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## UPDATE ON FISH DISEASE SITUATION IN THE MEDITERRANEAN BASIN 2015

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## EAFP 2015 First important Milestone for the platform

Fish health in Mediterranean Aquaculture, past mistakes and future challenges

2 DTU Vet, Technical University of Denmark Presentation name 17/04/2008

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### WORKSHOP

#### Fish health in Mediterranean Aquaculture, past mistakes and future challenges

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## PRODUCTION VOLUMES

COUNTRY	YEAR										
	2006	2007	2008	2009	2010	2011	2012	2013	2014		
TURKEY	114.206	124.530	136.571	149.585	155.802	164.107	187.136	210.824	211.672	232.152	
GREECE	90.959	115.392	130.872	148.509	138.513	122.500	111.217	116.073	125.580	115.580	
SPAIN	52.685	61.862	62.293	65.835	69.866	63.205	61.992	59.920	55.694	59.359	
ITALY	62.250	62.524	61.811	60.071	60.137	64.262	64.781	58.102	57.500	57.990	
FRANCE	48.908	50.987	49.491	47.110	45.954	44.342	45.980	44.540	40.205	41.641	
CROATIA	6.699	7.343	6.913	7.653	9.946	9.823	10.681	8.822	8.512	10.201	
PORTUGAL	4168	4367	4.274	4024	4.097	4.674	5136	7008	3.633	3.765	
SLOVENIA	11462	1206	1051	1091	995	701	954	842	897	1020	
BOSNIA	0	4835	6608	7334	7440	8155	7629	7662	5936	7168	
Algeria	613	697	725	1043	1059	1086	722	1274	1290	924	
Macedonia	845	588	1041	1387	1540	1491	1368	1396	1348	1214	
Marocco	2014	921	1274	394	425	447	402	449	710	887	
Nigeria	358	272	361	2775	2159	1755	2240	2641	2188	2380	
Tunisia	2483	2.678	3097	2442	4747	5256	7968	8462	12071	11123	
Iran	22408	22117	21438	20013	19177	19891	20817	20342	22252	20166	
Georgia	561	563	509	540	440	541	578	600	720	883	
Libano	801	803	803	955	1055	1155	1255	1255	1255	1115	
India	8538	8962	8423	8591	8697	8618	7658	6268	4008	3008	
Egypt	538452	594717	635429	693884	705290	918793	986054	1016628	1091688	1129563	
CYPRUS	2.118	2.552	2.229	2452	3.343	4.118	4.663	4.513	6.171	6.810	
Montenegro	0	184	211	414	355	590	640	630	630	680	
Malta	736	1938	2716	2702	3868	2916	2127	4336	5268	4912	
Bytye	241	245	245	10	10	10	10	10	10	10	
Grand Total	966.196	1.075.096	1.147.747	1.341.220	1.256.465	537.484	1.536.764	1.585.816	1.682.187	1.714.978	

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## WHICH SPECIES OF FISH WE HAVE TO DEAL WITH?

### Rainbow Trout Large and Portion size

LARGE RT COUNTRY	YEAR									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
FRANCE	9.000	9.000	9.000	9.000	9.000	12.000	12.500	12.500	11.130	12.000
TURKEY	1.249	1.633	2.740	2.721	5.229	7.079	7.697	3.234	5.186	4.812
SPAIN	1.500	2.000	2.000	2.000	1.500	1.500	1.500	1.600	1.600	2.600
ITALY	600	600	600	500	600	1.000	2.000	1.500	2.000	2.000
TOTAL	12349	13233	14340	14221	16329	21579	23697	18834	19916	21412

Small RT COUNTRY	YEAR									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Turkey	48.033	56026	58433	65.928	75.657	78.165	100.239	111.335	122.873	107.533
ITALY	39000	39000	39000	38900	40500	39.000	39.000	36300	36000	36.800
FRANCE	25000	25000	25000	25000	25000	22.000	23.500	23500	20870	22.000
SPAIN	25000	24000	20.000	20000	20000	18.000	18.000	14400	15000	13000
GREECE	4.892	3187	2820	3420	2588	2712	2389	1.967	2.014	2014
PORTUGAL	845	943	937	941	936	951	900	900	1.000	1000
CROATIA	800	800	800	800	2.000	2.095	2.358	1.232	350	361
TOTAL	143.570	148.956	146.990	154.989	166.681	162.923	186.386	189.634	198.107	182.708

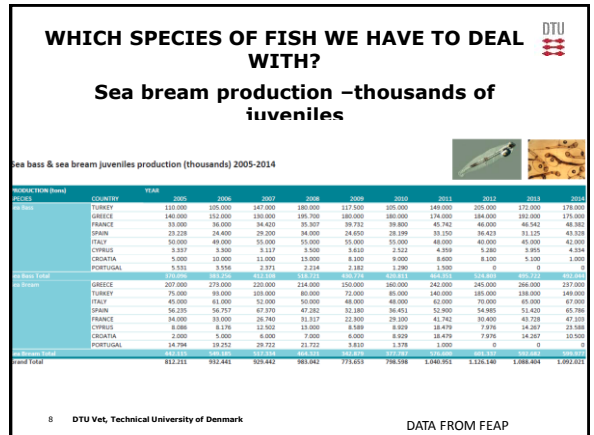
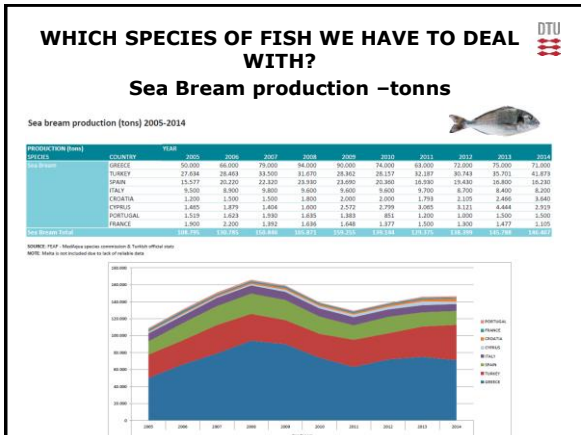
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## WHICH SPECIES OF FISH WE HAVE TO DEAL WITH?

### Sea Bass production –tonns

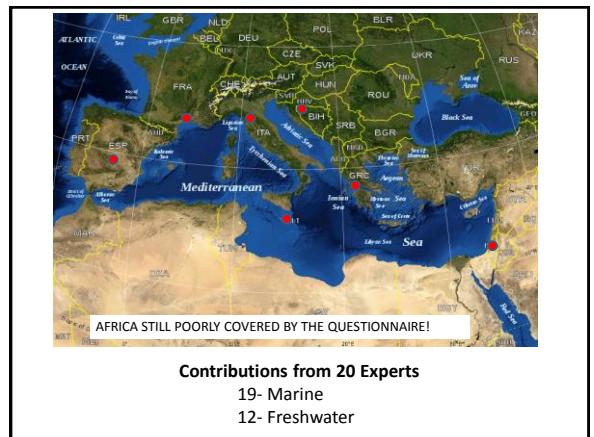
Sea bass production (tons) 2005-2014

COUNTRY	YEAR										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
TURKEY	37.250	38.408	41.500	45.000	49.000	46.000	46.000	46.000	46.000	46.000	
GREECE	35.000	45.000	48.000	50.000	45.000	45.000	45.000	45.000	45.000	45.000	
FRANCE	5.800	6.500	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800	
ITALY	9.100	8.800	8.900	8.800	8.800	8.800	8.800	8.800	8.800	8.800	
FRANCE	4.800	5.500	6.200	6.900	7.600	8.300	9.000	9.700	10.400	11.100	
CROATIA	1.800	2.000	2.200	2.400	2.600	2.800	3.000	3.200	3.400	3.600	
CYPRUS	180	180	180	180	180	180	180	180	180	180	
PORTUGAL	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500	1.500	



### AIM:

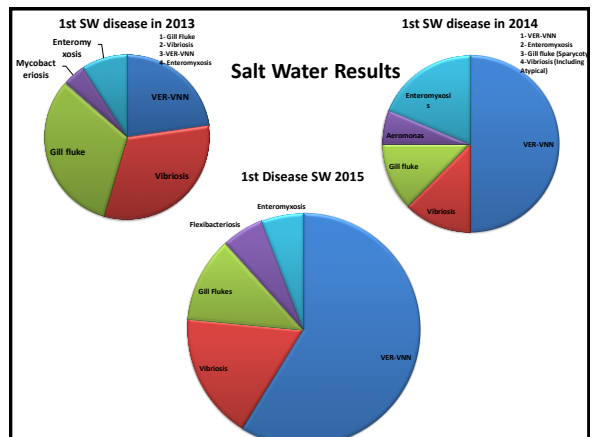
Continue survey established in 2013 targeting main problems, follow trends and highlight emergence of new disease

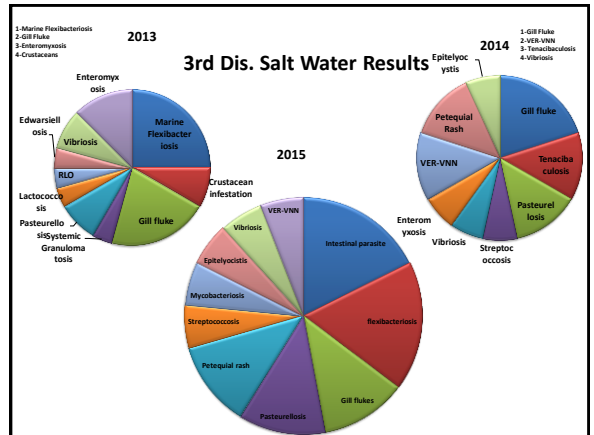
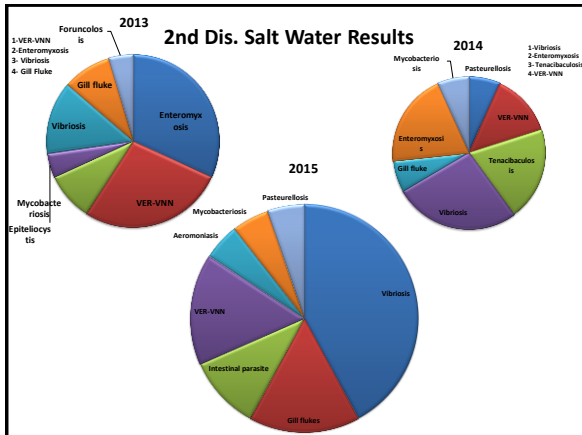


### Same questionnaire as in 2014

Third disease to be considered for its impact in the aquaculture sector

Name	
Aetiology	
Symptoms / Diagnosis	
Control methods applied	
Area of interest	
Species affected / size	
Rearing sector affected (Hatchery/nursery/ongrowing)	
<b>DISEASE CHARACTERIZATION</b>	
Impact on production	
Impact on Economy	
Legislative consequences	





### Results – Marine - VIRUS

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- VER/VNN is by far the most important disease in 2015, and the importance is increasing since 2013
- Field trial of vaccine prototypes in progress
- Sea bass remain target species mainly at larval/nursery stage, with implication for market size as well

• **Problem for Sea bream larval stage** See Anna Toffan presentation

Reports of diseases outbreaks also in wild stocks

### VER- VNN IMPACT

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Cantabria - Empresas

#### Tinamenor SLU pone fin a una actividad acuícola de más de 40 años en Cantabria

En febrero de 2013 se presentó en la Demarcación de Costas en Cantabria un proyecto en el que se explicaba que la concesión, debía hacerse por una cantidad de tiempo suficiente para que ésta fuera amortizada.

Sin embargo, a cambio, la concesión de Costas se recomendó por parte de la Demarcación de Cantabria a la Dirección General en Madrid por un plazo de 12 años más, hasta enero de 2029. Tiempo considerado por Tinamenor "manifiestamente insuficiente" para rentabilizar las inversiones de inversión en la instalación.

A este grave problema de concesión, se ha unido otro de "gran envergadura", como la afectación de la planta por nodavirus del serotipo RG(SJ), una cepa recombinante poco común que afecta principalmente a la dorada en sus estadios de larva, y en menor medida en la fase alevín y juvenil, la principal actividad productiva de esta instalación en Cantabria.

Como consecuencia de este problema, la empresa ha visto cómo se ha ido perdiendo la clientela, ante la imposibilidad de comercializar alevines y el desabastecimiento de éstos, "por lo que desaparece la razón de ser de la sociedad, que es la venta de sus productos".

### Results – Marine 2 - Bacteria

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Major constraint for Marine aquaculture despite the availability of therapeutic treatment and (few) vaccines

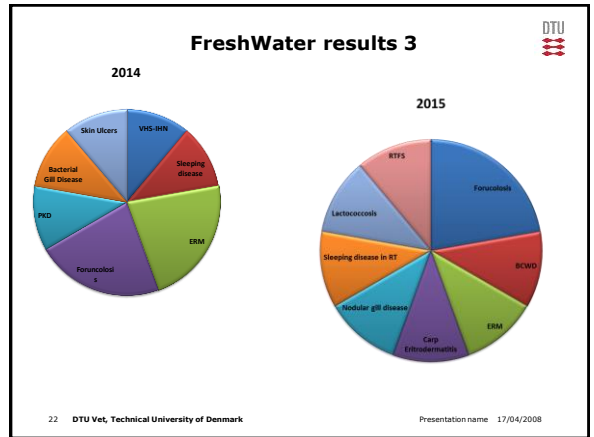
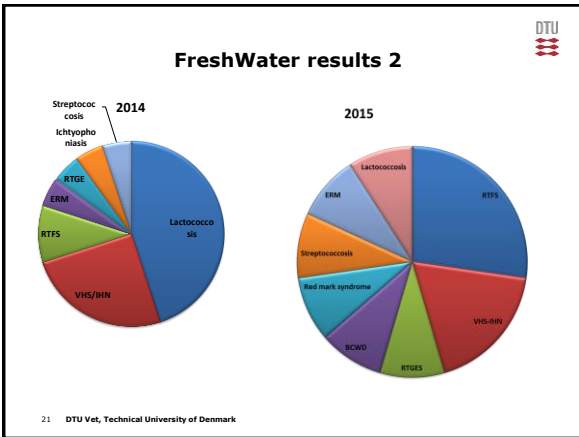
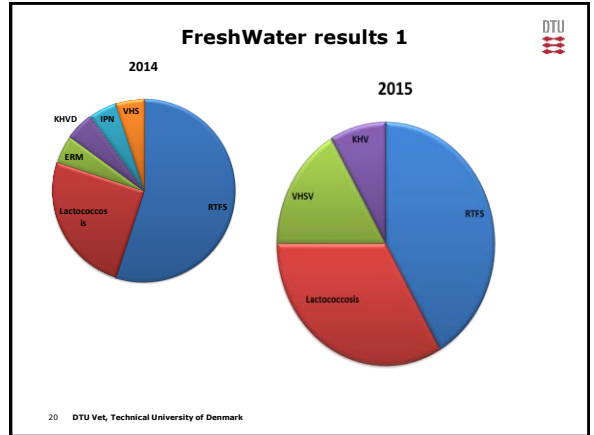
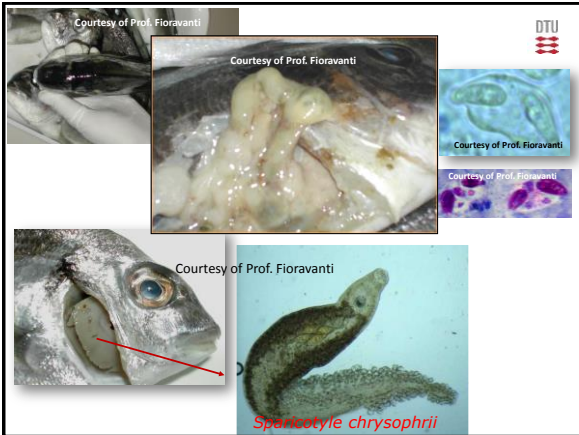
- **Vibrio (*Vibrio Anguillarum* plus non conventional vibriosis i.e. *Vibrio harveyi*): uncoordinated swimming behavior, progressive weight loss, exophthalmos, keratitis, skin lesions)**

### Results Marine 3 – Parasites complex

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Third disease to be considered for its impact in the aquaculture sector

PARASITIC DISEASES OF SPARIDS: ENTEROMYXOSIS, SPARICOTYLOSIS, ENTEROSPOROSIS, INFECTION BY APOROCOTYLIDS	
<b>Name</b>	Enteromyxum leei (Myxozoa) - Sparicotyle chrysopteri (Monogenea, Polyosthiophorea) - Enterosporea nucleophila (Microsporidia) - Cardicola aurata (Digenea, Apocotylidae)
<b>Aetiology</b>	ENTEROMYXOSIS: enteritis (progressive weight loss in gilthead seabream, high mortality in sharpnout seabream) SPARICOTYLOSIS: gill anemia in gilthead seabream ENTEROSPOROSIS: emaciative syndrome INFECTION BY APOROCOTYLIDS: gill necrosis
<b>Symptoms / Diagnosis</b>	Diagnosis: Clinical diagnosis, necropsy, parasite detection/identification + detection of Apocotylids eggs in gills (adults in circulatory system) + PCR for early stages of E. leei + PCR for E. nucleophila infection
<b>Control methods applied</b>	Reduction of biomass density (if feasible) - change of cage nets (for Sparicotyle and Apocotylid infections) Problem: lack of licensed effective antiparasitic treatments
<b>Species affected / size</b>	ENTEROMYXOSIS: gilthead seabream >100-150g, sharpnout seabream <80g + other sparids and non sparids SPARICOTYLOSIS: gilthead seabream - all sizes ENTEROSPOROSIS: mainly juveniles INFECTION BY APOROCOTYLIDS: mainly juveniles
<b>Rearing sector affected (Hatchery/nursery/ongrowing)</b>	Ongrowing



First disease to be considered for its impact in the aquaculture sector	
<b>Name</b>	LACTOCOCCOSIS
<b>Aetiology</b>	Lactococcus garvieae
<b>Symptoms / Diagnosis</b>	Melanosis, exophthalmos, lethargic swimming, anorexia, hemorrhages in eyes and internal organs, enteritis / Clinical diagnosis, necropsy, bacterial isolation
<b>Control methods applied</b>	Vaccination (autologous vaccines by injection + commercial vaccine Lacto-fishvax Fatro) + antibiotic treatment
<b>Species affected / size</b>	Rainbow trout (sub-adults and adults) farmed in lowland farms supplied with surface water
<b>Rearing sector affected (Hatchery/nursery/ongrowing)</b>	Ongrowing (water temperature > 15° C)

G. Bovo

G. Bovo

### Results - FW - RTFS

Fotos: Morlen S. Braun

Second disease to be considered for its impact in the aquaculture sector	
<b>Name</b>	Rainbow Trout Fry Syndrome or Visceral Flavobacteriosis
<b>Aetiology</b>	Flavobacterium psychrophilum
<b>Symptoms / Diagnosis</b>	Lethargy, melanosis, gill anemia, mortality. Sometimes the enlarged spleen can appear through the vent wall. Spleen prints on glass slides, coloration with safranin and microscopic examination is the most rapid diagnosis on field. Bacterial cultures need specific non common media
<b>Control methods applied</b>	Antibiotic treatment. The only and really effective product is florfenicol now registered in Italy only against Aeromonas sp.
<b>Species affected / size</b>	Only rainbow trout, juveniles starting from 2 cm
<b>Rearing sector affected (Hatchery/nursery/ongrowing)</b>	Hatchery/nursery



### RTFS Impact

- Recurrences of Flavob and antibiotic resistances are common.
- Disease is beginning to affect juveniles, fish more than 80-100gr. with important kidney inflammation and strong exophthalmia-as main lesions.
- Autogenous vaccines are tested



### Thank all of you for your attention

And thanks all experts for providing interesting replies:

Panos varvarigos  
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