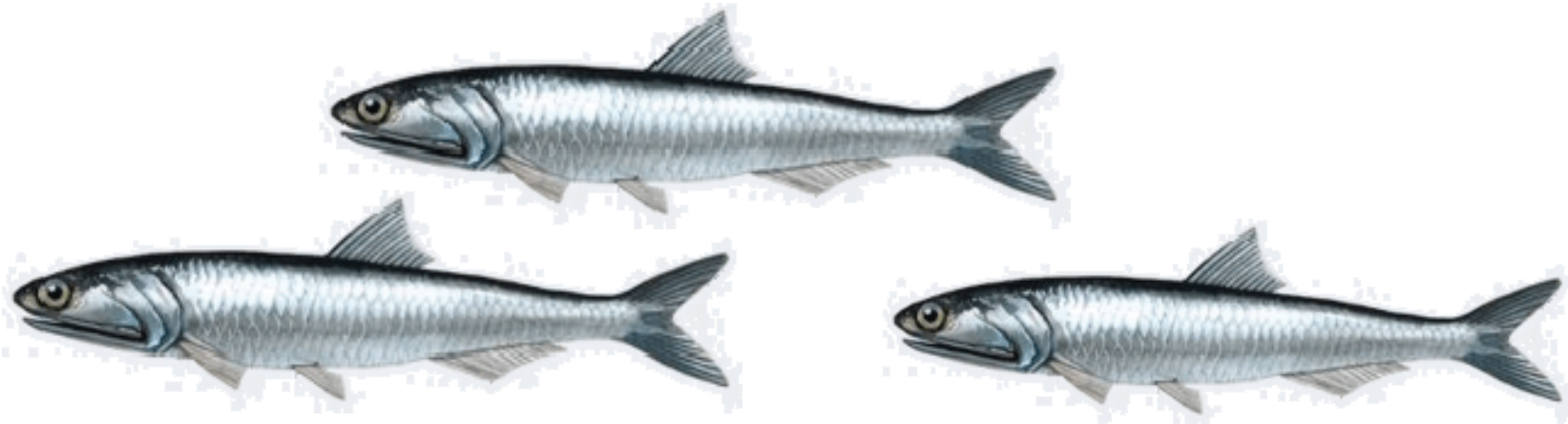
*** Thank you for your attention...**

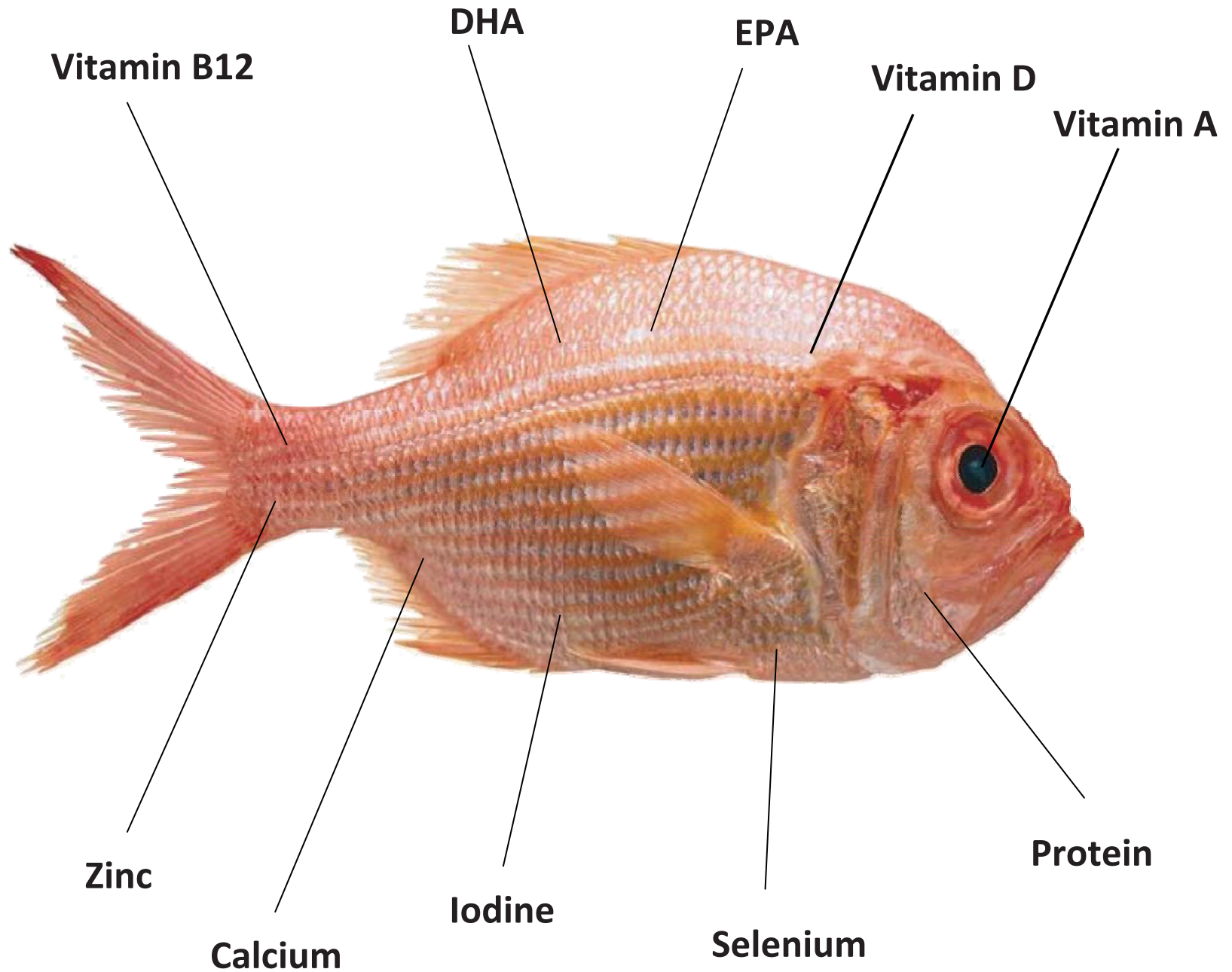
Contribution of fish to nutrition security



Bodrum 31 October 2012

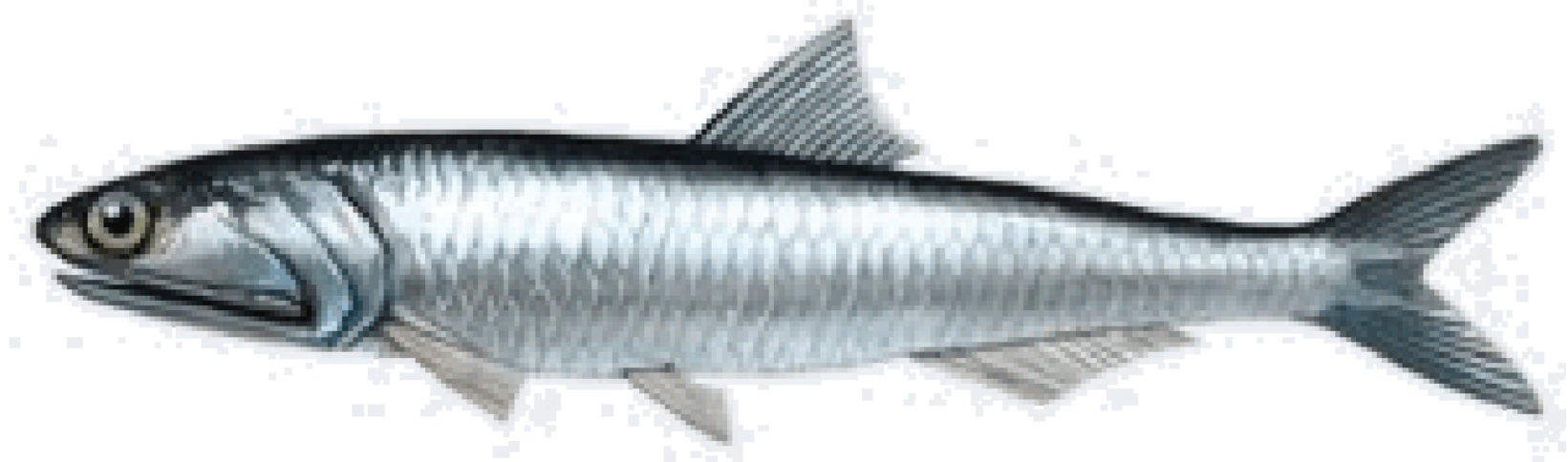
Fish -a complete source of nutrients





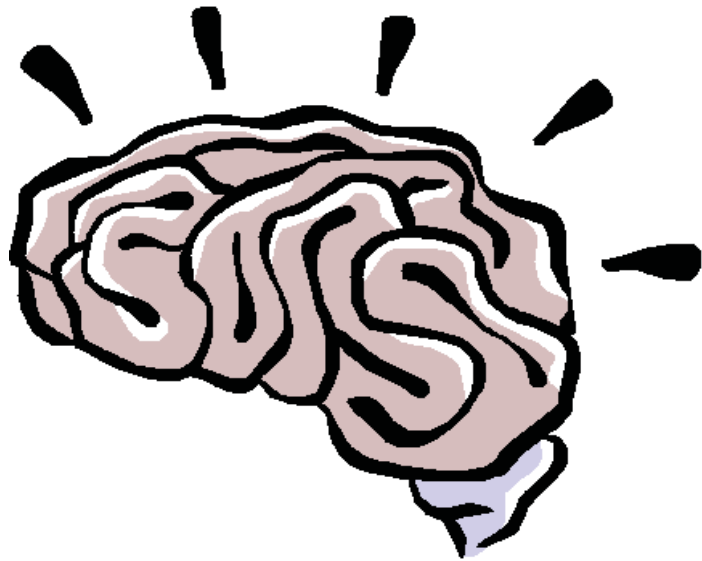
Proteins

- 17 % of protein of animal origin
- >50 % in many of the poorest countries



Omega-3; DHA and EPA

IQ +6

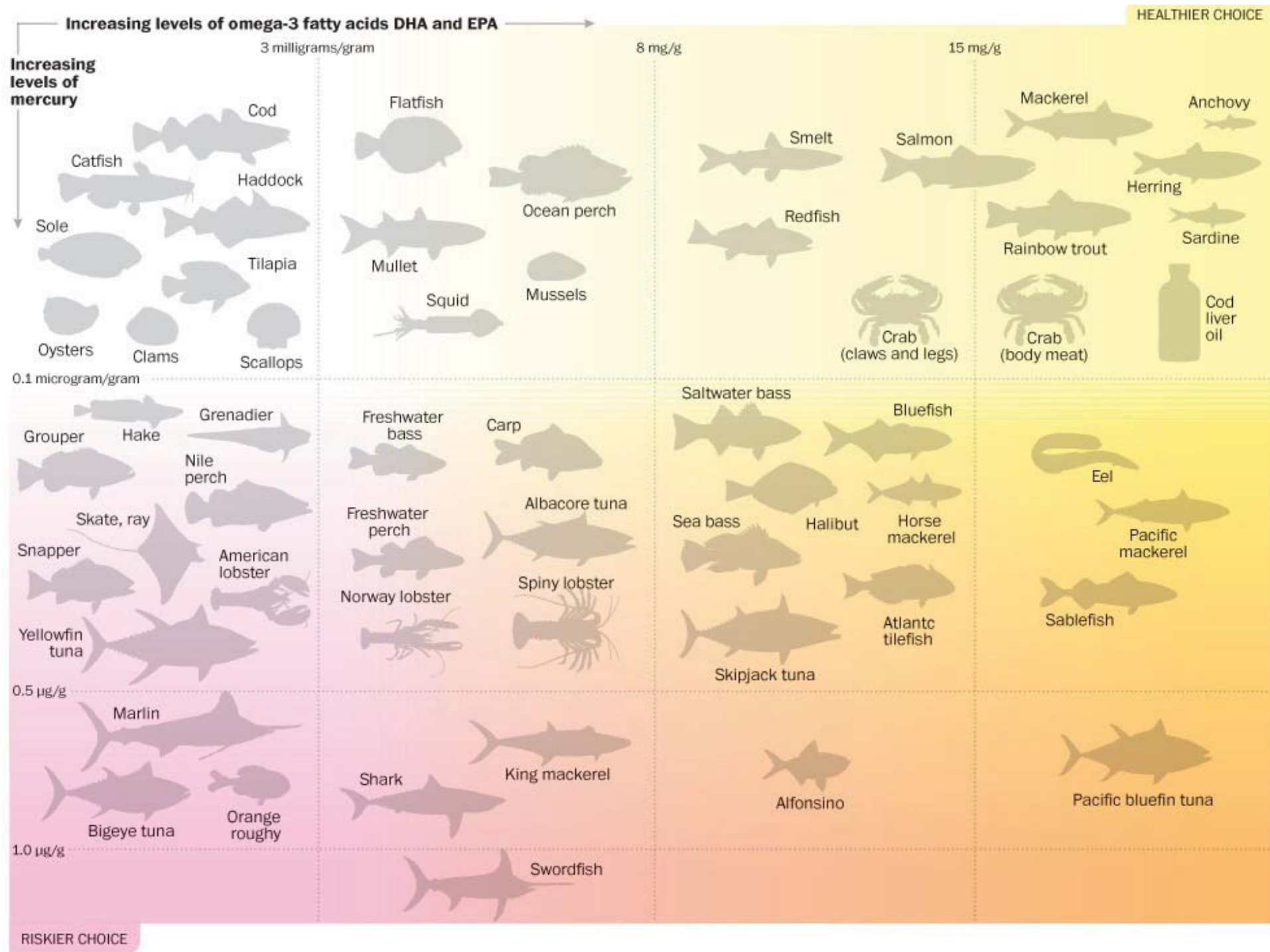


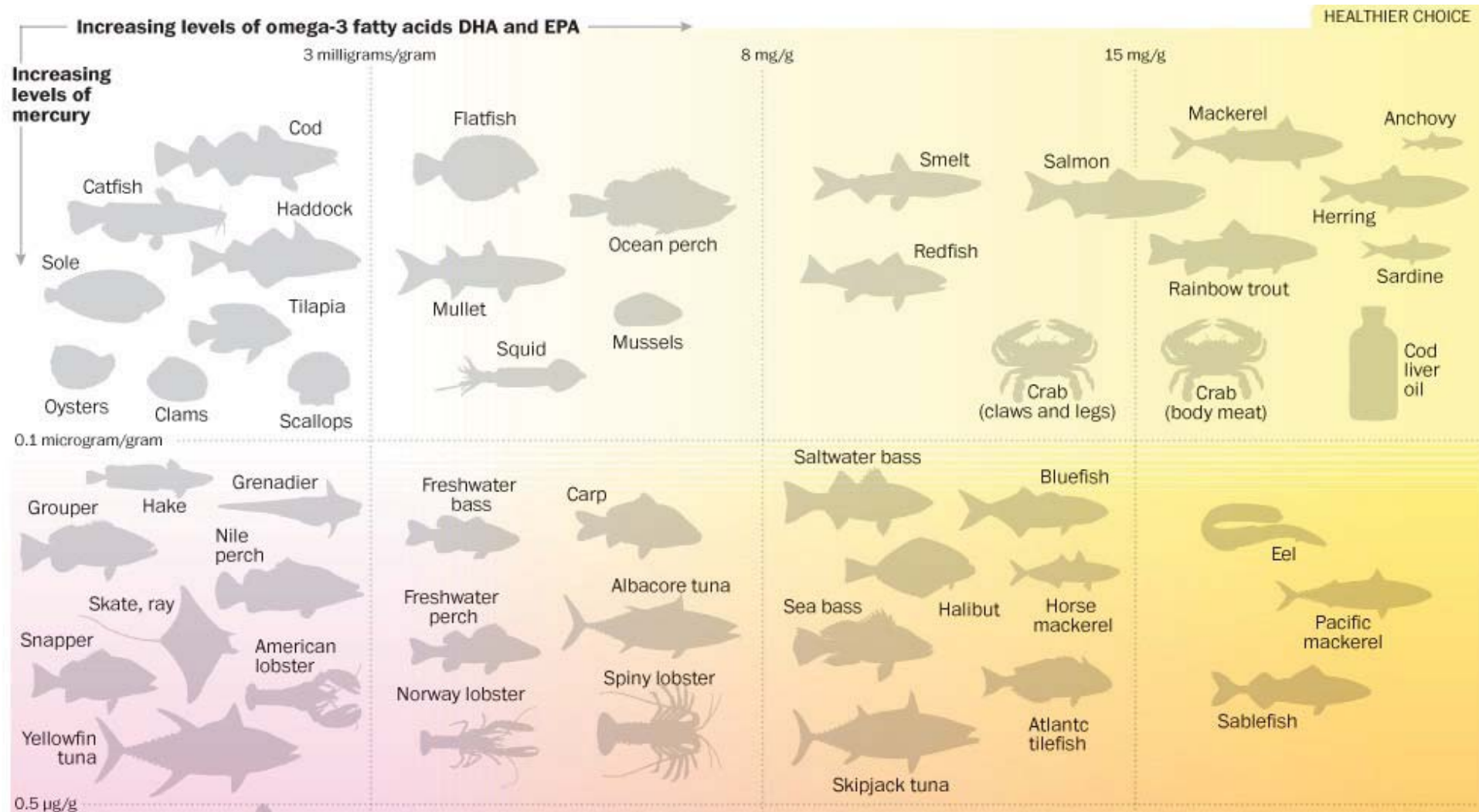
-36%



Minerals and micronutrients







Enough fish?

Demand for fisheries products increasing,
and.....

Capture fisheries fully exploited

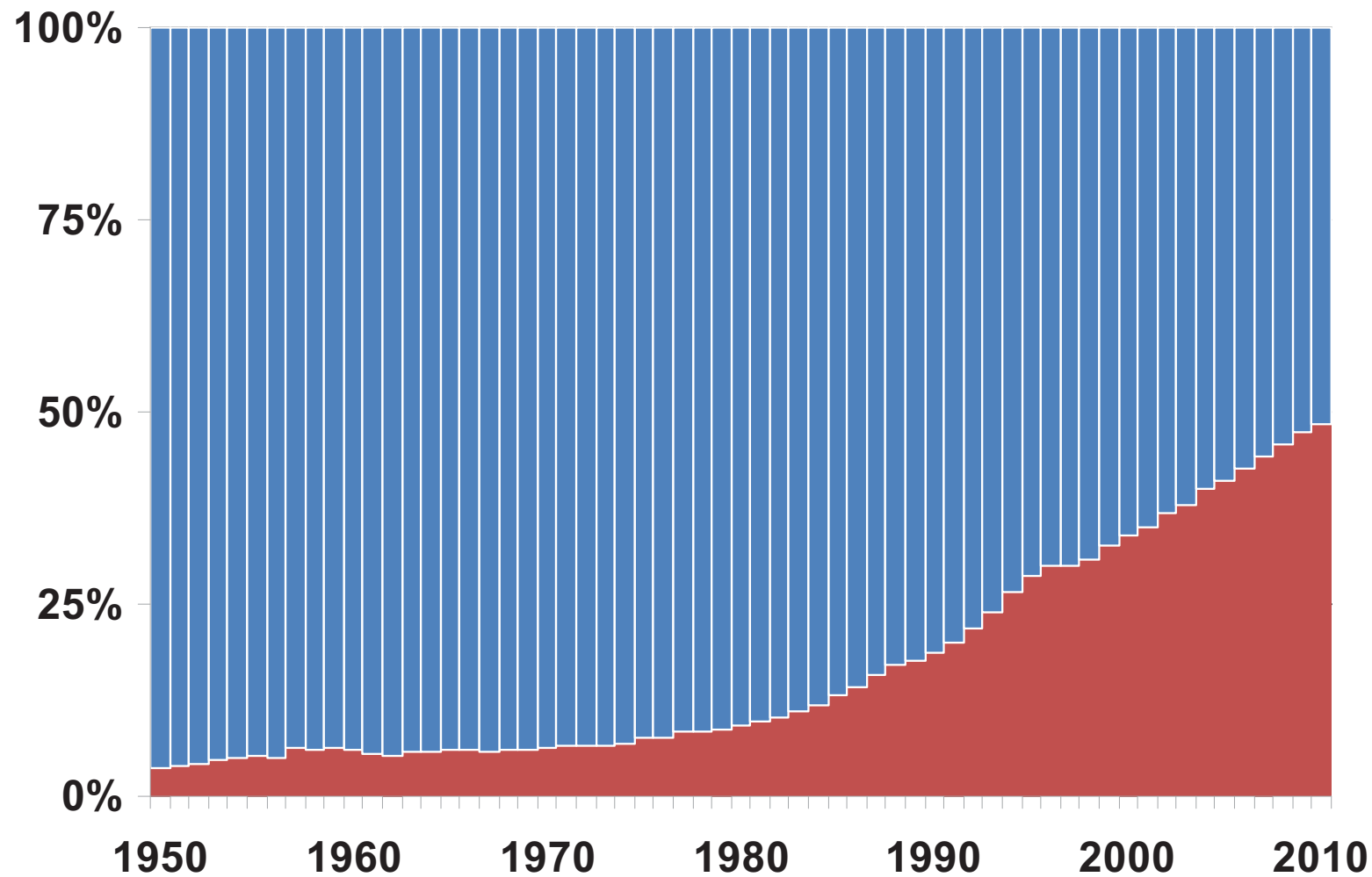


Farmed fish, an alternative?

- Aquaculture the fastest growing food producing sector (animal origin)
- Contributes about 50% of fish consumed



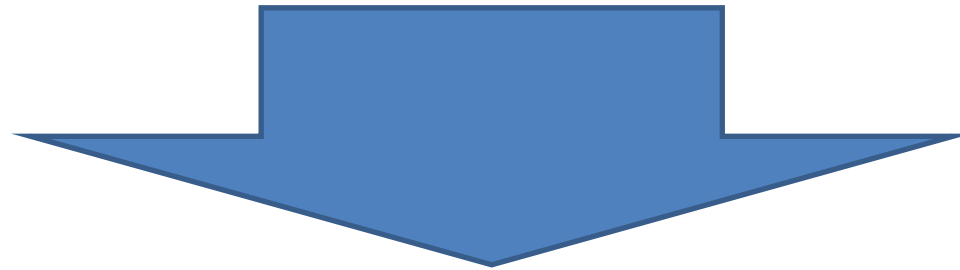
Aquaculture contribution



Farmed fish, any benefits ?

Most inputs
can be
controlled

More constant
nutrient
composition



Greater possibilities for an
optimal product ?

		Salmón, cultivo	Salmón, salvaje				
Proteínas	g/100g	20	20				
Lípidos	g/100g	13	6.3				
Agua	g/100g	65	69				
Ceniza	g/100g	1.1	2.5				
DHA + EPA (ω-3)	mg/100g	1966	1436				

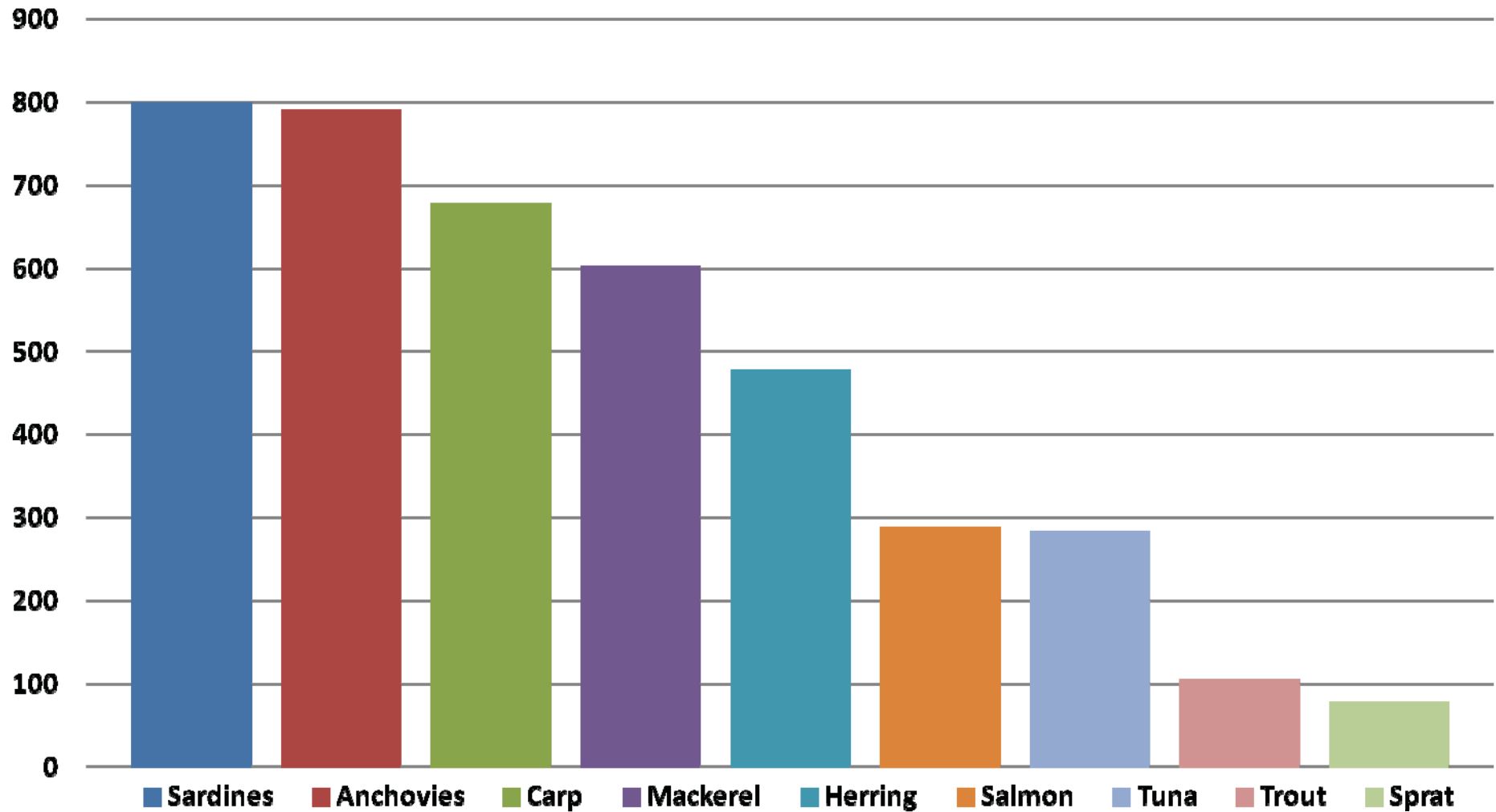
		Salmón, cultivo	Salmón, salvaje	Carpas, cultivo	Tilapia, cultivo		
Proteínas	g/100g	20	20	18	20		
Lípidos	g/100g	13	6.3	5.6	1.7		
Agua	g/100g	65	69	76	78		
Ceniza	g/100g	1.1	2.5	1.5	0.9		
DHA + EPA (ω-3)	mg/100g	1966	1436	350	91		

USDA National Nutrient Database (USDA, 2012)

		Salmón, cultivo	Salmón, salvaje	Carpas, cultivo	Tilapia, cultivo	Pollo	Res
Proteínas	g/100g	20	20	18	20	19	21
Lípidos	g/100g	13	6.3	5.6	1.7	15	12
Agua	g/100g	65	69	76	78	66	65
Ceniza	g/100g	1.1	2.5	1.5	0.9	0.8	1.0
DHA + EPA (ω-3)	mg/100g	1966	1436	350	91	40	3

USDA National Nutrient Database (USDA, 2012)

Annual contribution of ω -3 (DHA+EPA) per million people



Farmed fish

- Aquaculture needed to meet increasing demand
- Optimal products can be produced
- Any fish a good alternative to other meats
- Excellent source of most needed nutrients
- Main aq. species herbivorous; less need for fish in feed



THANK YOU

Jogeir Toppe
FAO

Good Aquaculture Practices (GAP)

- to improve product quality and safety -

***Dr. Pierpaolo Patarnello – Veterinary
Fish Pathologist***

pierpaolo.patarnello@libero.it

Fish products represent an important nutritional intake for humans, because they provide high-quality proteins...



Recently the increasing demand of aquaculture product determined the need of increasing of quality and food safety

The concept of quality is strictly linked to the concept of food safety, which must always be guaranteed for all of the products independently of their organoleptic or morphological characteristics.



In order to guarantee product safety is necessary to apply strict protocols of Hygiene Management

NEW TECHNOLOGIES
AUTOMATION & MECHANISATION

➤ *P. puntazzo*

➤ *A. regius*

➤ *S. senegalensis*

➤ *Others*



**SPERIMENTAL
PRODUCTION**



**INCREASING
QUANTITY**

➤ *D. labrax*

➤ *S. aurata*



**INCREASING
QUALITY**

CONSTRAINTS

- ◆ Drop in the market value

- ◆ **Increasing demand for Quality**

- ◆ **Environmentally friendly industry**



Media



- ◆ Technical limiting factors

MAD COW DISEASE

DIOXINE
80.000 Tons of pork
destroyed in Belgium

Not
us



So ?



health concerns

Chemical Contaminants

A number of recently published studies raise concerns that should be considered when assessing the health benefits of eating farm salmon. While a great deal of research has isolated a single persistent organic pollutant (i.e., PCBs), consumers also need to be concerned about interactions between chemicals. In a global assessment of farmed salmon, thirteen persistent organic pollutants were found.¹

and the environment.

Additives and contaminants present in farmed salmon may include: Ivermectin, emamectin benzoate, oxytetracycline, florfenicol, Romet 30, sulfadimethoxine and ormetoprim, sulfadiazine and trimethoprim, tricaine methanesulfonate, formaldehyde, florfenicol and hydrogen peroxide.⁸

**"Antimicrobial resistance [the resistance to drugs once capable of destroying disease-carrying microorganisms] is an emerging global health issue that, if not addressed, may evolve into one of the most significant public health challenges worldwide."
— Canadian Veterinary Drugs Directorate**

Ex. Of bad image of fish product to the consumers !!!!

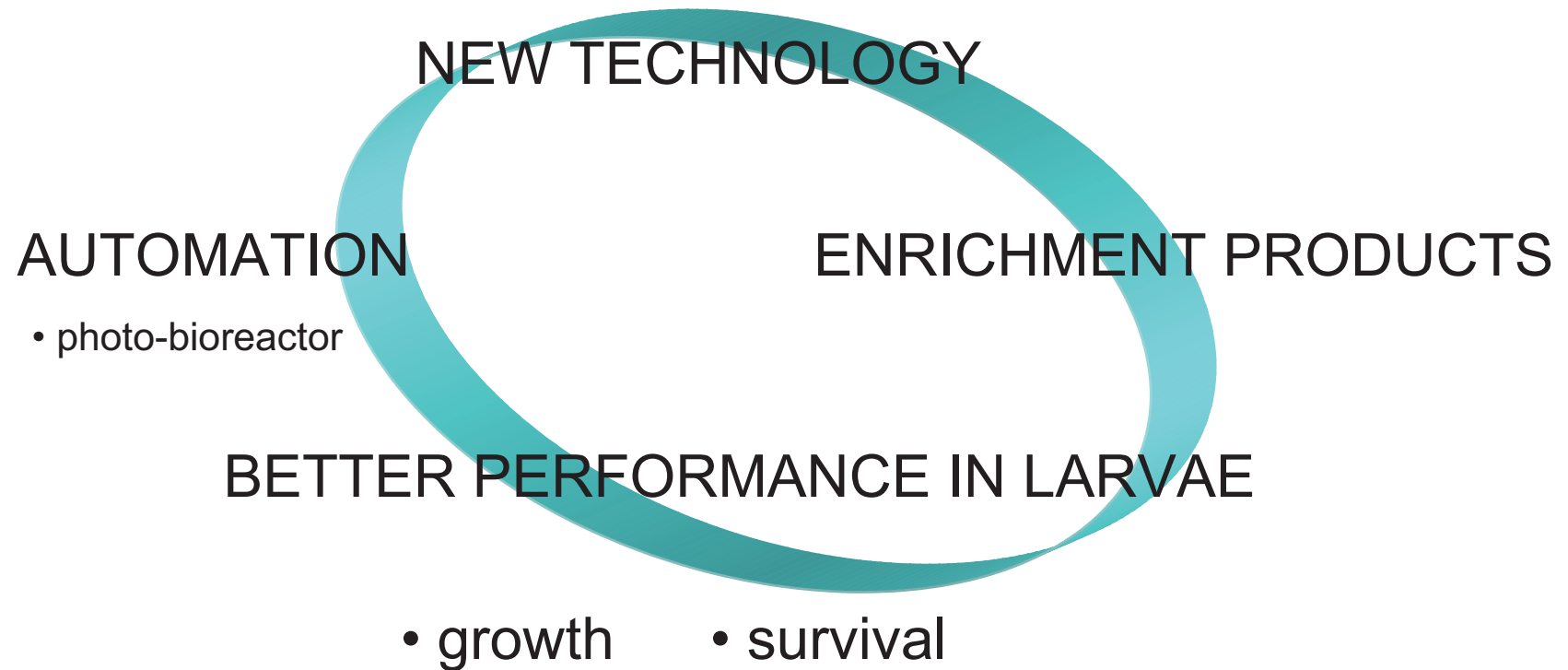
Technical Limiting Factors

- ◆ Nutrition / Feeding
optimisation
- ◆ Genetic Improvement
- ◆ Pathology



EVOLUTION OF PRODUCTION SYSTEM

LIVE CULTURE PRODUCTION



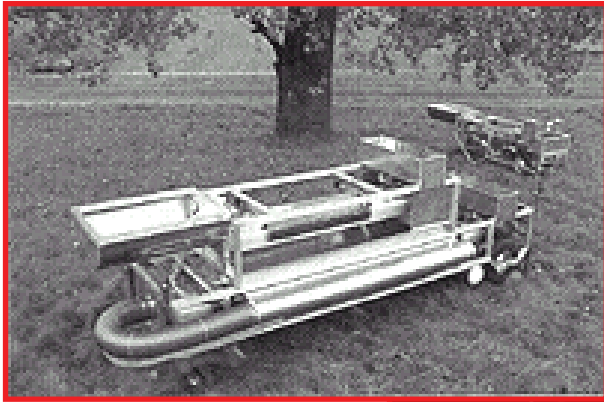
EVOLUTION OF PRODUCTION SYSTEM

LARVAL REARING PHASE



EVOLUTION OF PRODUCTION SYSTEM

PREGROWING PHASE



APPLICATION OF QUALITY SYSTEM AT PRODUCTION

CONTROL: A KEY WORD IN EACH PRODUCTION STAGES

- ✓ Identify the processes needed for the quality management system
- ✓ Determine the sequence and interaction of these processes
- ✓ Determine criteria and methods required to ensure the effective operation and control of these processes
- ✓ Ensure the availability of information necessary to support the operation and monitoring of these processes
- ✓ MEASURE, MONITOR AND ANALYSE THESE PROCESSES AND IMPLEMENT ACTION NECESSARY TO ACHIEVE PLANNED RESULTS AND PROGRESSIVE IMPROVEMENT

APPLICATION OF QUALITY SYSTEM AT PRODUCTION

INTRODUCTION OF S.O.P. FOR EACH
PRODUCTION STAGE WITHIN THE PROCESS

THE PROCESS ORGANISATION MUST HAVE
ADEQUATE S.O.P. (STANDARD OPERATING
PROCEDURES), AND OPERATE IN ACCORDANCE
WITH THEM.

APPLICATION OF QUALITY SYSTEM AT PRODUCTION

S.O.P.s SHOULD CONTAIN INSTRUCTIONS
AND REFERENCES TO COVER ALL HAZARD.

S.O.P.s ARE NEEDED TO GUARANTEE
SAFETY, LEGALITY AND QUALITY OF THE
PROCESS AND CONSEQUENTLY OF THE
PRODUCT!!!

Technical Limiting Factors

- ◆ Nutrition / Feeding optimisation
- ◆ Genetic Improvement
- ◆ Pathology



Pathology: *a limiting factor*

some examples

Dicentrarchus labrax
Nodavirus (VER/VNN)

Endemic in the Mediterranean

Summer 2011

**High losses, some farmers
stopped seabass production**

♦ ***Diplodus puntazzo***
☞ ***Myxidium leei***

**Greece, Mediterranean
area - since 1994**

**30 to 60% of mortality
expected per batch**

Pathology: a *limiting factor*

some examples



Do fish have
tongue?

Limiting
Parasitic
Infestations

Pathology in aquaculture

some concepts...

- Biological Risk
 - - direct damages product loss
 - - indirect damages c.i. decrease – treatment costs – respect of suspension times – extra work for the collection and the disposal of dead fish – stock weakening
- Environmental impact
 - - spread of pathogens in the environment
 - - wild species contamination
 - - antibiotic resistance

Pathology Definition

Alteration of one or more physiological aspects in a living organism which appreciably compromises its biological functions until the extreme consequences of death

Pathology in intensive aquaculture

- **Single specimen pathology** – in the case of fish– breeders or aquarium fish–
- **Mass pathology** – concerning the farming unit usually represented by a cage or tank

Aetiology: study of pathology causes

- Infectious diseases
 - - viral – bacterial – parasitic
- Environmental diseases
 - - water physico-chemical parameters
 - - atmospheric events
 - - pollutants or toxics
- Technopathies –
 - Technical mistakes or wrong application of operational techniques

CONTROL

- EQUILIBRIUM OF A “BIOLOGICAL SYSTEM”
- NATURAL
- ARTIFICIAL

HIGH DENSITIES
+
SMALL ENVIRONMENT
=
IMBALANCE OF SEVERAL FACTORS



Factors predisposing to pathology

- High densities
- Stress induced by biological factors
- Decrease in immune defense
- Increase of pathogen pressure
- High metabolism (forced feeding)

Pathology and Environment

- **Impact of a disease event on the natural environment**
- Spread of pathogens in high concentration (bacterial, viral, parasitic load)
- Contamination of other vulnerable species with direct damages to the same: mortality or impairment of some functions
- Possible creation of “wild reservoirs” (resistant species which take the role of carriers/eliminators – endemic circular condition development)
- Transmission of antibiotic – resistance (present in the case of chemotherapy treatments)
- Pollution (as in the case of disinfectants or pesticides)

PREVENTION OF DISEASE CONTAMINATION RISKS

~~• Avoid new aquaculture farms!! ???~~

- Increase the control over the management level of farms
- More attention to sanitary requirements of new seeds
- More attention to prophylactic standards for infectious diseases
- More attention to the feeding and to the growth of cultured species

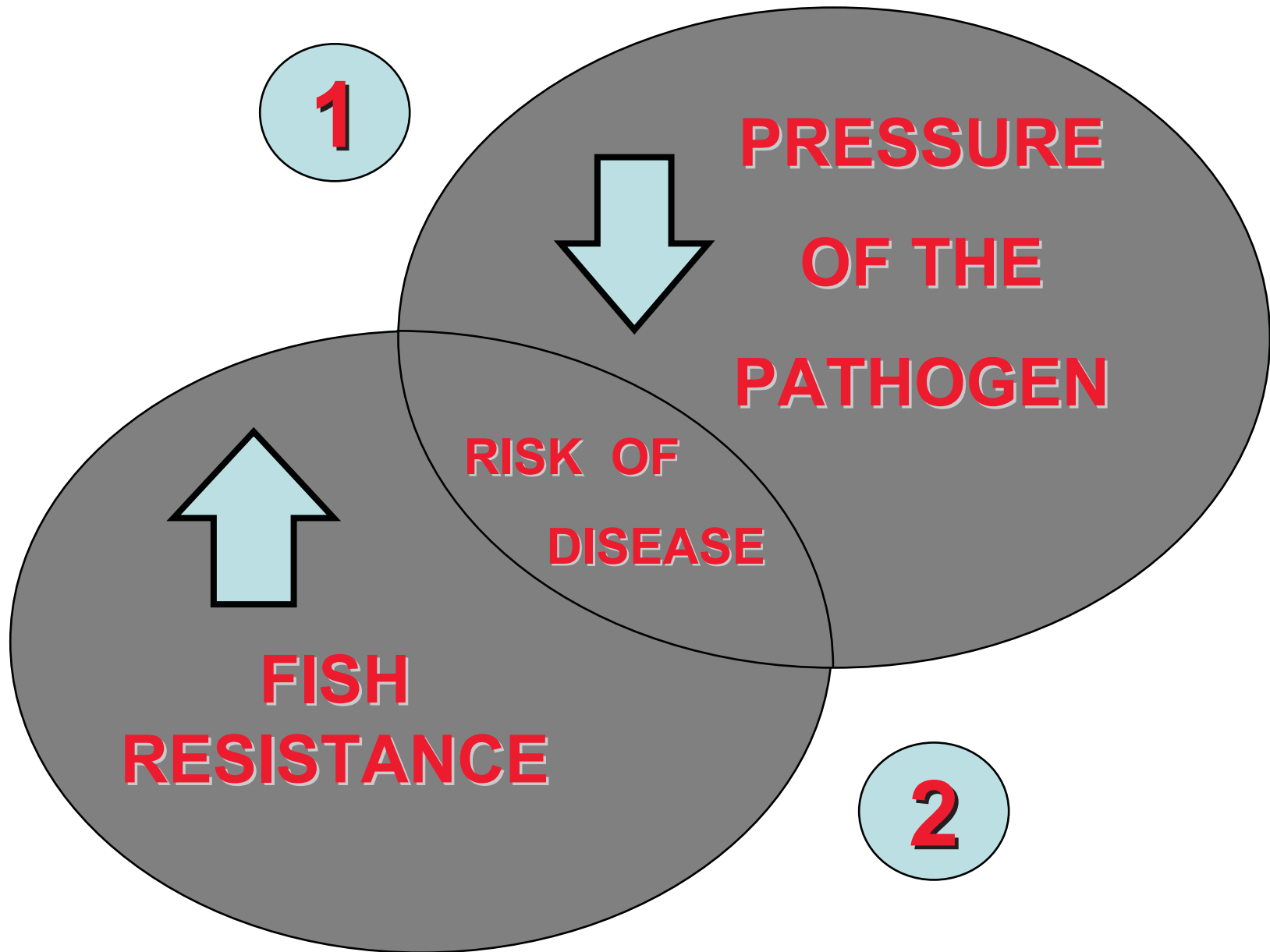
Summarizing.....

- Fish become ill...
- Cultured fish are more exposed to disease because of the metabolic stress condition to which they are subjected
- Disease represents a significant “balance item” in aquaculture activities:
 - as for the economy of the farming activity itself (direct + indirect damage)
 - as for the environmental impact

Summarizing.....!!

- Correct technical and strategical management of sanitary aspects essential to:
 - - reduce the incidence of disease in the farm
 - - prevent the spread of pathogens in the environment
 - - guarantee greater food safety and quality of the aquaculture product

- Application of health monitoring programs in order to:
 - - screen the presence of pathogens in the farm before it becomes disease - PREVENTION - !
 - - assess the epidemiological situations of pathogens in the aquaculture environment
 - - control of the presence of pathogens in wild species which are/have been into a contaminated environment





HYGIENE PRACTICES

- ◆ **TANKS CLEANING & DISINFECTION**
- ◆ **MATERIAL DISINFECTION**
- ◆ **Control of movement of persons**
- ◆ **Collect & Destruction of dead fish**



MANAGEMENT PRACTICES

- ◆ **STRATEGY OF PRODUCTION**
- ◆ **STOKING DENSITY**
- ◆ **REDUCTION OF STRESS FACTORS**
 - Lights / Nets
- ◆ **SITE ROTATION**

1

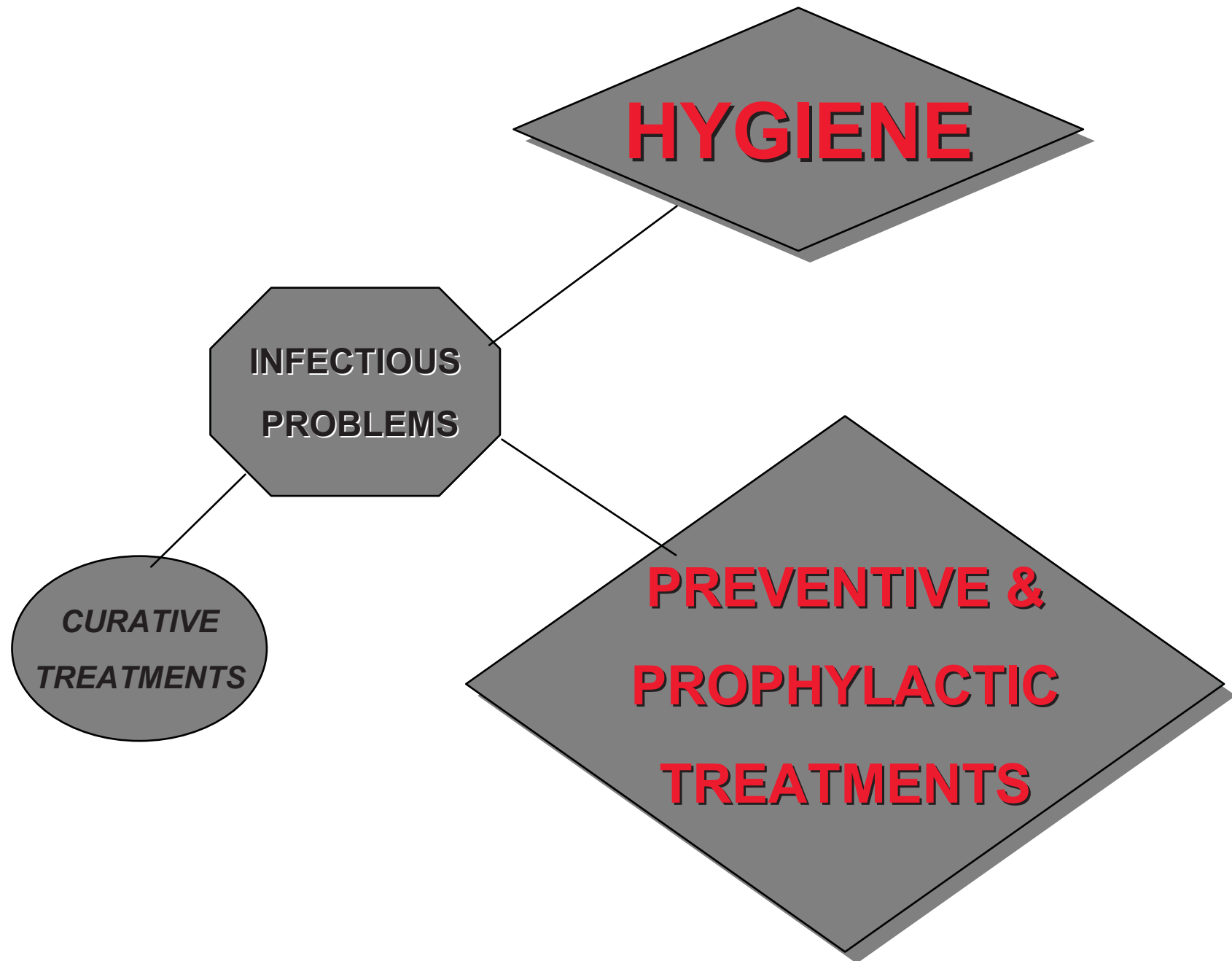
PRESSURE OF THE PATHOGEN: Reduction

- **Hatchery Monitoring**
- **Health monitoring program**
- **Hygiene / Management**
- **Vaccination programs**

2

ENHANCEMENT OF THE HOST RESISTANCE

- **VACCINATION**
- **IMMUNO-STIMULANT**
- **VITAMINIC TREATMENTS**
- **ANTI STRESS FACTORS**
- **Good nutrition management**



Facilities for intensive aquaculture:

- Fattening units
- In land farms
- Sea cage / Mariculture
- High control systems Breeding and larval rearing centres (Hatcheries)

In-land aquaculture

- Concrete tanks or earth ponds for fattening
- Forced water circulation (energy)
- Liquid oxygen
- High density



Mariculture

- Cage mariculture farms (inshore, offshore in very different conditions !)



HIGH CONTROL SYSTEMS

- Breeding and larval rearing centres
- Extremely high densities farms
(usually closed-circuit and recirculation).
 - Aquariums
 - Experimental research centres

Breeding and larval rearing

-HIGH CONTROL SYSTEMS-

- phyto-zooplankton chain
- Water physico-chemical parameters



Biological and sanitary control of every single specimen of the breeders department

-HIGH CONTROL SYSTEMS-



Emerging infectious diseases of modern Mariculture

- - sanitary risk of fish product
- - epidemiological risk for wild fish species
- - zoonosis risk
- - severe damage to the image of farmed fish product

EMERGING INFECTIOUS DISEASES IN MARICULTURE

1) VIRAL

2) BACTERIAL

- Systemic
- External

3) PARASITIC

- Systemic
- External



VIRAL DISEASES

Viral Encephalopathy and Retinopathy (sea bass, sea bream, shi drum, grouper, turbot, sole... MORE THAN 50 Species all over the world!)

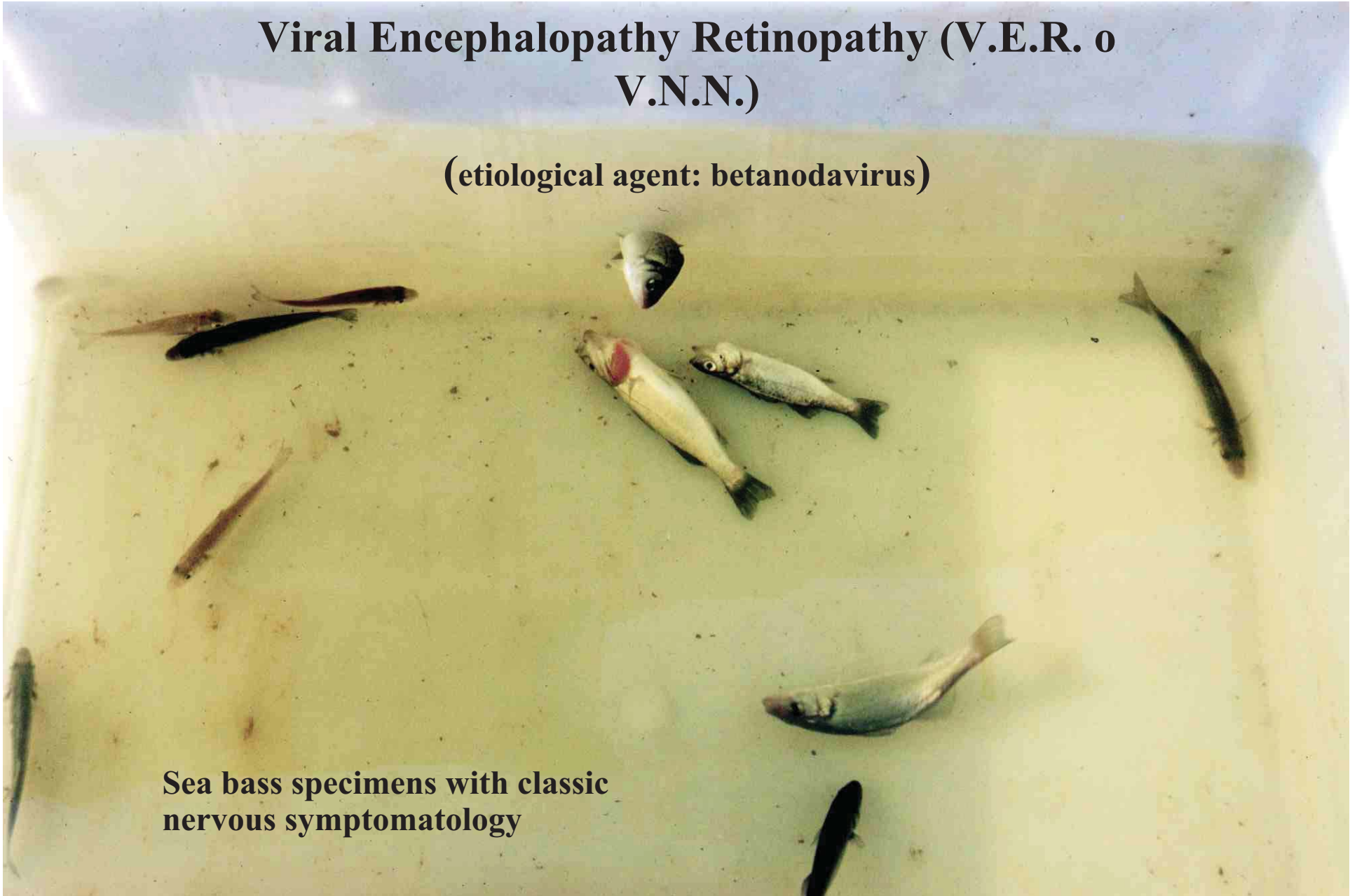
Lymphocystis (sea bream and other sparids)



Viral Encephalopathy Retinopathy (V.E.R. or V.N.N.)

(etiological agent: betanodavirus)

**Sea bass specimens with classic
nervous symptomatology**



V.E.R.



Death with anoxic behaviour

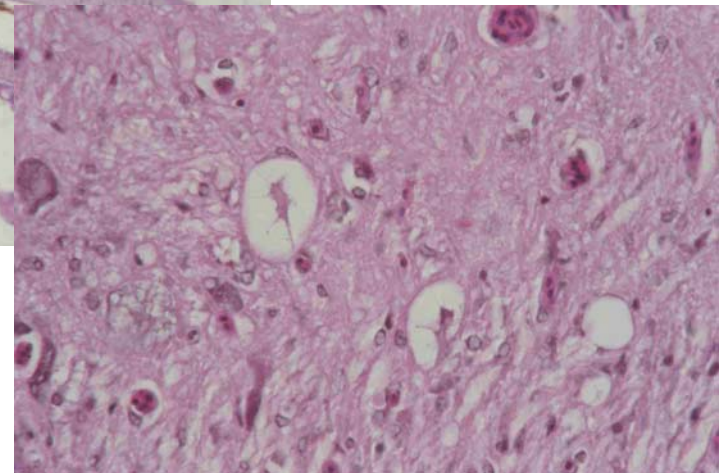
Cerebral hiperhaemia



V.E.R.



Histological findings:
neural degeneration



CONTROL OF VIRAL ENCEPHALOPATHY AND RETINOPATHY

PROPHYLAXIS

Application of hygienic measures: correct sanitary
management,
stamping out

Vaccination: study in progress

THERAPY

Not applicable

Lymphocystis

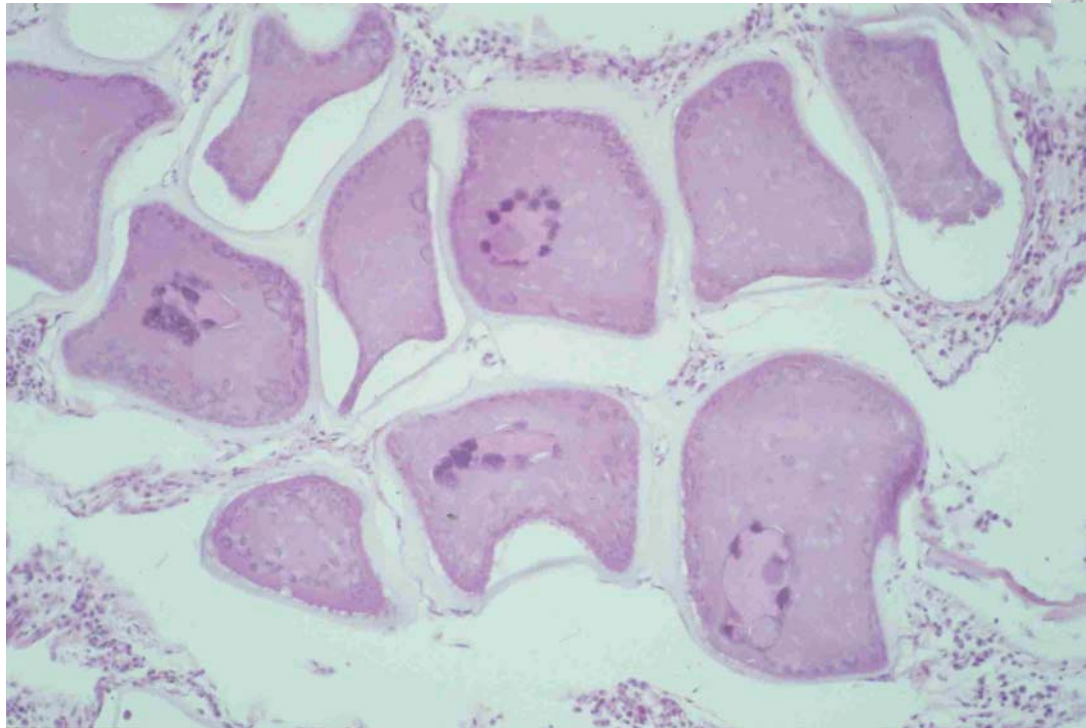
(etiological agent: iridovirus)



Sea bream with skin and fin lesions

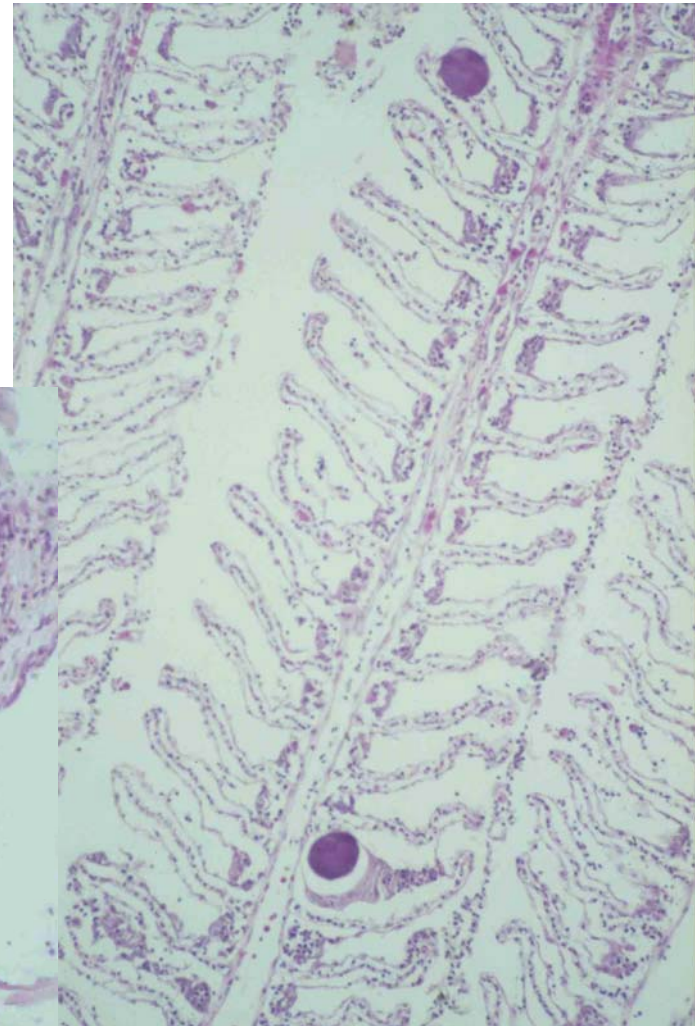
Lymphocystis

Histological findings



[skin]

Hypertrophic fibroblasts



[gill]

LIMPHOCYSTIS

PROPHYLAXIS

Application of hygienic measures: correct sanitary management

THERAPY

Non applicable

BACTERIAL DISEASES

1) SYSTEMIC

A) Gram-negative germs:

Vibriosis, Photobacteriosis, Winter Disease (sea bream)

B) Gram-positive germs: Streptococcosis, Lactococcosis

C) acid-resistant germs: Mycobacteriosis

2) EXTERNAL

Flexibacteriosis:

gill disease, skin and fin erosion

VIBRIOSIS

**Different diseases under the same name
(the fish turn red)**

a) Classic vibriosis:

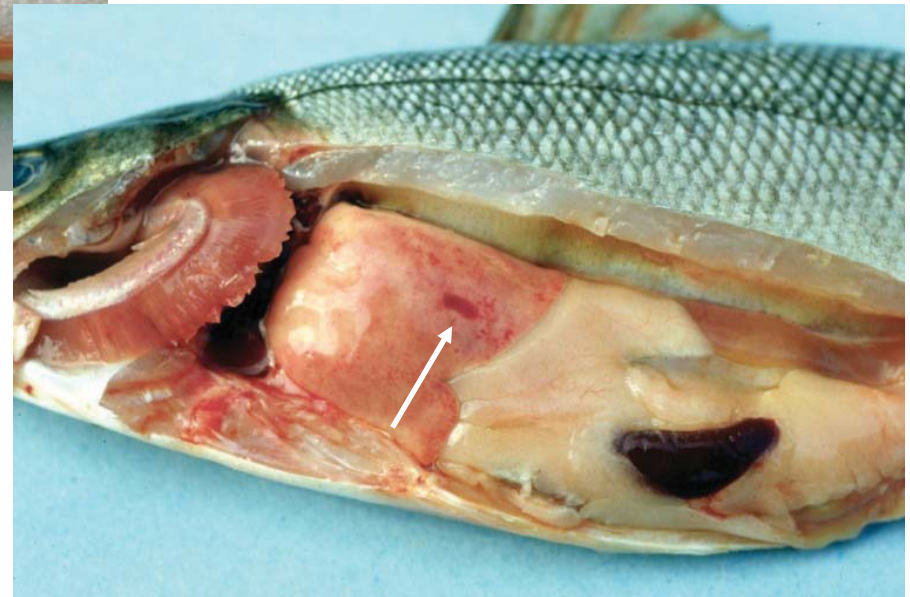
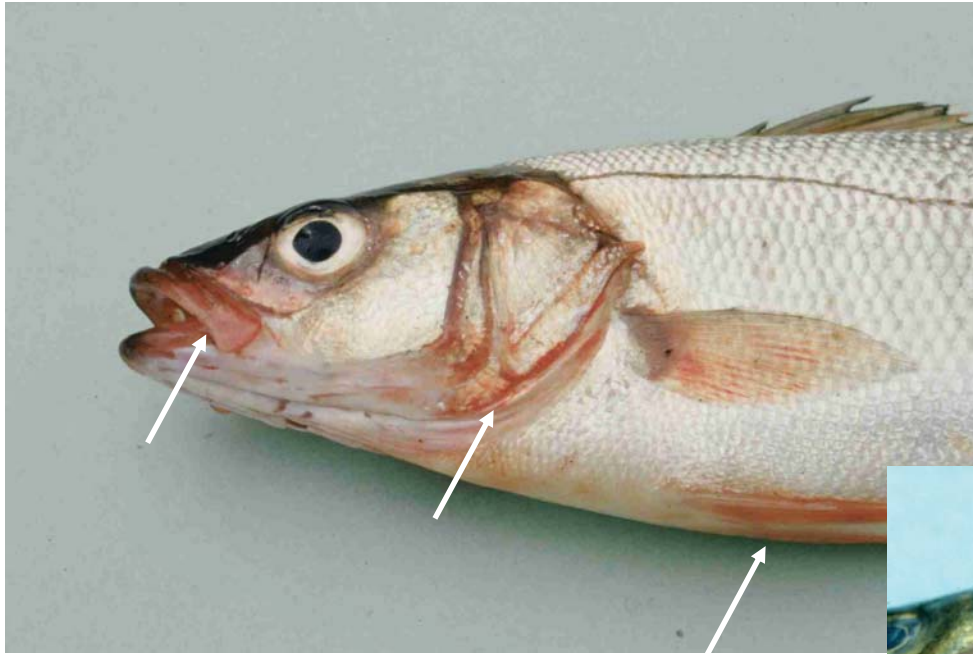
Aetiological agent: *Vibrio anguillarum*

b) Emerging vibriosis:

Aetiological agent: *V. Alginoliticus*, *V. vulnificus*

Infection by *Vibrio vulnificus* ➡ zoonotic risk

Vibriosis



**Anatomopathological findings:
Skin and visceral haemorrhages**

CONTROL OF VIBRIOSIS

PROPHYLAXIS

Classic vibriosis (*Vibrio anguillarum*)

Application of hygienic measures: correct sanitary management,

Removal of predisposing stressful factors

Vaccination (bacterin):

- via immersion: good effectiveness (protection for 10-12 mesi)

- orally: reduced effectiveness (valid as booster)

Ip injection : expensive but necessary in some framework

Use of immunomodulators: good effectiveness

Emerging Vibriosis (*V. alginolyticus*, *V. Vulnificus*)

Hygienic prophylaxis and use of immunomodulators

CONTROL OF VIBRIOSIS

THERAPY

TREATMENT WITH ANTIBIOTICS (ONLY TO STOP THE INCREASE OF MORTALITY) -> THIS IS NOT THE SOLUTION

Classic Vibriosis and Emerging Vibriosis

Administration of medical feed:

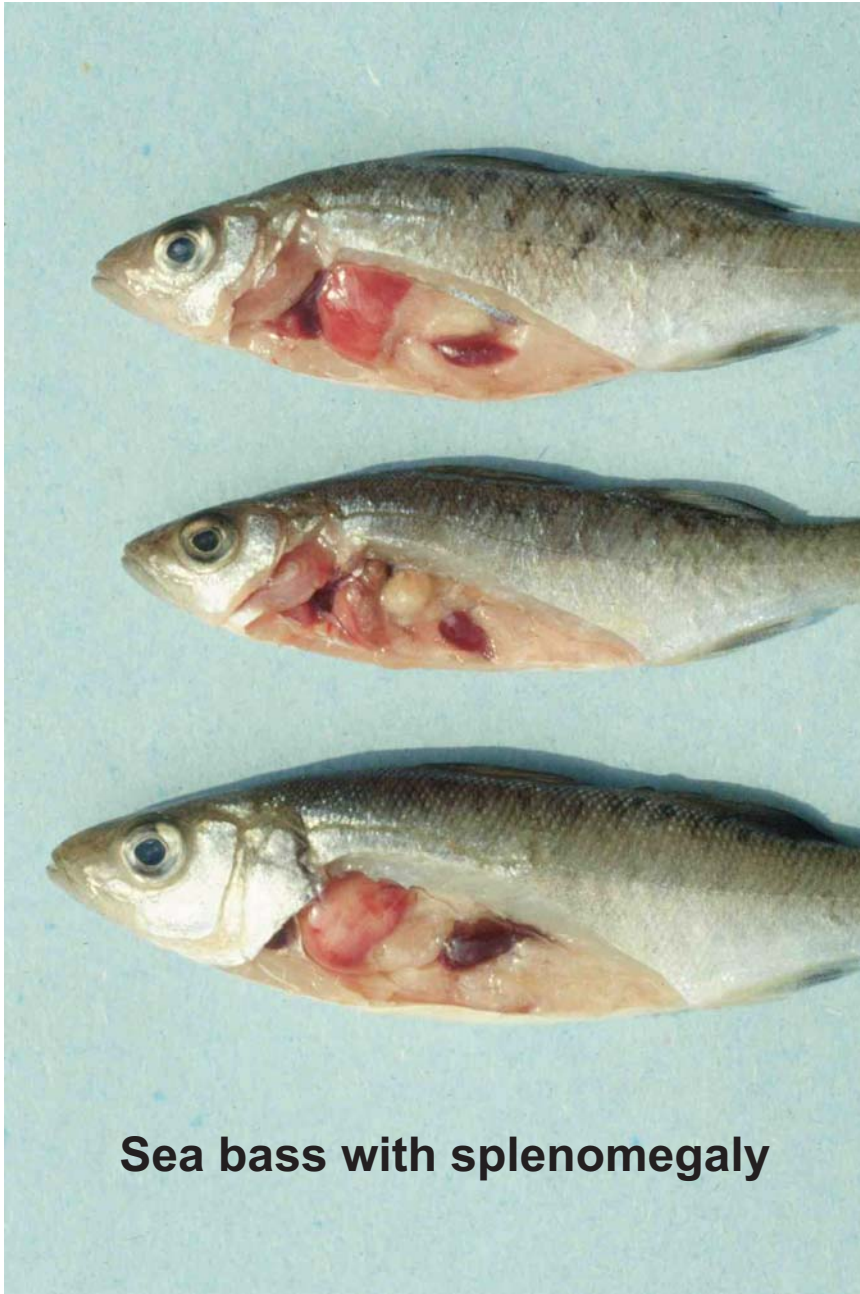
sulfatrimetoprim, flumequine and oxitetracyclin showed good effectiveness

Photobacteriosis

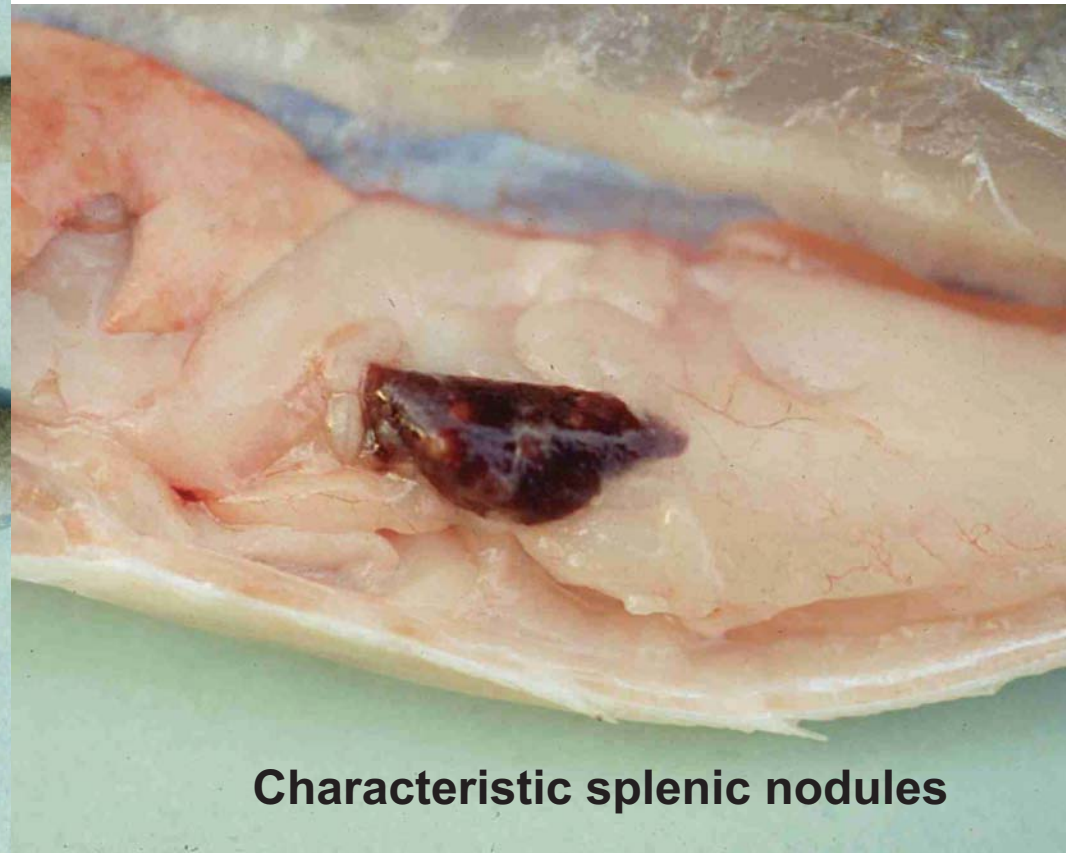
**(*Photobacterium damsela* sbsp.
piscicida)**

ex Pasteurellosis

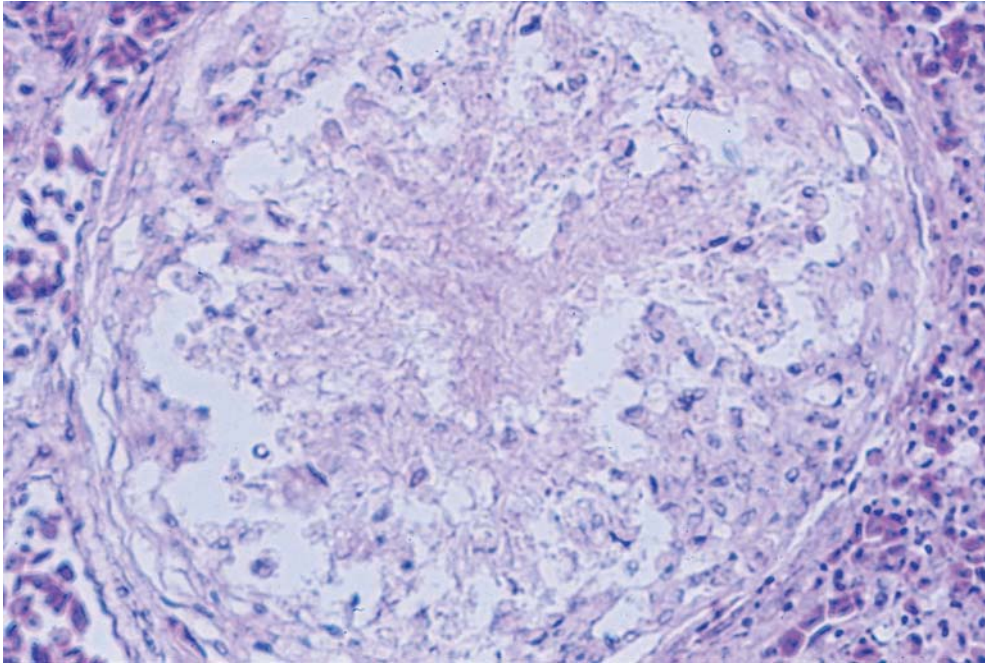
Anatomopathological findings:



Sea bass with splenomegaly



Characteristic splenic nodules



Photobacteriosis

Histological findings
spleen: necrotic nodule

colonies of *Photobacterium damselae* ssp. *piscicida* on blood Agar plate



CONTROL OF PHOTOBACTERIOSIS

PROPHYLAXIS

Application of hygienic measures: correct sanitary management

Vaccination (bacterin):

- through immersion: reduced effectiveness
- orally: very low effectiveness
- Ip injection : expensive but necessary in some framework

Administration of immunomodulators: reduced effectiveness

THERAPY

TREATMENT WITH ANTIBIOTICS (ONLY TO STOP THE INCREASE OF MORTALITY) -> THIS IS NOT THE SOLUTION

Administration of medical feed

sulfatrimetoprim and flumequine showed good effectiveness

Oxytetracycline showed moderate effectiveness

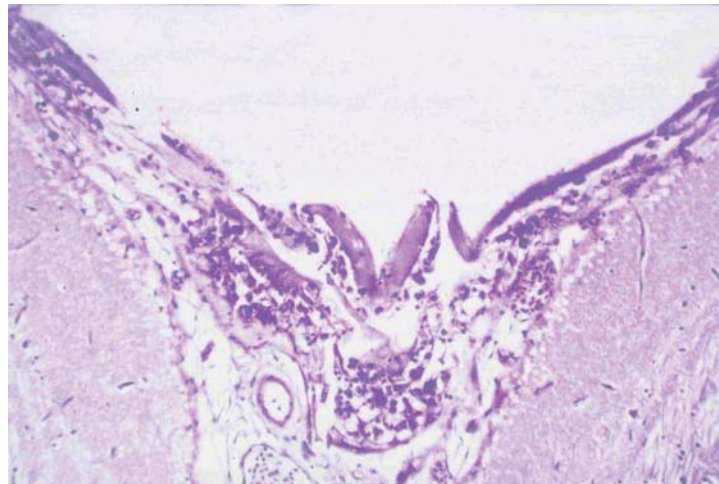
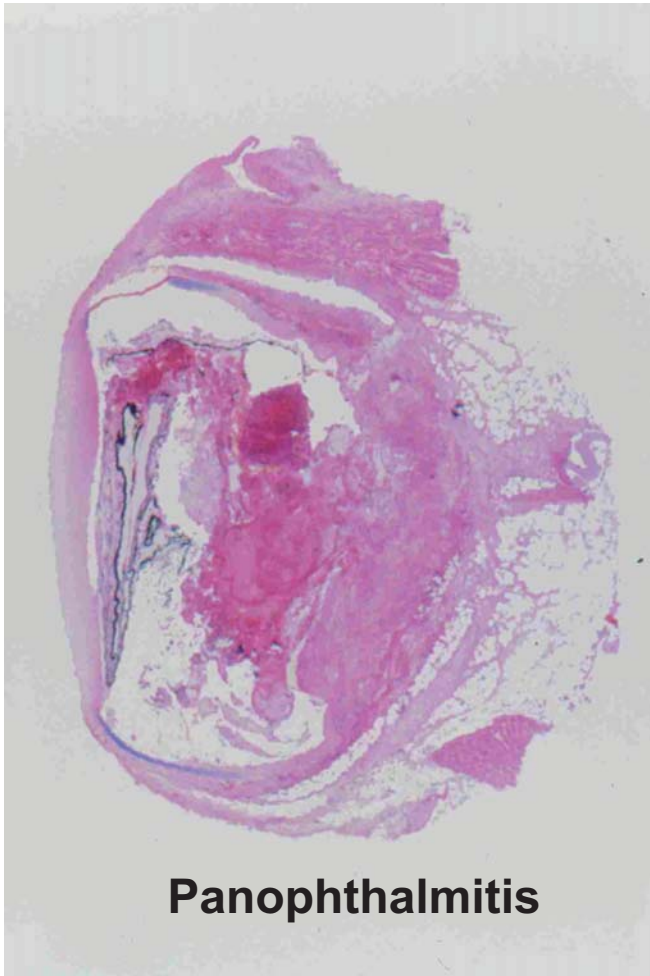
“True” streptococcosis or infection by *Streptococcus iniae*

Sea bass with panophthalmitis and meningitis

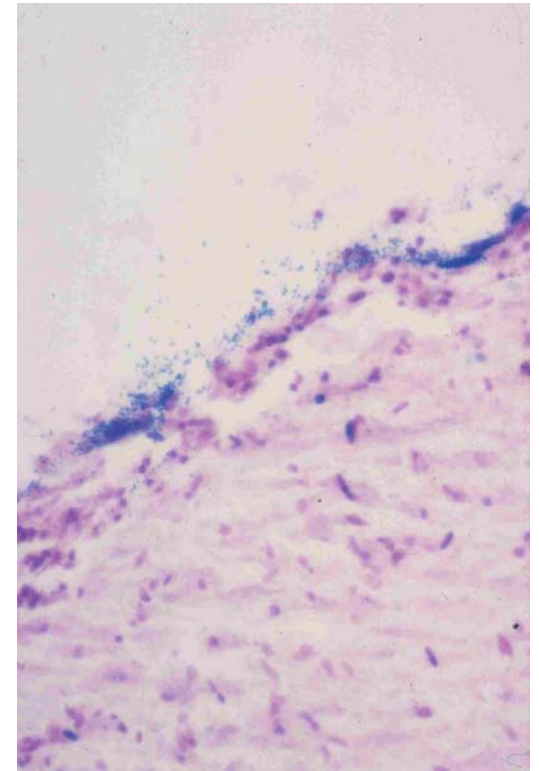


“True” streptococcosis or infection by *Streptococcus iniae*

Histological findings



Meningitis



CONTROL OF “STREPTOCOCCOSIS”

Infection by *Streptococcus iniae*

THERAPY

Is problematic because of:

- early anorexia, antibiotic-resistance, continuous relapses
- Environmental impact, presence of residuals

Administration of Medical feed:

oxytetracyclin and amoxicillin show reduced effectiveness

CONTROL OF “STREPTOCOCCOSIS”

Infection by *Streptococcus iniae*

PROPHYLAXIS

Application of hygienic measures: correct sanitary management

Vaccination:

- Through immersion: no effectiveness
- intraperitoneally:
 - * bacterin: average effectiveness (protection for 3 months)
 - * Adjuvanted vaccine: good effectiveness (protection for 6 months)
- orally: very reduced effectiveness (still being tested)

CONTROL OF MYCOBACTERIOSIS

PROPHYLAXIS

Application of hygienic measures: correct sanitary management,

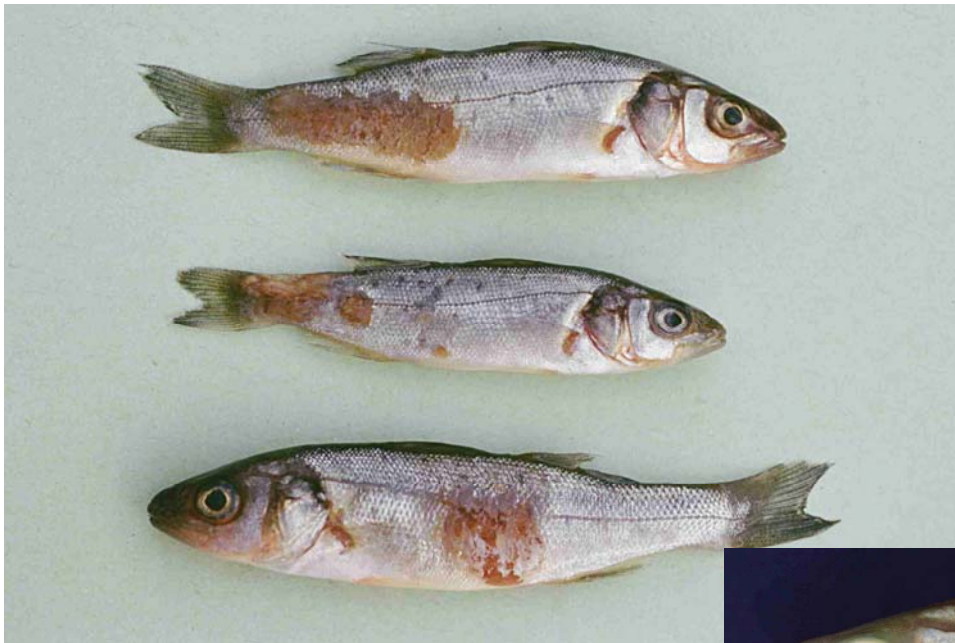
Avoid feeding with waste fish

THERAPY

No drug available

External Bacterial Disease (Flexibacteriosis)

- Primary causative agents (environment)
- Secondary complications (flexibacteria)



Skin and fin erosion



Gill Disease



CONTROL OF EXTERNAL BACTERIAL DISEASES

PROPHYLAXIS

Application of hygienic measures:

- correct sanitary management
- Removal or reduction of the primary causative agents
 - Weekly prophylactic disinfections
(short bath of CuSO_4 : 1 ppm/15 min.) NOT AUTHORISED !!!

Antibiotic Therapy

Major constraints

- Time needed for antibiotic-feed preparation from diagnosis (5-7 days)
- Early inappetence
- Efficacy of chemical selected against the bacteria “in vivo”(7 days for antibiogram)
- Enhancing of antimicrobial resistance of pathogens population
- Residual level in fish products

PARASITIC DISEASES

1) SYSTEMIC

Enteromixidiosis (sea bream; Snarpshout sea bream)

2) EXTERNAL or ECTOPARASITOSIS

A) Infection by protozoans: Velvet (Oodinium) disease, Cryptocarionosis, Tricodiniasis

B) Infestation by monogeneans: es. Diplectanosis

C) Infestation by crustaceans: Caligidosis, Isopodosis

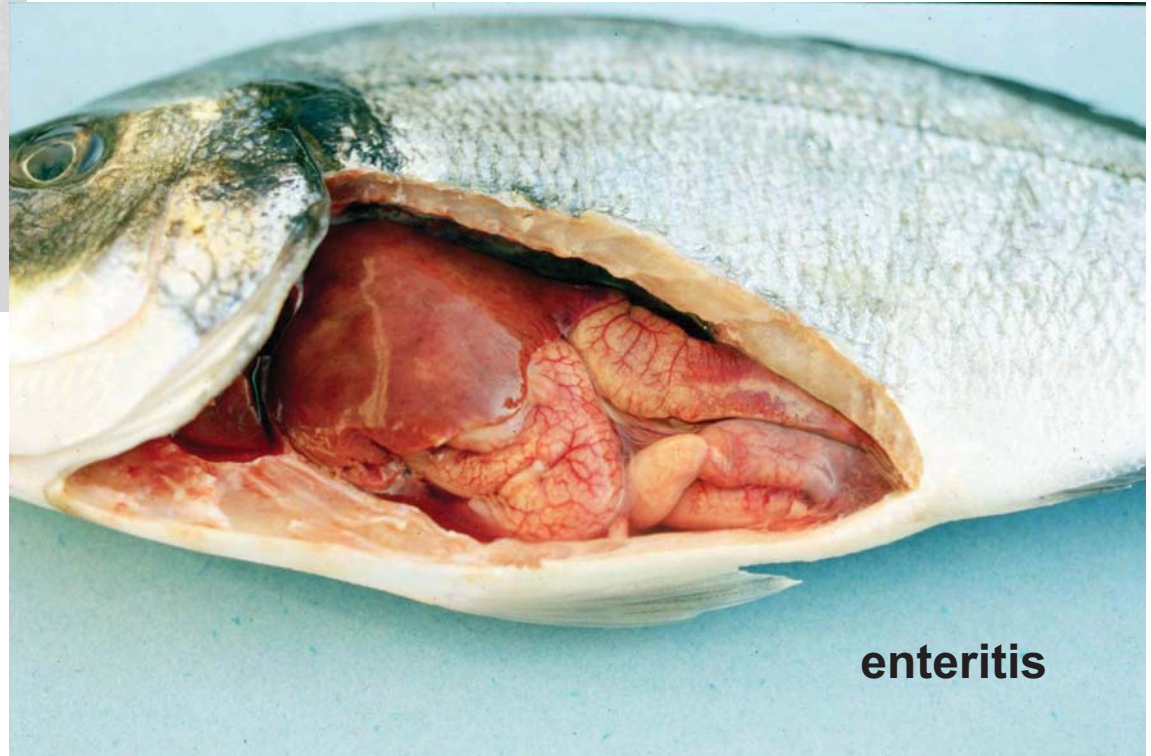
Infection by *Enteromyxum leei*

Anatomopathological findings

severe weight loss



Sparids are affected



enteritis

CONTROL OF ENTEROMIXIDIOSIS

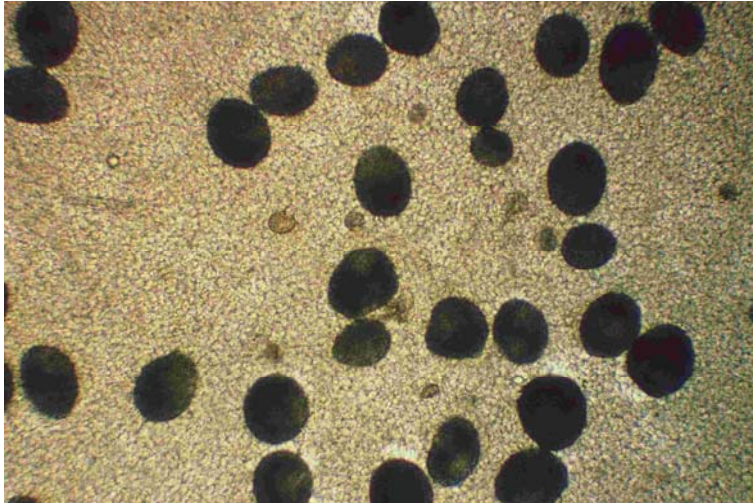
PROPHYLAXIS

Application of hygienic measures: correct sanitary management

THERAPY

No drug available

Ectoparasitic diseases



Velvet (Oodinium) disease



cryptocarionosis



diplectanosis



caligidosis

CONTROL OF ECTOPARASITIC DISEASES

PROPHYLAXIS

Application of hygienic measures:

- correct sanitary management
- Weekly prophylactic disinfections with:

CuSO₄ in short bath, dose 1 ppm/15 min.

alterned with

formalin in short bath, dose 150 ppm/30 min.

Those two treatments are not authorised!!!!

CONTROL OF ECTOPARASITIC DISEASES

THERAPY

- Application of medical bath based on disinfectants or disinfestants
 - Often performed but NOT AUTHORISED

Velvet (Oodinium) disease:

Short bath of CuSO_4 , dose 2 ppm/30-60 min.die/7-10 gg

Cryptocarionosis, Tricodiniasis, monogenean infestations:

Formalin short bath, dose 250 ppm/60 min.die/7-10 gg

Caligidosis, Isopodosis:

Short bath of Triclorphon, dose 5 ppm/30-60 min.die/5 gg

CONCLUSIONS

A continuous environmental monitoring

In mariculture farms

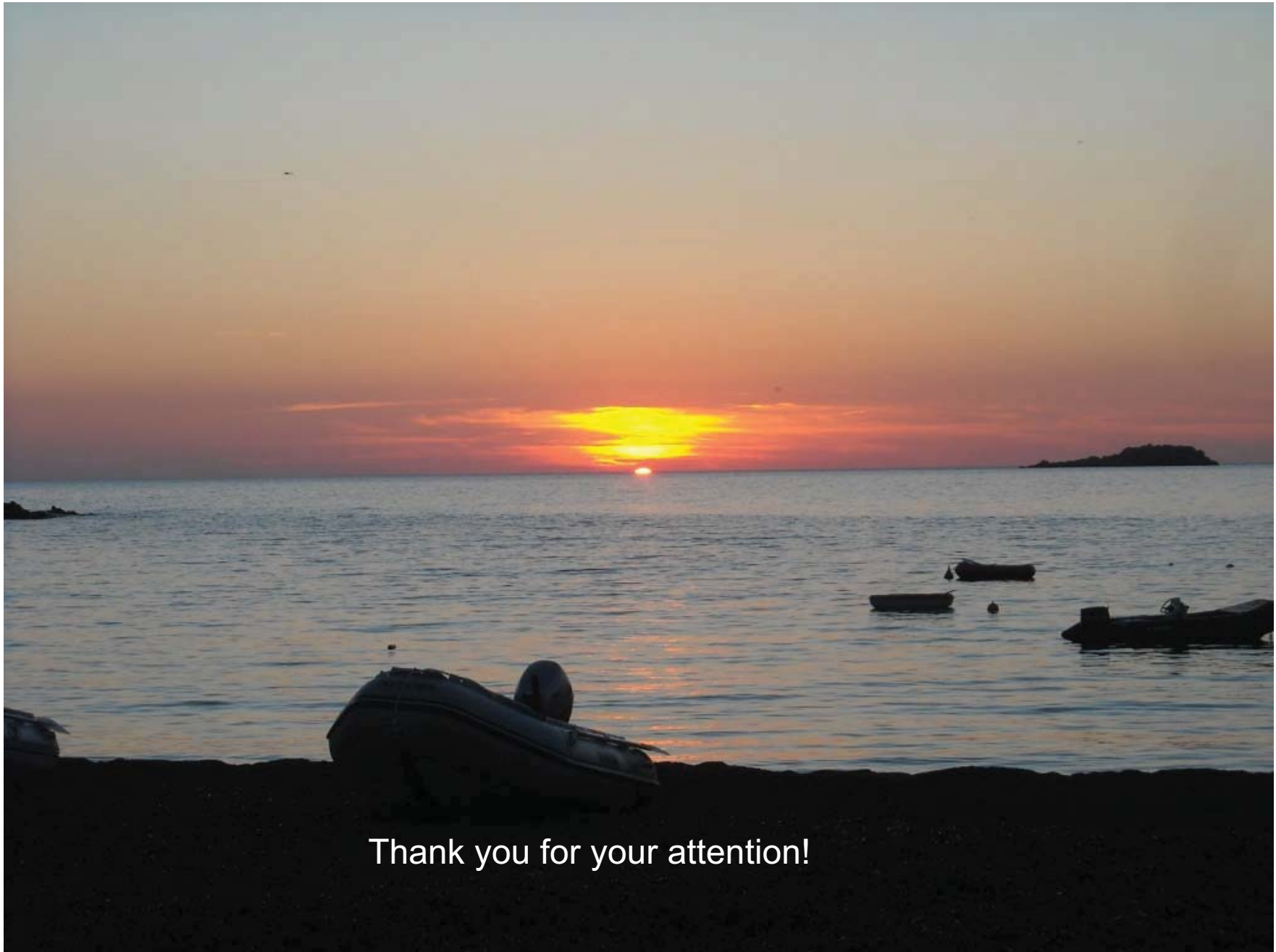
Is ESSENTIAL to control the spread of diseases

**This is needed to preserve the farmed stocks (meaning more \$\$\$
and less efforts for the farmer) as well as to preserve our environment**

**Such surveillance must be done
by specialized veterinarians,
through routine investigations of
fish, water and feed**

**In cooperation with relevant
laboratories**





Thank you for your attention!



Role of supermarkets and distribution chains in farmed fish marketing in EU

BODRUM, TURKEY

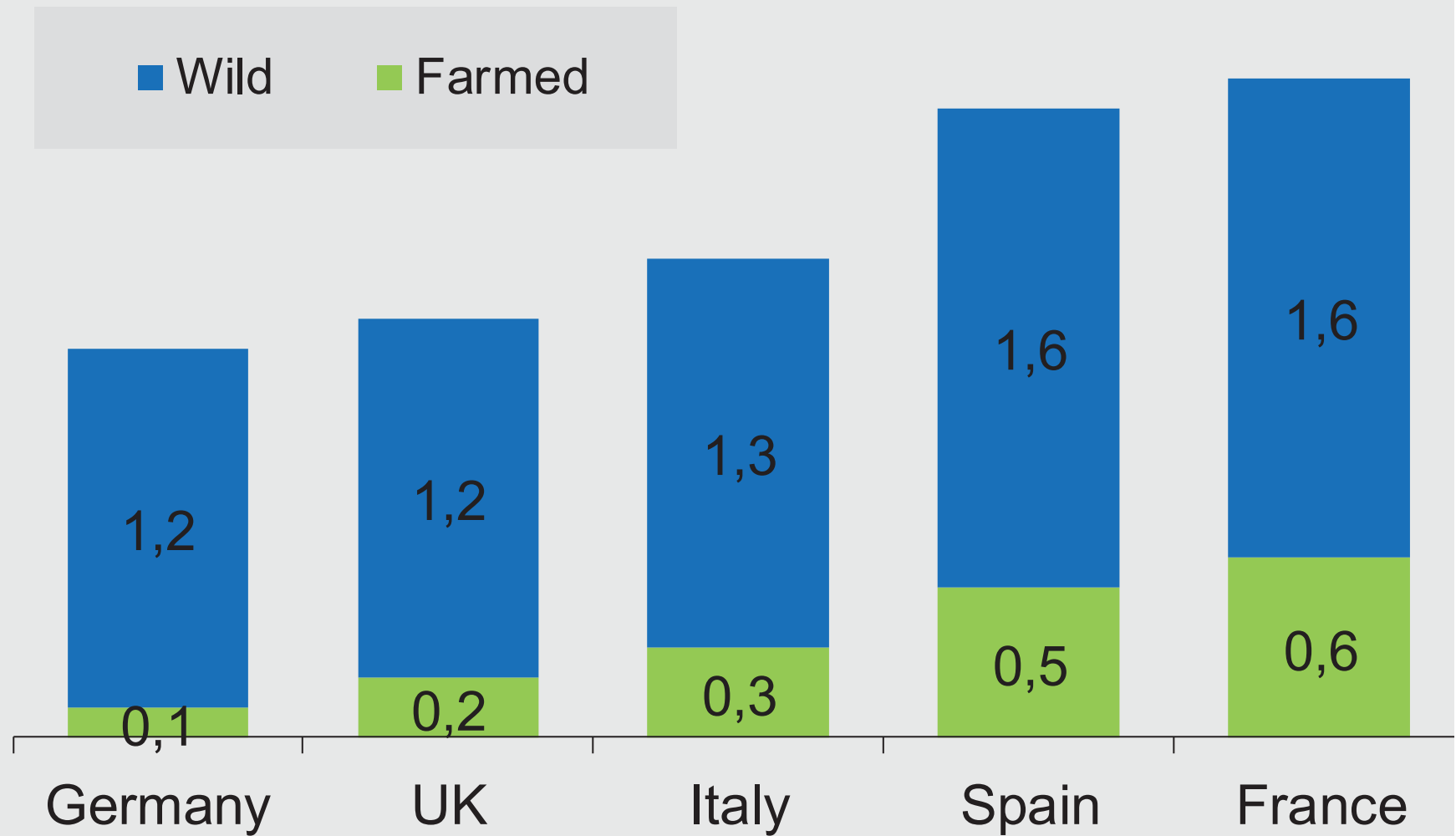
October 31 – 2 November 2012



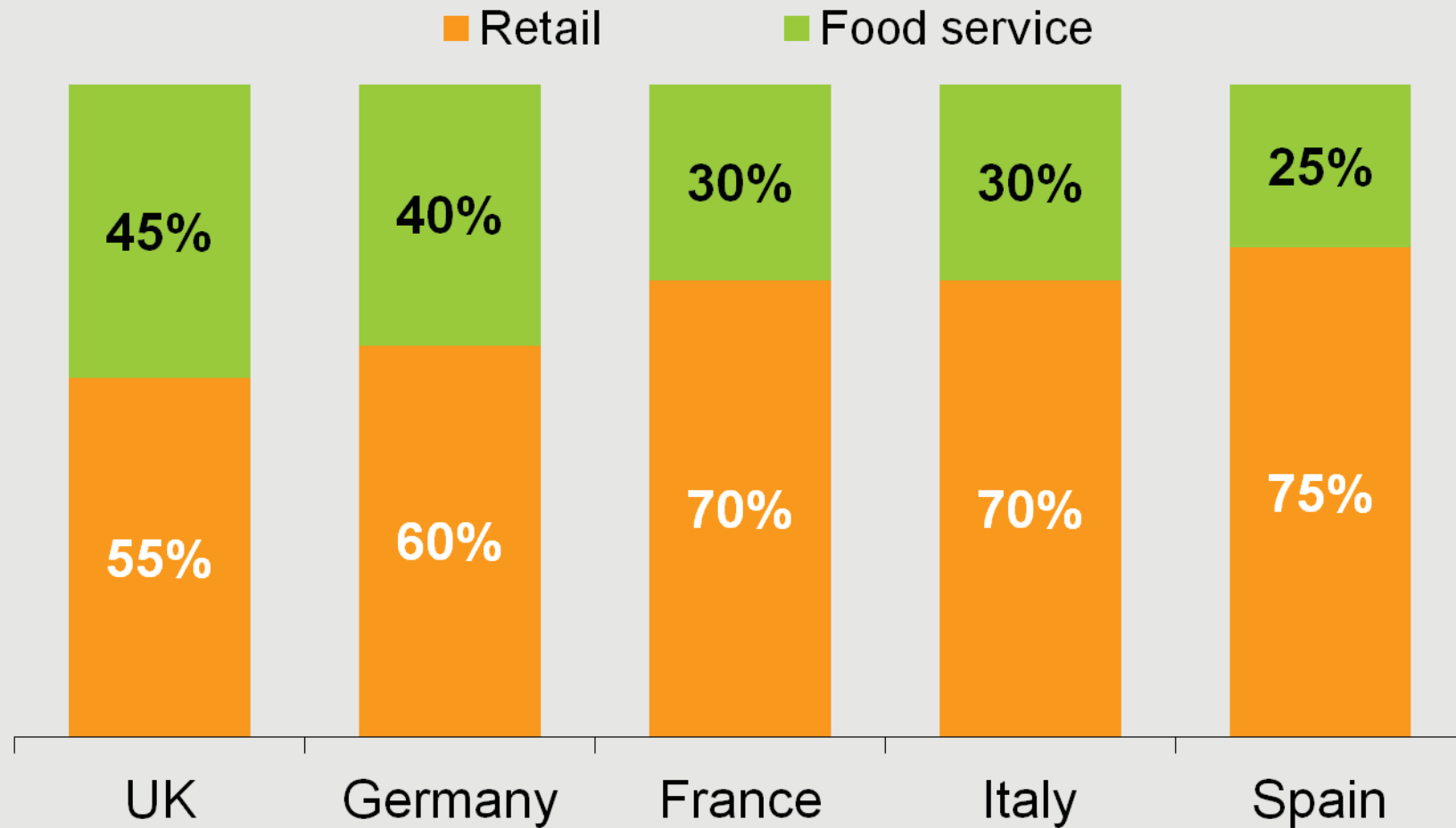
The European seafood market

- The market in Europe (EU) is the world largest consumption zone, with 500 million inhabitants. It imports every year seafood for over US\$ 20 billion,
- It is not one but very different single markets: different levels of consumption, product forms, species
- In terms of final distribution, the importance of foodservice and retail varies greatly, and within the retail, the role of supermarkets
- This presentation focuses on this latter segment: important and growing

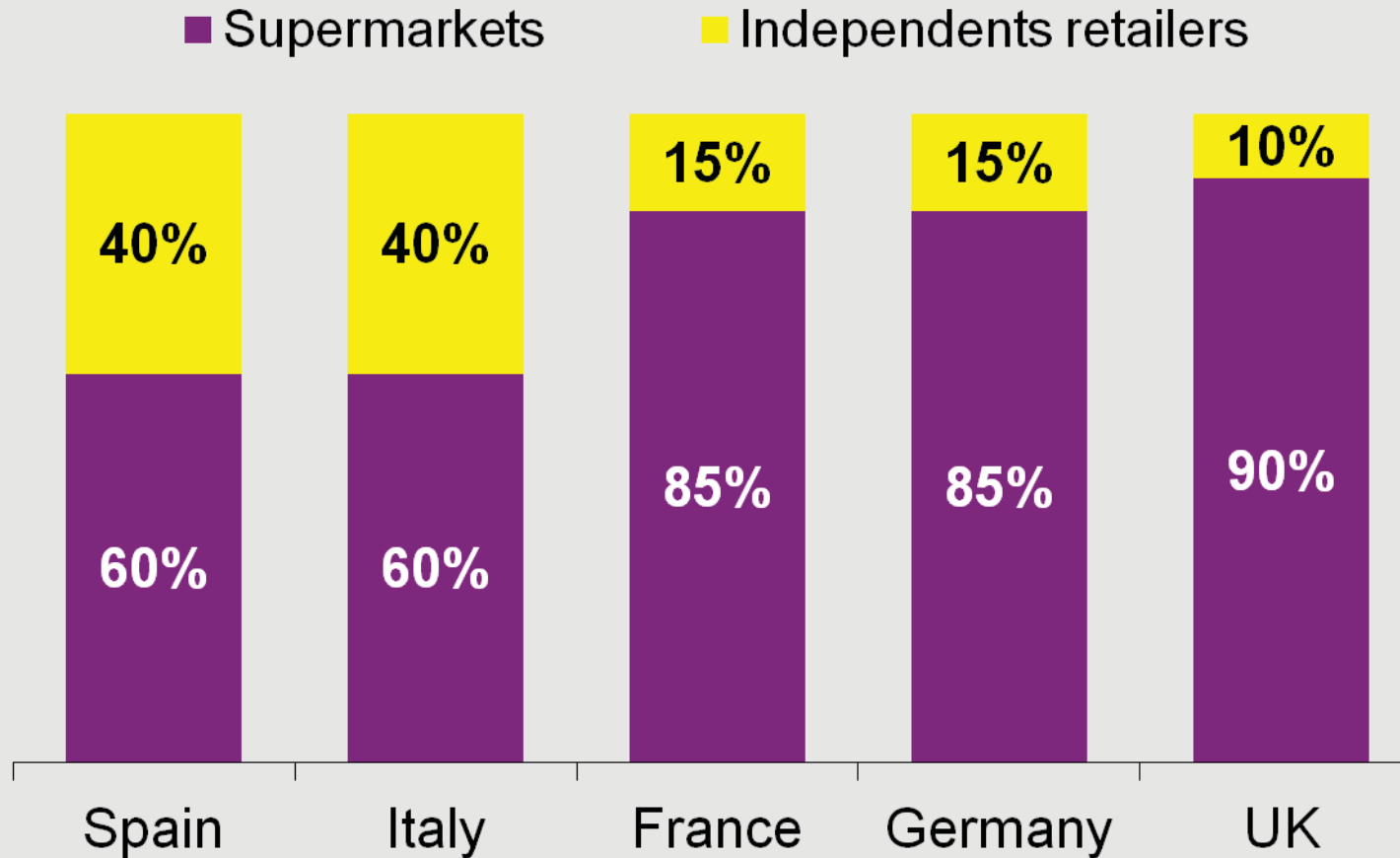
Market characteristics: size (in million tonnes)



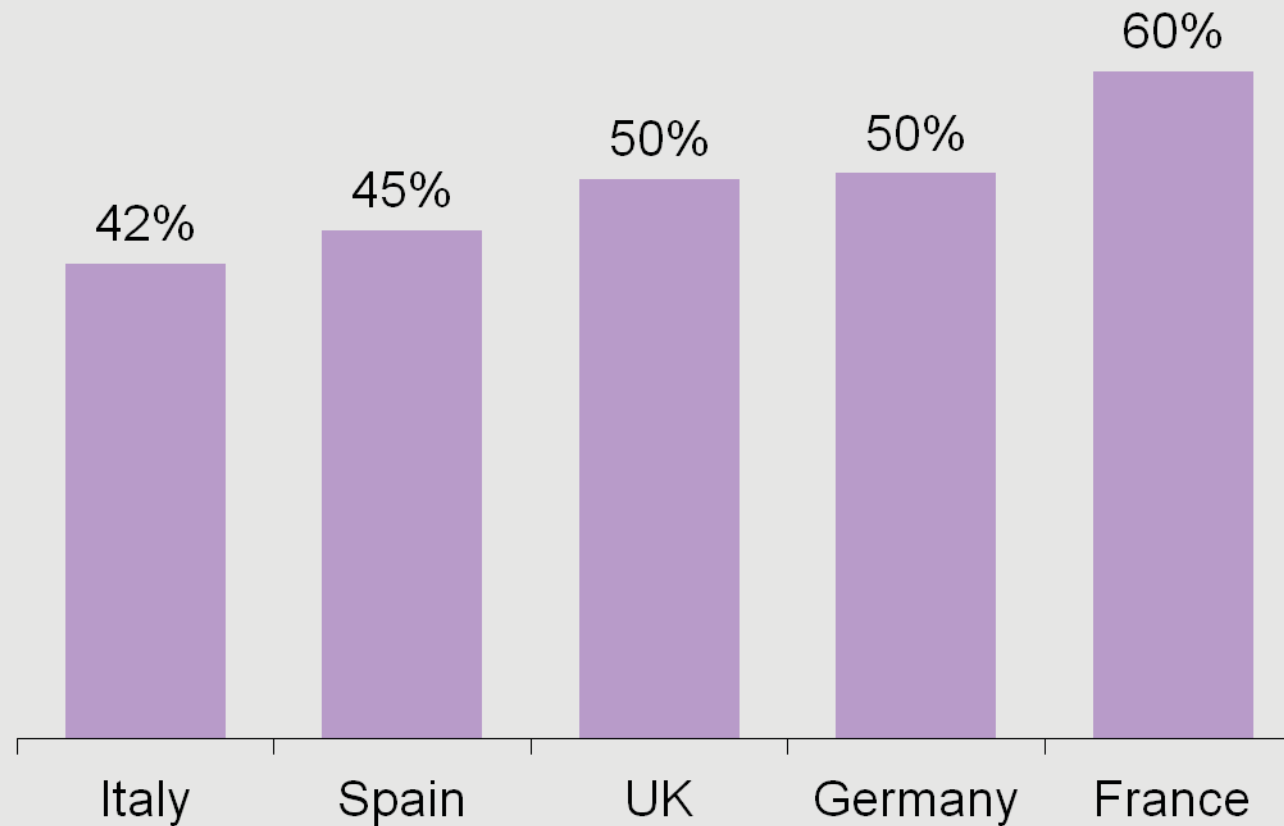
Retail *versus* catering



Retail Segment: Supermarkets and independent stores

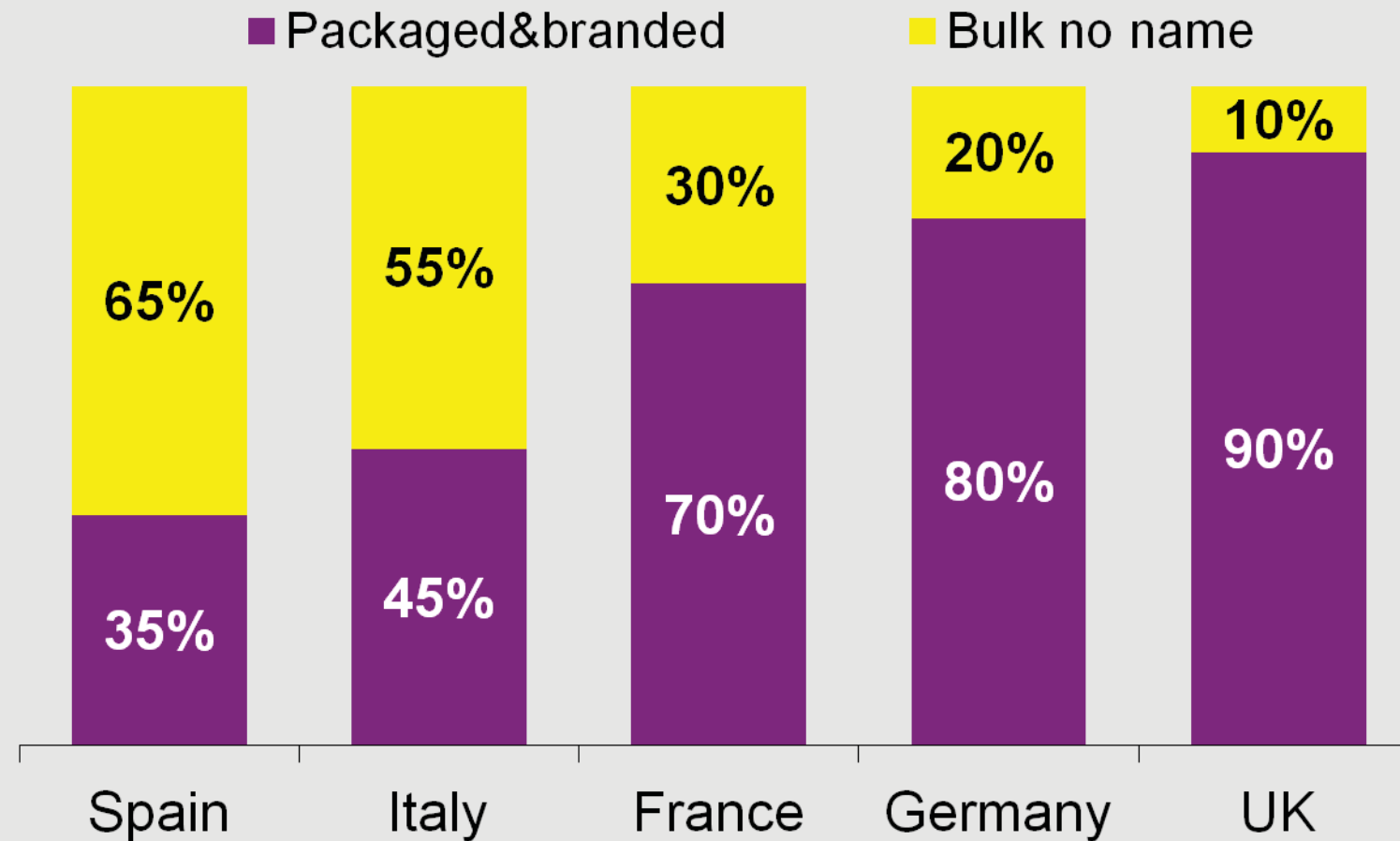


Supermarkets' share in the global market



Supermarkets share in seafood distribution, out of the global market (retail + catering) vary from 40% to 60%.

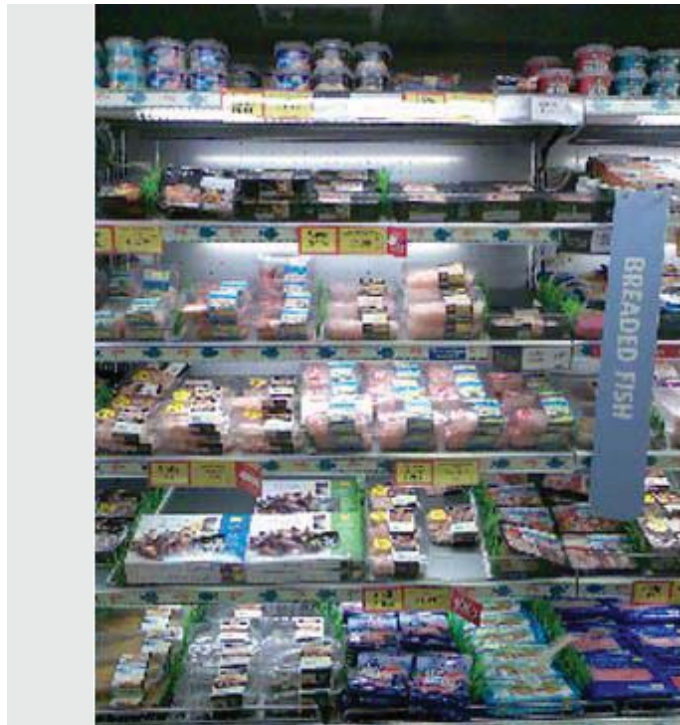
Packaged/ branded and no-name seafood





France

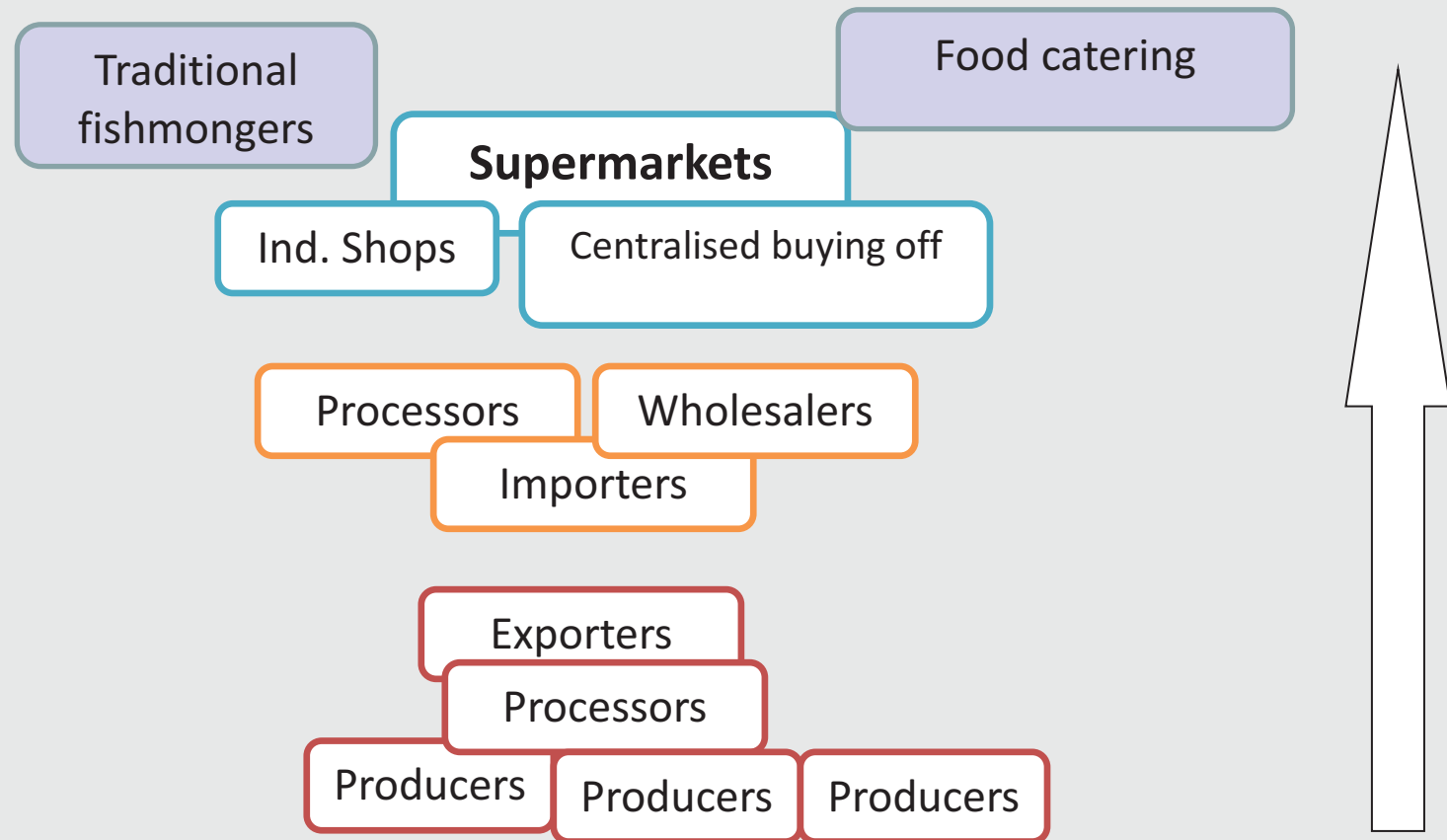




UK

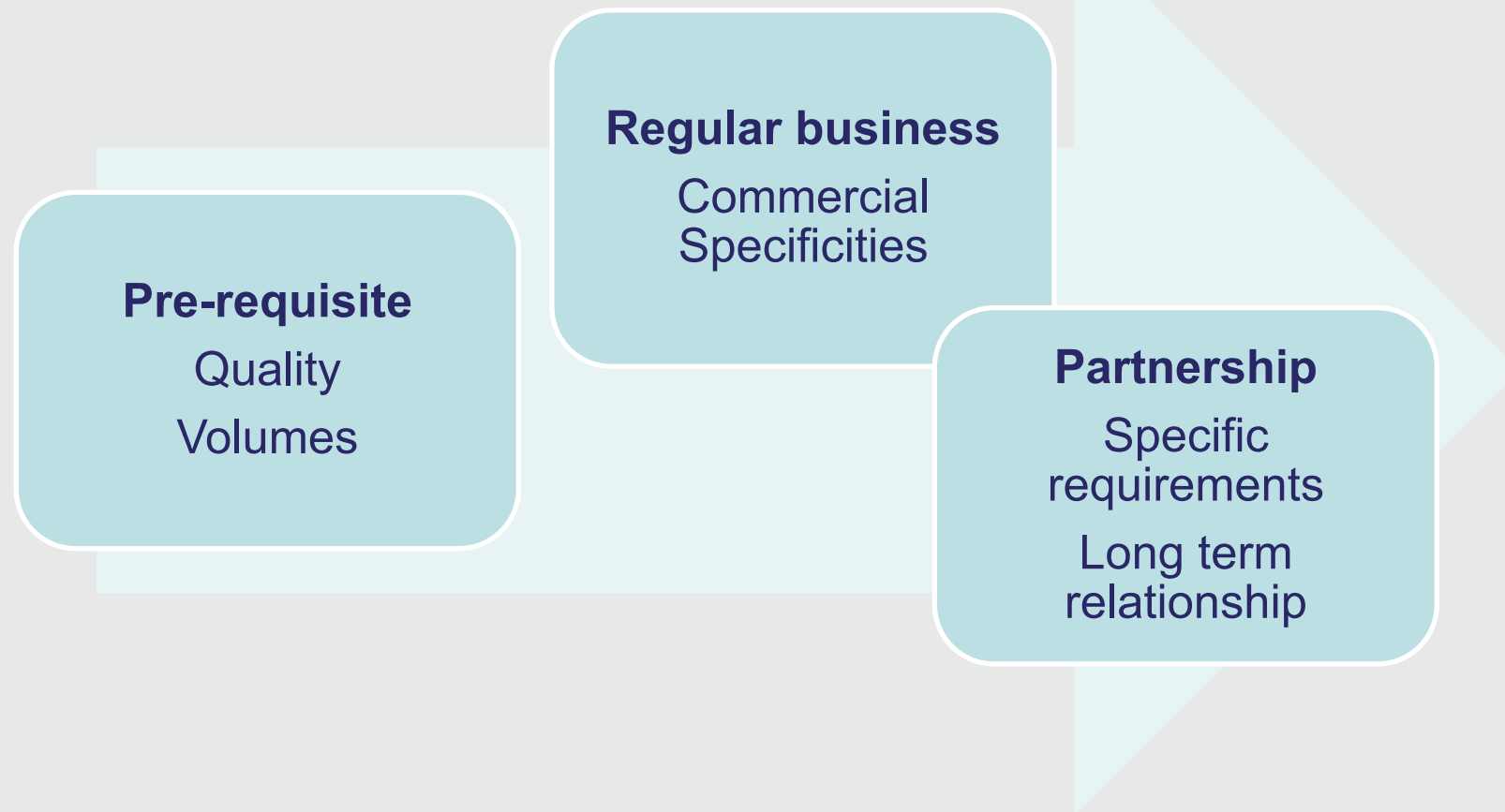


How do they buy?



- Spot market *versus* contract based
- Branded products *versus* non branded

Their criteria for selecting fresh farmed fish suppliers



What do they buy?

- **Quality**
- Large volume species
- Quality verified : certified company and/or verified lot
- Branded products: producers name (very few) of Private label (growing business)
- **Price:** Spot *versus* guaranteed price (more or less long term)
- **Processed form:** Growing interest in filets and cuts, pre-packed
- Importance of price in period of declining purchasing power

Farmed fish: A must have for supermarkets

- Price/
- Availability/
- Quality garanty (freshness)





Tesco Fish Counter Farmed Sea Bream (300g)



[Write the first review](#)

£4.00

(£13.33/Kg)

ADD to basket

Add to l

PRICE COMPARISON*

REVIE

TESCO

£4.00

ÉLEVÉE EN FRANCE ET/OU GRÈCE ET/OU ESPAGNE SELON APPROVISIONNEMENT

2+1 GRATUIT
3€ 75
La pièce 7€ 50
Les 3 pièces

Daurade royale
La pièce de 300 g
Par 1 : 3,75 €
Soit le kg : 12,50 €
Par 3** : 7,50 € au lieu de 11,25 €
Soit le kg : 6,33 €

ÉLEVÉE EN ÉCOUTAILLÉ ET/OU VÉNÉZUELA ET/OU NICARAGUA ET/OU HONDURAS SELON APPROVISIONNEMENT

LABORÉS EN FRANCE
3€
La barquette de 3 pièces

boudins de poisson et Saint-Jacques**
1 gratuit LES ENTRÉES DE LA MER
barquette de 300 g
Argemone Piquante ou Zygachne Potagica
Soit le kg : 10 €

ÉLABORÉE EN FRANCE
0€ 85
Les 100 g

Crevette rose cuite
Calibre 20 à 30 pièces au kg
Soit le kg : 8,50 €

ÉLABORÉE EN FRANCE
4€
La barquette de 150 g

Couronne de queues de crevettes sauce aux fines herbes
SÉLECTIONS MARINES
La barquette de 150 g - 15% gratuit, soit 150 g.
Existe aussi sauce cocktail.
Soit le kg : 24,47 €

24 sushis YEDO
La barquette de 400 g
Soit le kg : 29,44 €

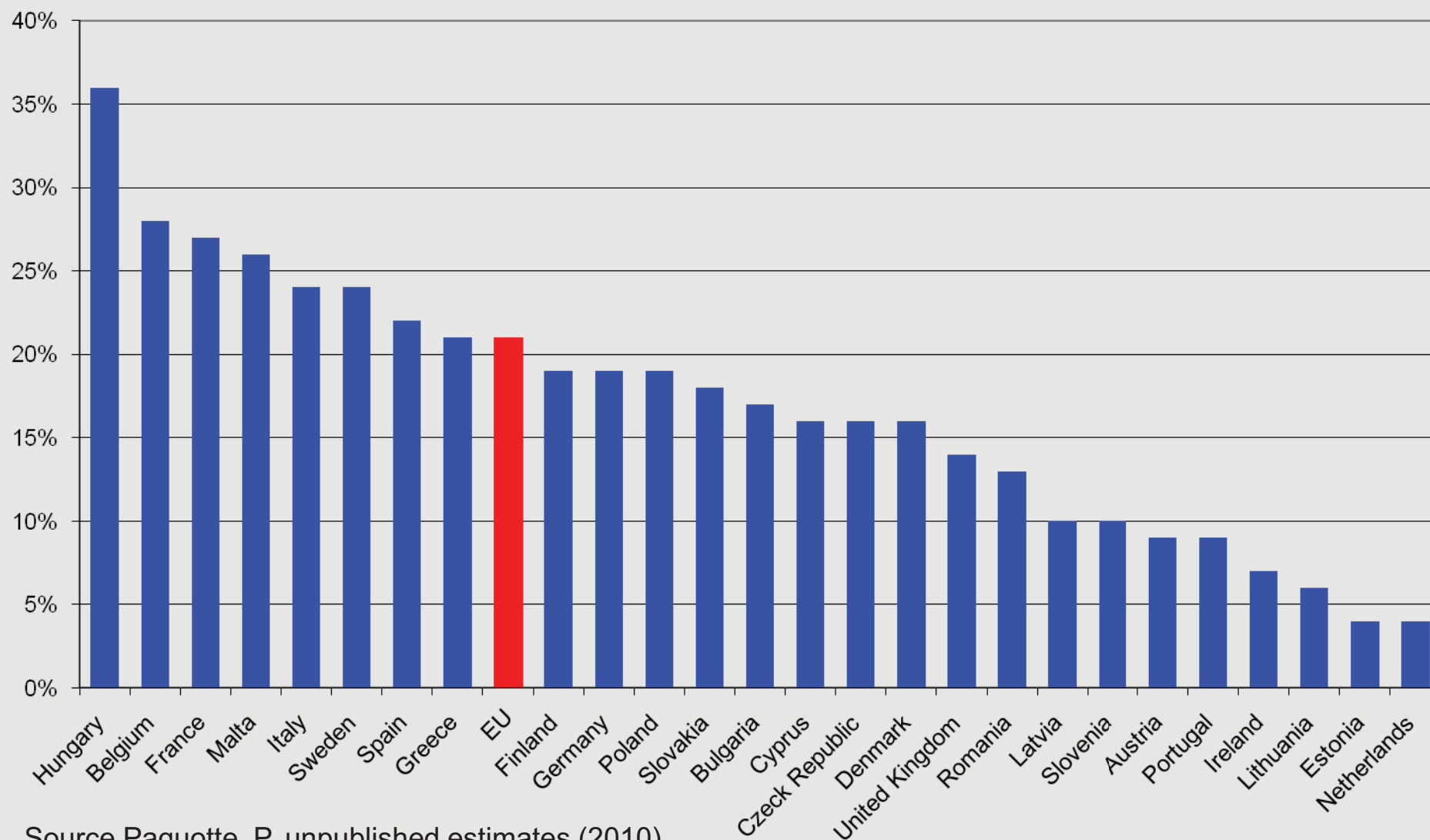
ÉLABORÉS EN FRANCE

** Pour 3 produits identiques achetés signalés en catalogue ou en magasin.

Aquaculture fish in Europe

Aquaculture: market share

(volume, 2010)



Source Paquotte, P. unpublished estimates (2010)

Positive attributes

- Availability, in terms of volume, day after day, all year through
- Healthy food
- Helps to preserve the marine resource (yet not always a stimulus for purchase)

The Telegraph

HOME NEWS WORLD SPORT FINANCE COMMENT BLOGS CU
Columnists | Personal View | Telegraph View Letters Cartoon Arch

HOME » COMMENT » LETTERS

Farming will replenish freshwater fish stock

The importance of fish farms.



theguardian

News | Sport | Comment | Culture | Business | Money | Life &
Environment > Farming

Fish farming is answer to increasing global meat demands, says report
Conservation International says aquaculture has lower environmental impact than cattle, pig and poultry farming

Aquaculture fish

Negative attributes

- Stressful environment for the fish
- Use of colorants may be excessive
- Use of antibiotics
- Negative media



No consensus

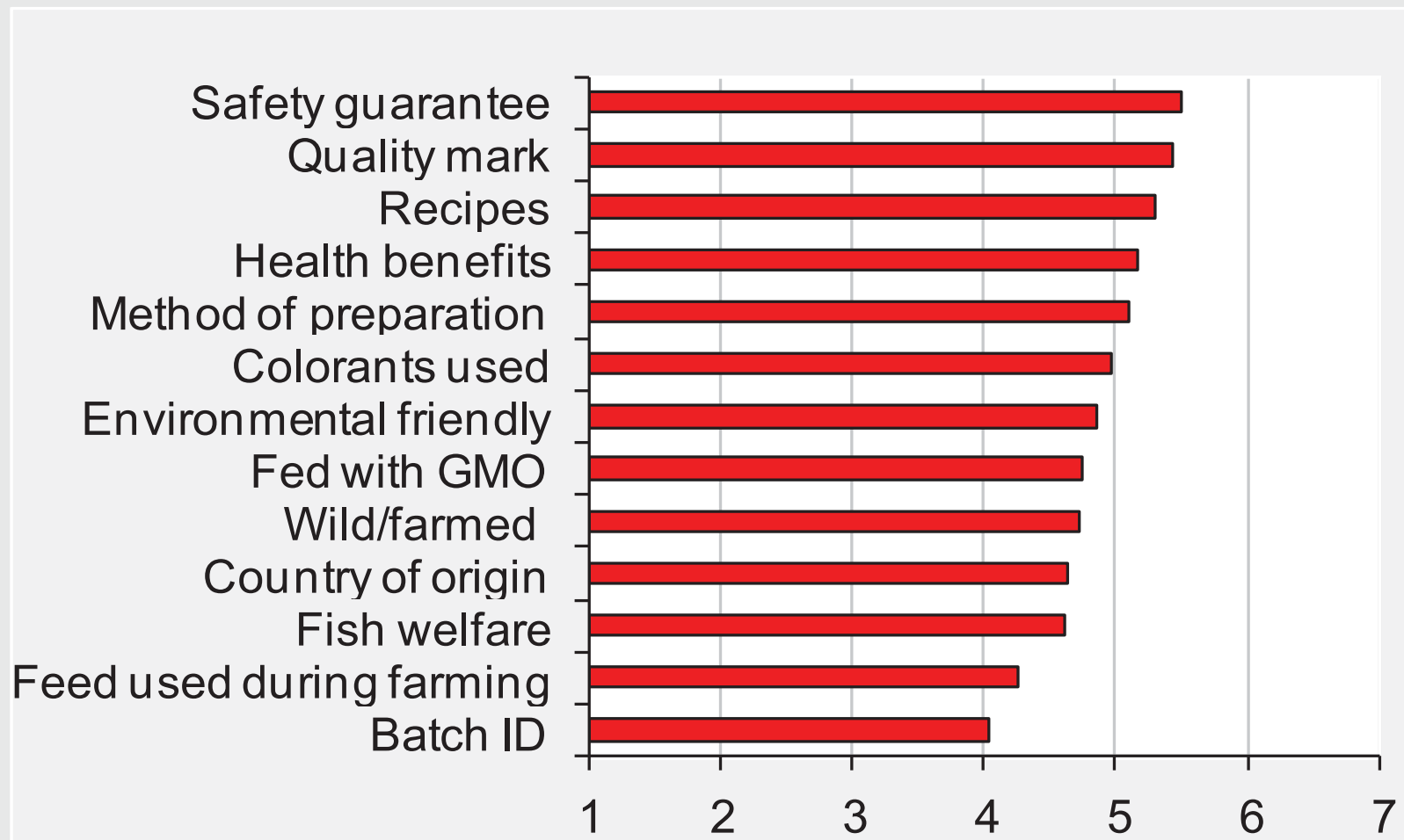
- Quality, some say better taste than wild; others not
- Some say fresher than wild, other not

Lack of knowledge

- Some still don't know about the existence of farmed fish
- Little awareness of farmed fish production. Some compare with on-land production system (hens in battery cages)

Role of information

What consumers want to know



Conclusions

- Europe: a large market far from being self sufficient
- The image of seafood is positive (health) and fairly consistent across European countries
- Aquaculture fish plays a growing role in supplying European markets
- Supermarket play an important and still growing role: price minded and services oriented
- The image of farmed fish with European consumers is diverse
- The success is based on quality certified, convenient product at competitive prices
 - **Economies of scale/ Partnership/ Communication**



Thanks you for your attention

Marie Christine Monfort

www.marketing-seafood.com

www.sea-matters.com



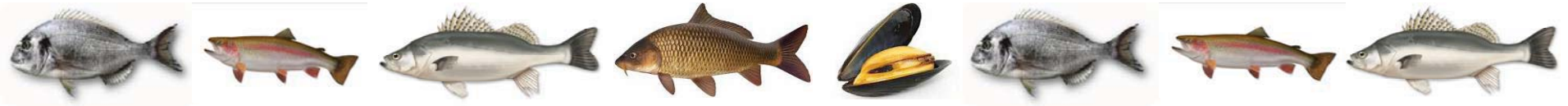
Product innovation and marketing of aquaculture products

Ekaterina Tribilustova

31 October – 2 November 2012

Bodrum, Turkey





Structure of the presentation

- Global trends in the food industry
- Marketing of farmed fish
- Strategical options for aquaculture farms
- Conclusions



Top-10 trends in the food industry

- Pure is the new natural,
- Green is a given,
- Location, location, location,
- Premium stands out,
- Seniors get more attention,
- Forty is the new twenty,
- Grounded in science,
- Regulators force a rethink,
- Immeasurable niches,
- Boom for protein.

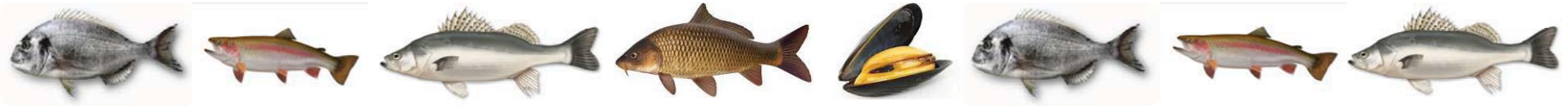


Source: "Innova market insights"



Marketing of aquaculture fish

- Marketing activities for farmed fish are not a generalized activity in Europe;
- Each country and region has its own approach, based on the structure and organization of the industry itself;
- Promotional activities are carried out by the producers' organizations and cooperatives, based on their missions, objectives and priorities;



Marketing tendencies - Products

Focus on exotic marinades and sauces



“Paramount company” (UK): Seabass, cod, ginger and lime fish cake

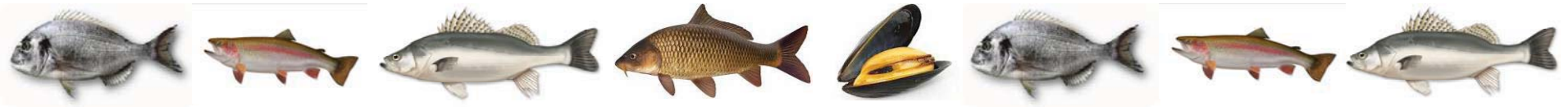


Marketing tendencies - Products

Focus on coatings diversification

The screenshot shows the Cumbrian Seafoods website. The header includes the logo 'Cumbrian Seafoods' with the tagline 'Setting the standard', and navigation links: HOME, COMPANY, OUR PRODUCTS, NEWS, SUSTAINABILITY, and HEALTHY LIVING. The main content area features a 'Perfect Catch' promotion. On the left, a chalkboard graphic says 'Perfect Catch' and 'Prepared with you in mind...'. In the center, there's an image of a plate with breaded fish, vegetables, and a fork, next to two product packages: 'Breaded Icelandic Cod' and 'Mini Seafood Steaks & Dip'. On the right, text reads: 'Outstanding unbeatable Great quality impossible w', 'Perfect Catch Fail in love w new range o for all occas', 'Sustainab Our commit is at the he', and 'For the fu Get inspire our great s of deliciou'. A 'VIEW RANGE' button is at the bottom left.

Cumbrian Seafoods (UK): various fish products in oat-meal coatings



Marketing tendencies - Products

Focus on diet fish products and healthy attributes





Marketing tendencies - Products

Focus on convenience and integrity



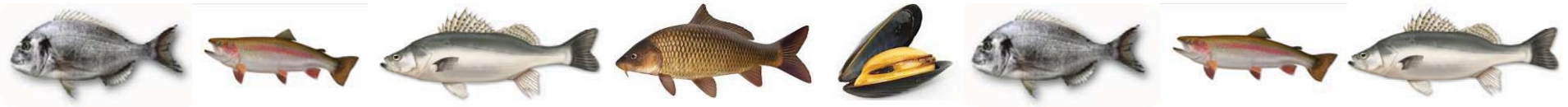


Marketing tendencies - Products

Ready fish products of “Restaurant quality” for home consumption



www.seacuisine.com



Marketing tendencies - Products

Unusual combinations for traditional products





Marketing tendencies - Products

- Sustainable organic products increase opportunities at the markets,
- Increasing future production in European countries highlighting quality labels and the country of origin,
- Value-added products like ready-to-cook and ready-to-eat products,
- Greener packaging – even edible packaging.



Marketing tendencies - Prices

- Consumers often shop on the extremes of the market seeking out big discounts at one end and high premium products at the another;
- Premium fish products remain attractive – they are affordable indulgences. Strong marketing efforts are needed, especially for promotion.
- Fish products at the lower end are in growing demand without substantial marketing campaigns.



Marketing tendencies - Promotion

- Need to revive consumption of farmed fish through organized national campaigns focused both at adults and young generation;
- Active national promotion and education in schools/kindergartens and the Ho-Re-Ca sector.



Examples of promotional campaigns

Rainbow trout – promotion in Spain



www.besana.es



Examples of promotional campaigns

Carp promotion in Poland



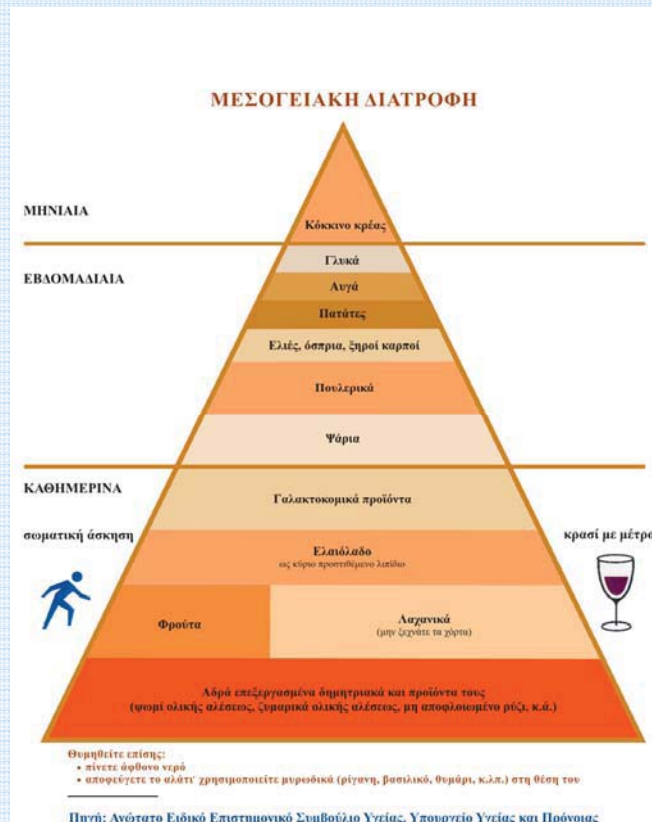
www.pankarp.pl





Examples of promotional campaigns

Seabass and seabream promotion in Greece



“Maricultured sea bass and sea bream are in terms of appearance and organoleptic characteristics among the most precious fisheries products in Mediterranean. High protein level per 100g similar to other animal products with far lower lipid content from the majority of them”.



Trends

- Northern markets – rather odorless products, consistent quality, product convenience, neutral taste, firm texture;
- Increasing focus on price;
- Small portions;
- Good position regarding competition with other wild fish species;
- Generally positive attitude towards frozen fish products;
- Conveniently prepared value-added fish and seafood products increasingly attract the Northern European consumers.



Trends

- Southern markets – more difficult competition because of greater variety of fish and seafood;
- Focus on raw packaged fish (whole cuts) and fresh fish and seafood counters;
- Supplying niche markets.



Strategies – small-sized farms

Strategic options for small-sized farms

- 1) **Maximum cost reduction and selling to bigger farms with organized sales network**

However, no contact with consumer/no negotiation power. This strategy resulted in majority of cases in going out of the business/absorption by larger farms.

Source: FAO study “Synthesis of Mediterranean marine finfish aquaculture”



Strategies – small-sized farms

- 2) **Band together in collective groups, for example, as producer organizations or more informal alliances.**

Improved negotiation power to suppliers and customers. Option for a common investment in a hatchery, processing plant, etc. Possibility for a joint brand or label for quality/origin of production.



Strategies – small-sized farms

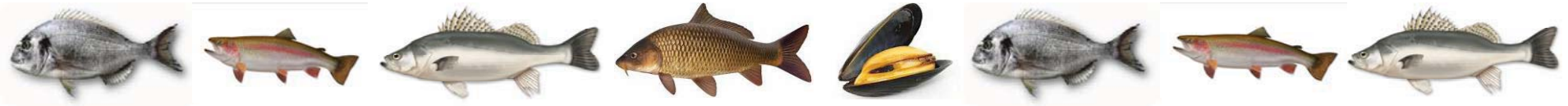
3) Strategy of choosing niche markets.

The advantage is that by selling directly to consumers, the farmer eliminates the middle men and obtains a better price for the product. Another option is to supply directly a fish retailer or distributor who can supply his customers with “fresh from the farm”.



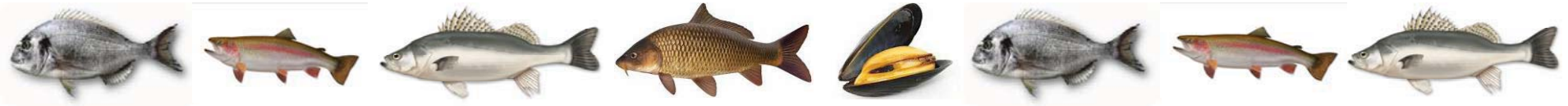
Strategies – medium-sized farms

- Similar problems as for small-sized farms,
- Added costs of hatcheries, management and sales distribution costs,
- Most of these farms are trying to build their own sales network, however, it is difficult to compete with large-scale farms due to the price competition.



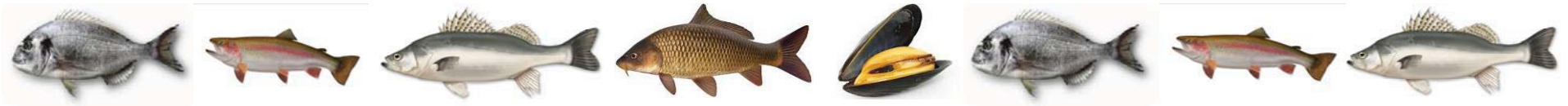
Strategies – large-sized farms

- Higher degree of automation, centralization of management and control system and different sales strategies,
- Can be a conglomeration of many geographically dispersed production sites,
- Batches of products are often transported to one of more central packaging and processing facilities where sorting and processing are done.



Strategies – large-sized farms

- Sales strategies depend on the products, i.e. in case of bass and bream sector, producers apply the same sales techniques as smaller farms,
- Nature of the product “Fresh from the farm” in various scales,
- Traditional market.



**Thank you for your
attention!**



Why and how labelling farmed fish ?

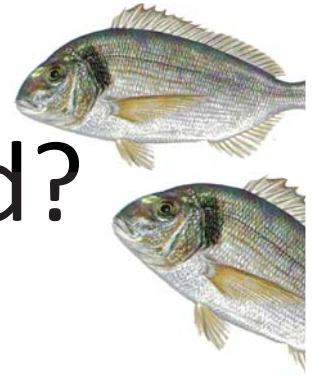
Bodrum, Turkey

October 31 – 2 November 2012





Why labelling farmed seafood?



- To convince consumers
- To convince professional buyers
- To increase revenue
- To improve visibility and foster sales
- To create loyalty

Why labelling? To convince consumers



- Their choice is guided by
 - Personal preferences
 - Information they get from various sources, which are sometimes in contradiction: media, public authorities, environmental NGOs, distributors and producers themselves (brand & labels).
 - The price
- At the end, who do consumers' trust?

Why labelling? To convince professional buyers



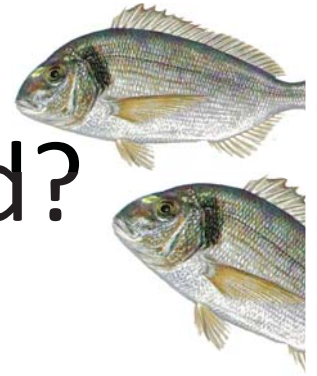
- To offer your client an additional tool for promoting your products
- To give your clients additional element for their own Corporate Social Responsibility
- To give retailers or caterers arguments to convince consumers

Why labelling? to increase economic performances



- Higher price?
- Higher margin?
- Higher sales?

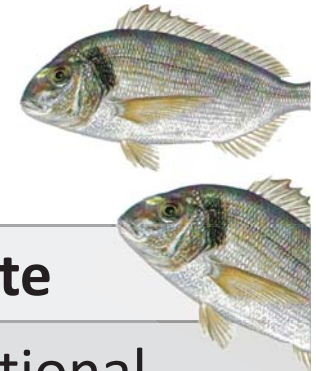
How labelling farmed seafood?



Important to chose the right:

- Target: B2B or B2C
- Value: quality, environment, origin, etc...(non exclusive from each other)
- Method: certified or not
- Scheme: private or public
- Project manager: solo, collective

Examples of labels



Promoted Value	Public	Private
Quality	Label Rouge	Regional or national brand
Origin	PDO/ AOC, PGI	NORGE
Environment	Organic	Friend of the Sea ASC Global Gap
Animal welfare		Freedom food
Fair Trade		Max Havelaar



Carbon foot print, cultural obligations, social and humanitarian issues, nutritious qualities, etc...

Values promoted: historical perspective



1980-1990
Origin

1990-2000
Origin/ Quality

2000 - 2010
Origin/ Quality/
Environment

2010 - ++
Origin/ Quality/
Environment/
Ethics

Origin

- Labelling for the domestic market
- For the external market







Recette norvégienne du plaisir n°14

PARTEZ POUR LES FJORDS

Avec les poissons de Norvège

À GAGNER:
1 séjour en Norvège
pour 2 personnes
100 cours de cuisine
et une heure à l'atelier des Chefs
1350 livres de recettes
"Cabillaud en Fjord"

DEMANDEZ VOTRE CARTE À GRATTER À VOTRE POISSONNIER. Le poissonnier vous indiquera comment la gratter.

NORVÈGE

L'objectif est de faire connaître la mer de Norvège.

Crevettes roses élevées en Equateur
CAL.60/80

5,95 €



La marée

TOURTEAU

Pêché en Atlantique Nord-Est

~~7,90~~ **5,90 €** Le kg

Filet de saumon
23,90

Filet de poisson de mer
13,90

Filet de saumon
13,90

Filet de sardine
9,90

Des de cabillaud
15,90



Quality



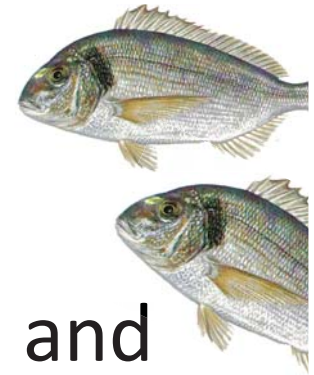
- Which quality to enhance? Complex issue.
What means quality? Varies by buyer.
 - Sanitary
 - Freshness – taste
 - Sensitory







Environment



- The pressure on environmental certification and labels varies by country and according to their economic situation
- *“Sustainability certification is not an issue at the moment, nor on a medium term. Maybe it could happen on a long term, once the economic crisis will be over, not before.” Spanish distributor 20/10/2012*

- *“PAM chain is not willing to pay more for an environmental certification”. Italian distributor 18/10/2012*



GLOBAL G.A.P.
The Global Partnership for Good Agricultural Practice







ΚΕΦΑΛΟΝΙΑ
fisheries

Εμπορεύσιμο όνομα / Trade Name

Λιμάνι, Κεφαλονιά, Ελλάδα

Λαυράκι Κεφαλονιάς
βιολογικής εκτροφής*

* Ουδέποτε ήταν θηλάσιο. Τα ψάρια εκτρέφονται μόνο με φυσικά προϊόντα βιολογικής γεωργίας και κυματισμού, σύμφωνα με την οδηγία της Ευρωπαϊκής Ένωσης. Τα ψάρια είναι ελεύθερα στην επιφάνεια του θαλάσσιου νερού, χωρίς να υπάρχουν φράγματα ή άλλα ενοχλητικά στοιχεία. Τα ψάρια είναι ελεύθερα στην επιφάνεια του θαλάσσιου νερού, χωρίς να υπάρχουν φράγματα ή άλλα ενοχλητικά στοιχεία. Τα ψάρια είναι ελεύθερα στην επιφάνεια του θαλάσσιου νερού, χωρίς να υπάρχουν φράγματα ή άλλα ενοχλητικά στοιχεία.

organic* Kefalonias
sea bass

* Organic fish... fed only with natural ingredients, from certified organic agriculture and fishmeal. Fisheries, based in the island, are free of any netting of the Mediterranean sea with availability to the fish and protection. Our fish are small, healthy, steady and with the utmost respect for the environment and their welfare.



BIO
HELLAS

βιολογικό προϊόν βάσει καταλόγου, organic fresh frozen, sea bass
πρόσβαση και πιστοποίηση, certification & inspection
www.naturand.de, www.biohellas.gr

Κεφαλονιά, Ελλάδα / Kefalonias, Greece



Daurade Royale 400/600 g

Pièce ☐ 9,90 €

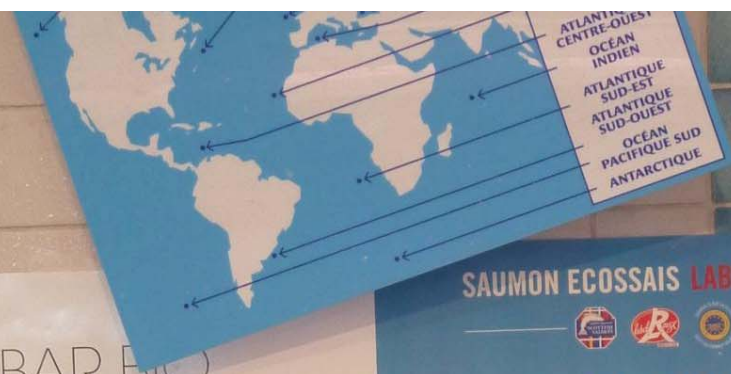
ÉLEVÉ EN GRÈCE

DORADE ROYALE BIO

du GOLFE de CORINTHE

AB





OSO

BAR BIO
du GOLFE de CORINTHE

Parce que la Nature
fixe les standards...

AB
AGRICULTURE
BIOLOGIQUE

R&O
Tel : +33 1 4512 7171 - Fax : +33 1 4512 7155 - e-mail : contact@rso.fr

SAUMON ECOSSAIS LABEL ROUGE

**SON GOÛT
EST DÉJÀ ENTRÉ DANS LA
LÉGENDE**

scasse
2,95 €

Sole
1kg 3,49 €

PÊCHE
FRANÇAISE

followfish
FOLGE DEM WAHREN GESCHMACK

Bio Miesmuscheln

REINES NATURPRODUKT
AUS BIOLOGISCHER AQUAKULTUR - TIEFGEKÜHLT



500g e

100%
NACHHALTIG
100% LECKER

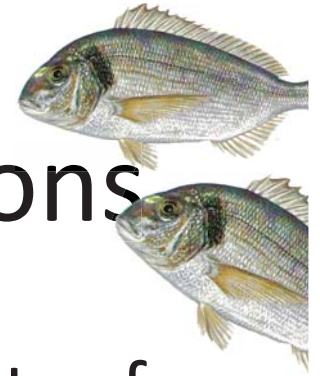


Bio Miesmuscheln
aus biologischer Aquakultur





Before labelling ...a few questions



- Who are your customers? Who are the clients of your customers?
- What is the supply situation? Who are your competitors and what is their strategy?
- Which your commercial objectives?
- What is the image of your company, of your products?
- Which are the true attributes of your products?
- Which are your means for communication

