

Evaluación de las tipologías empresariales acuícolas mediterráneas y su adaptación mediante especialización y el ajuste de tamaño

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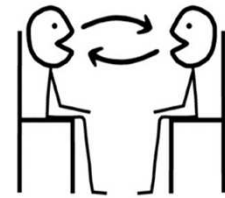
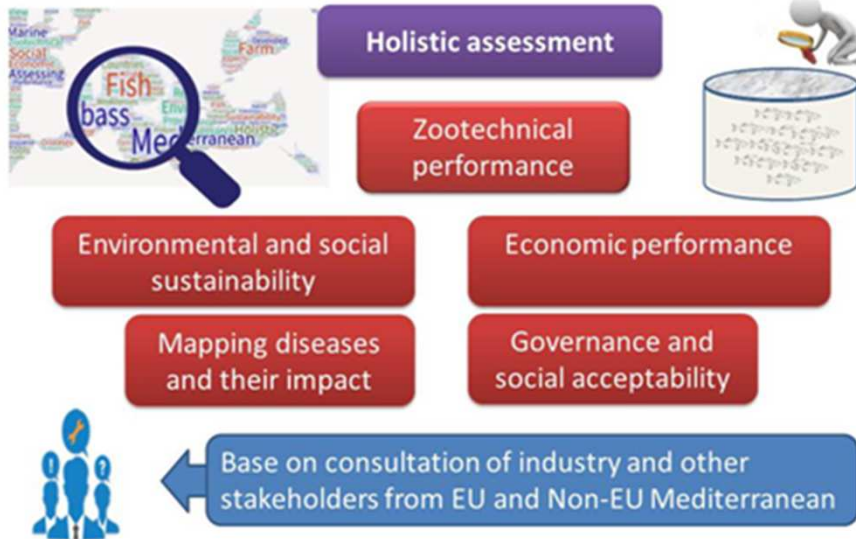
Horizon 2020
GA No. 727315

XVIIICNA, Cartagena, Spain, 7-10 May 2019

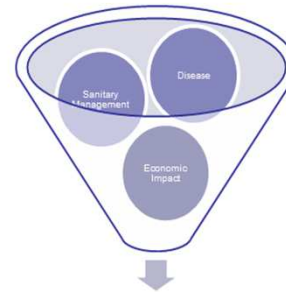


MedAID objetivos y metodología

WP1: Holistic sustainability assessment of Mediterranean marine fish farming sector



Survey - Country by experts



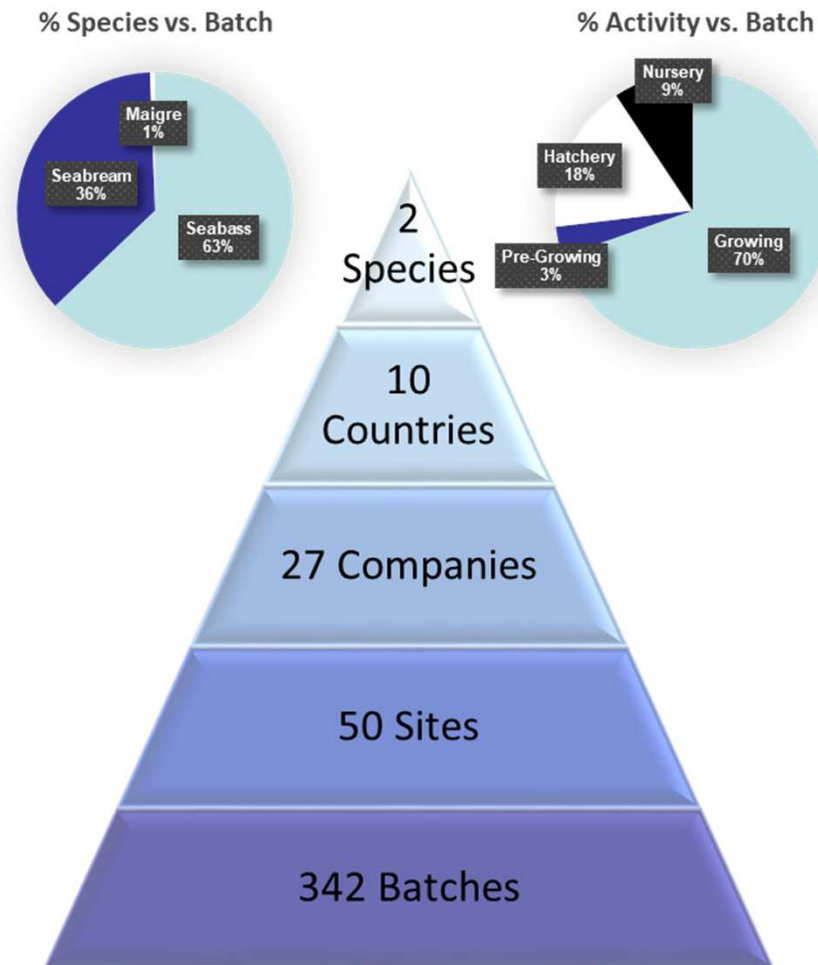
Survey Compilation

T1.4 Health		T1.4 Health		T1.4 Health		T1.4 Health		T1.4 Health	
des	Site	des	Site	des	Site	des	Site	des	Site
Main	Site	Main	Site	Main	Site	Main	Site	Main	Site
1. Di	mont	1. Di	mont	1. Di	mont	1. Di	mont	1. Di	mont
description sp		description sp		description sp		description sp		description sp	
Site Internal code		Site Internal code		Site Internal code		Site Internal code		Site Internal code	
Main activity Unit		Main activity Unit		Main activity Unit		Main activity Unit		Main activity Unit	
year		year		year		year		year	
2017		2017		2017		2017		2017	
1. Disease occurrence & month		Disease		% mortality		% prevalence			
January									
February									
March									
April									
May									
June									
July									
August									
September									
October									
November									
December									

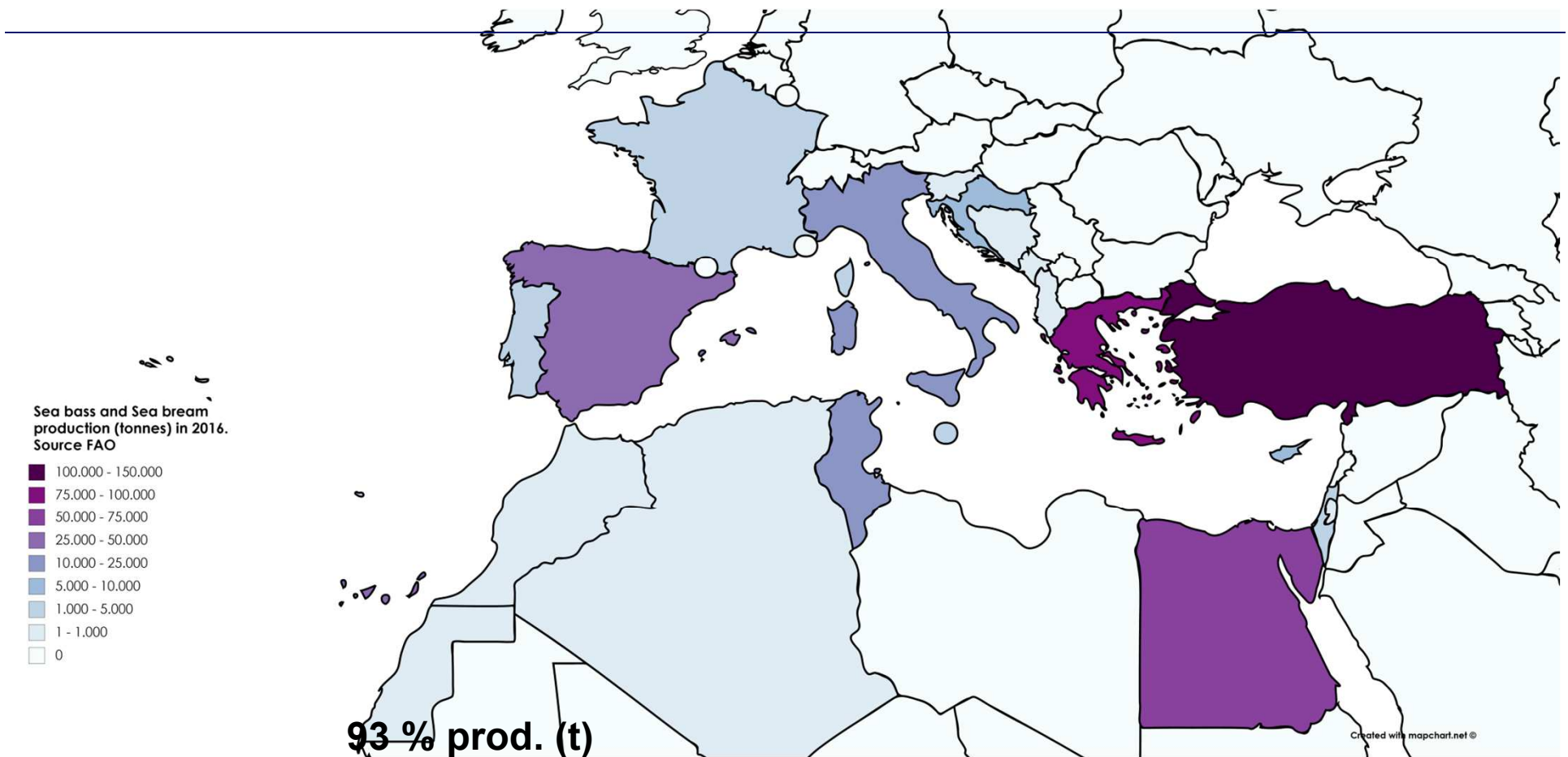


Evaluación de las tipologías empresariales

Encuesta MedAID WP1



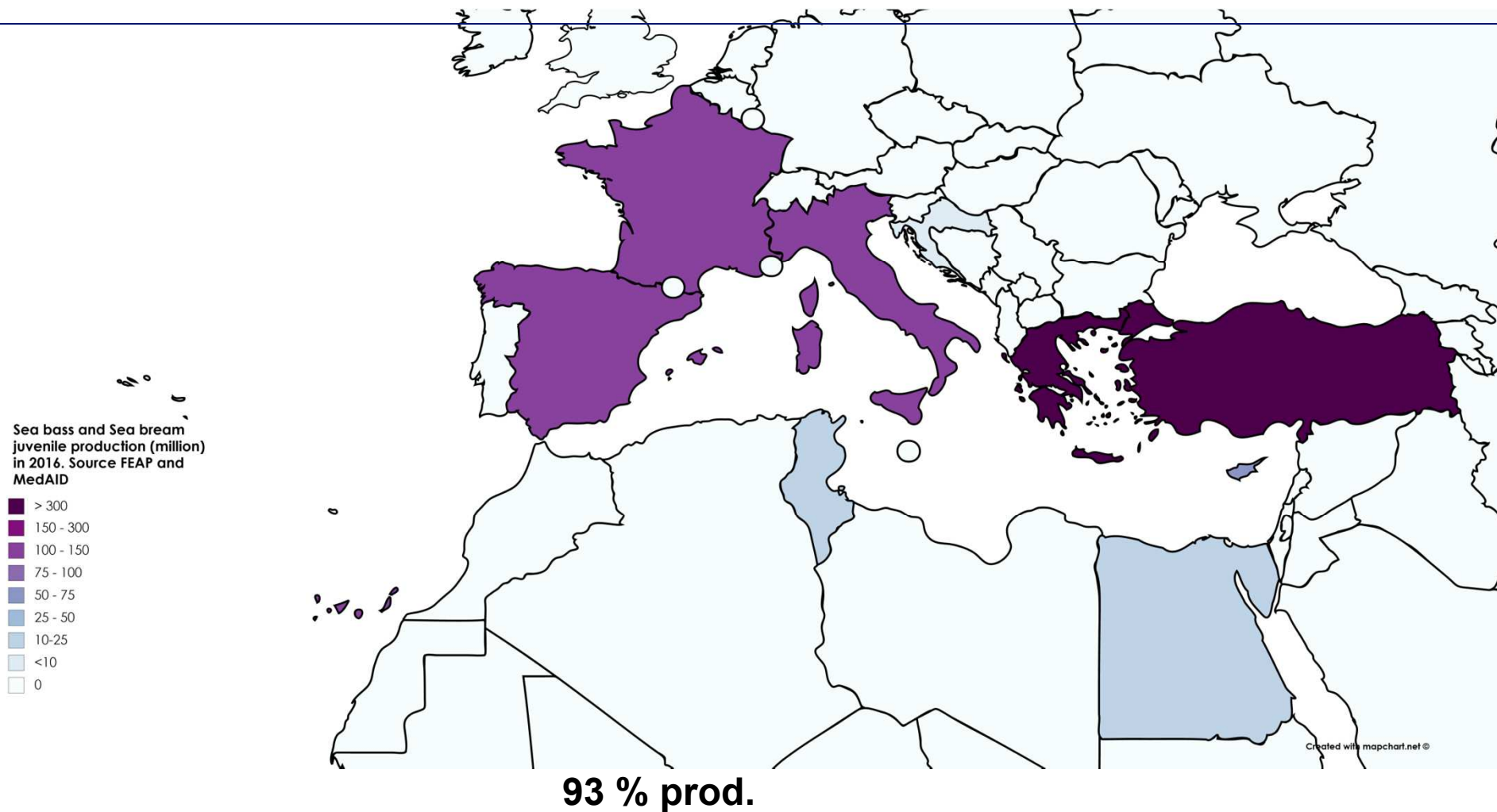
Sea Bass and Sea Bream production (tonnes) in 2016. Source FAO



Country	Total	TR	GR	EG	ES	TUN	IT	HR	CY	FR	MT	IL	PT	AL	DZ	PS	BA	ME	MA	SI
Prod. (t)	343.622	139.101	91.822	51.161	35.353	14.732	14.400	9.411	6.556	3.600	2.260	2.132	1.569	400	360	250	173	138	134	70
on-growing units		339	318	44 + others	86	25	77	61	9	20	2		1480 lic					2	1	1



Sea Bass and Sea Bream juvenile production (million) in 2016. Source FEAP and MedAID



Country	Total	TR	GR	ES	IT	FR	CY	EG	TUN	HR
juveniles (m)	1.277	410,0	418,5	126,3	119,0	112,2	32,6	27,9	16,6	13,96
hatcheries		15	29	11	11	5	3	11	2	4



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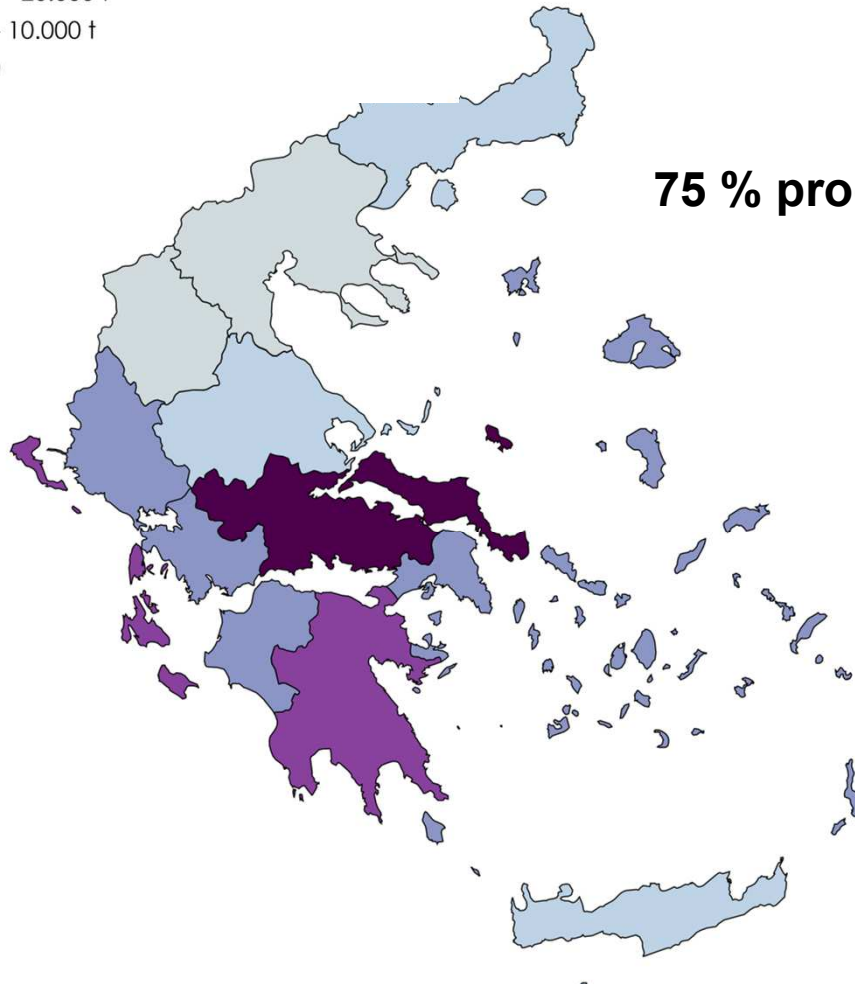
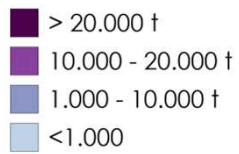
XVIIICNA, Cartagena, Spain, 7-10 May 2019



¿Hay un efecto de clusterización / agregación sectorial?



Greek Sea bass and Sea bream production (tonnes) in 2016



75 % prod. (t)

Region/Province	Bass & Bream (tonnes)	% Production	Nº ongrowing units
Central Greece	33.010	35,1	72
Peloponnese	14.777	15,7	49
Ionian Islands	13.447	14,3	32
Epirus	9.370	10,0	41
South Aegean	8.668	9,2	38
North Aegean	4.791	5,1	18
Attica	4.787	5,1	27
Western Greece	3.739	4,0	31
Central Macedonia	1.108	1,2	5
Crete	240	0,3	2
Thessaly	72	0,1	2
Eastern Macedonia and Thrace	58	0,1	1
GREECE	94.067	100	318

Region/Province	TURKEY	Muğla	İzmir	Aydın	Mersin	Ordu	Samsun	Antalya	Hatay	Trabzon	Çanakkale
Bas & Bream (tonnes)	139 101	73 000	52 695	7 200	2 700	1 829	887	469	216	90	15
% prod.	100	52,5	37,9	5,2	1,9	1,3	0,6	0,3	0,2	0,1	0,0
N° units	337	237	49	13	9	6	6	4	4	8	1

90,4 % prod. (t)

Turkish Sea bass and Sea bream production (tonnes) in 2016. Source FAO.

- < 1.000 t
- 1.000 - 10.000 t
- > 50.000 t

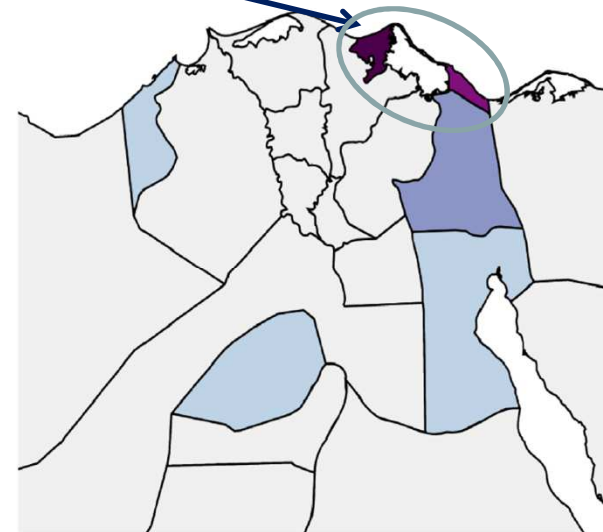
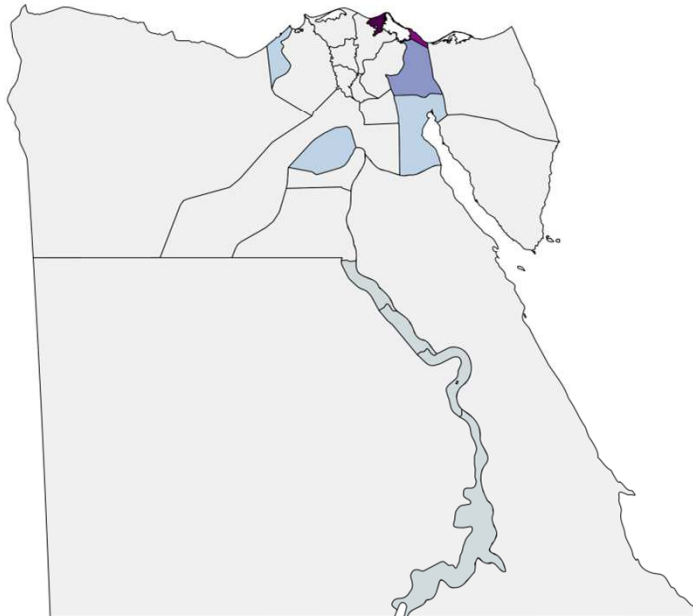


Region/Province	EGYPT	Damietta	Port Said	Ismailia	Fayoum	Alexandria	Suez
Bass & Bream (tonnes)	102.298	51.161	45.004	4.656	997	261	219
% prod. (t)	100	50,0	44,0	4,6	1,0	0,3	0,2

94 % prod. (t)

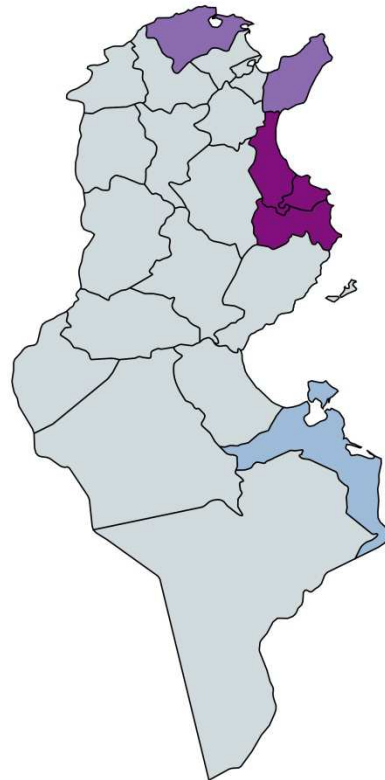
Egyptian Sea baas and Sea bream production (tonnes) in 2016 Source

- < 1.000 t
- 1.000 - 10.000 t
- 40.000 - 50.000 t
- > 50.000 t



Tunisian Sea bass and Sea bream productions (tonnes) in 2016. Source FAO

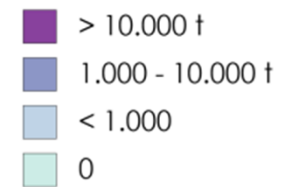
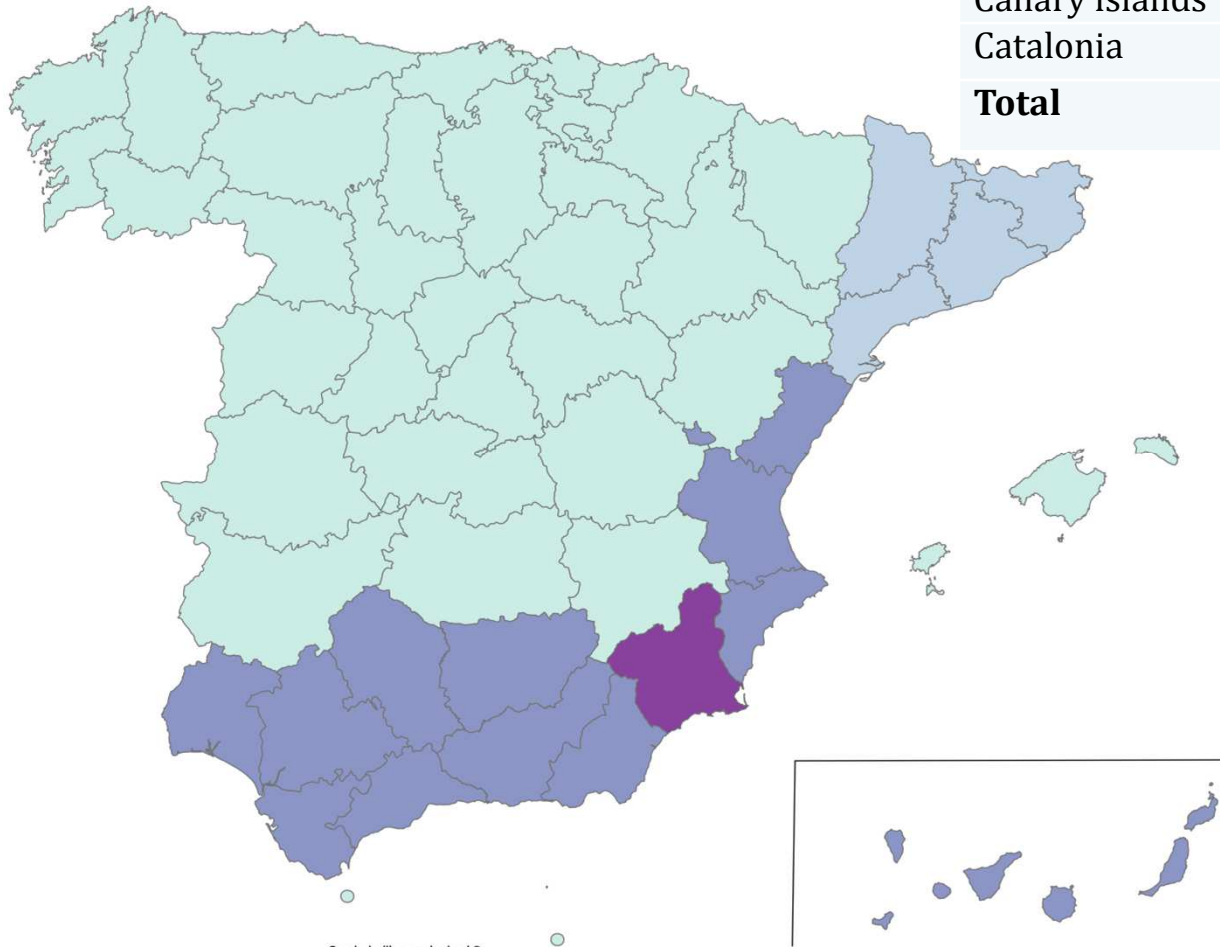
- > 10.000 t
- 1.000 - 10.000 t
- < 1.000



Region/Province	Bas & Bream (tonnes)	& prod.	N° units
North part. Governorates (Bizerte, Nabeul)	3 235	15,9	6
Middle part. Governorates (Sousse, Monastir and Mahdia)	16 832	83,0	16
South part. Governorates (Mednine)	222	1,1	3
TUNISIA	20 289	100	25

**Spanish Sea Bass and Sea Bream
production (tonnes) in 2016. Source FAO**

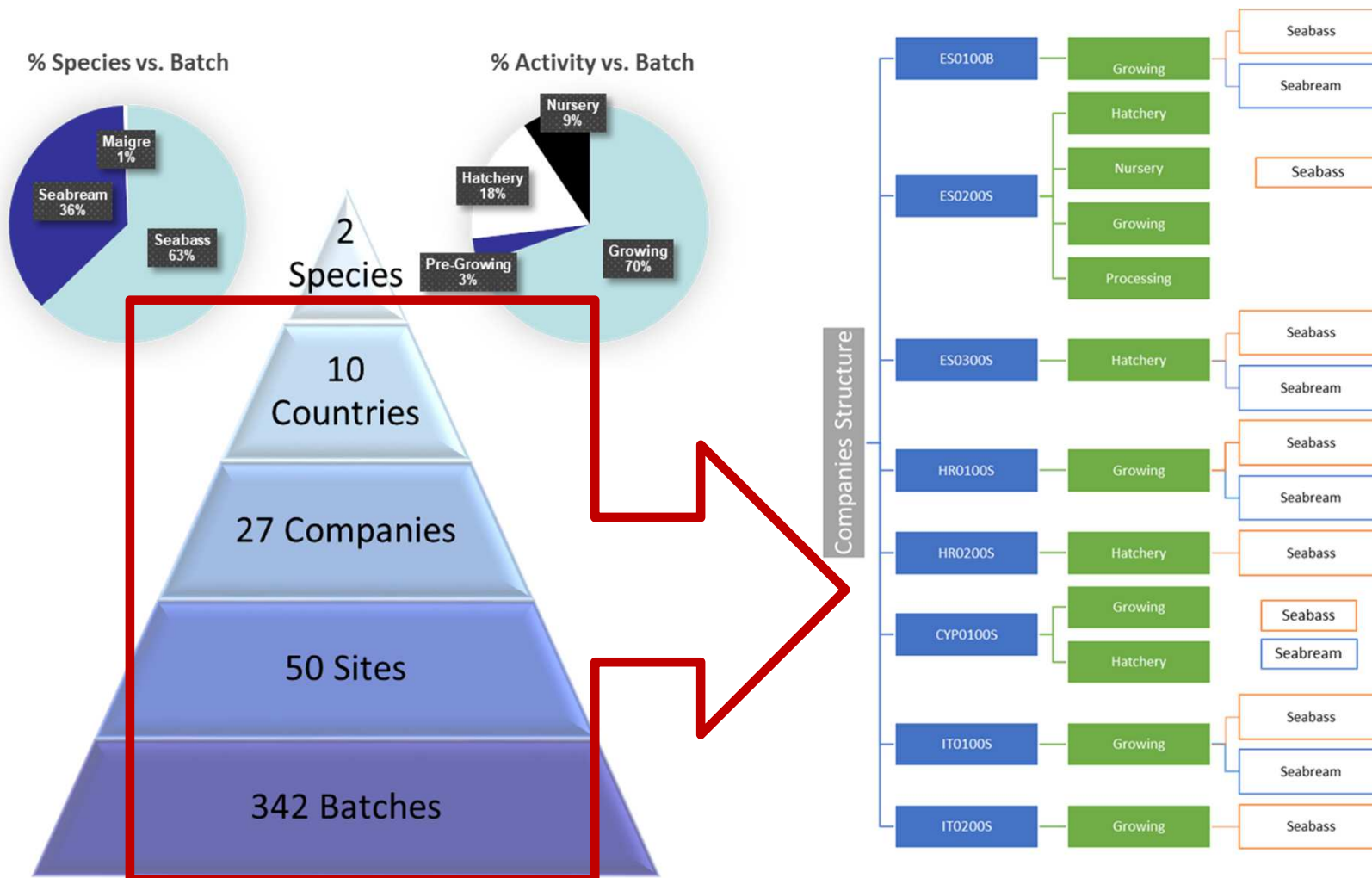
Region (CCAA)	Bass & Bream (tonnes)	% Production	N° ongrowing units
Murcia	11.554	32,2	8
Valencia	9.139	25,5	14
Andalucia	7.374	20,5	50
Canary islands	6.965	19,4	12
Catalonia	869	2,4	2
Total	35.902	100	86 lic.



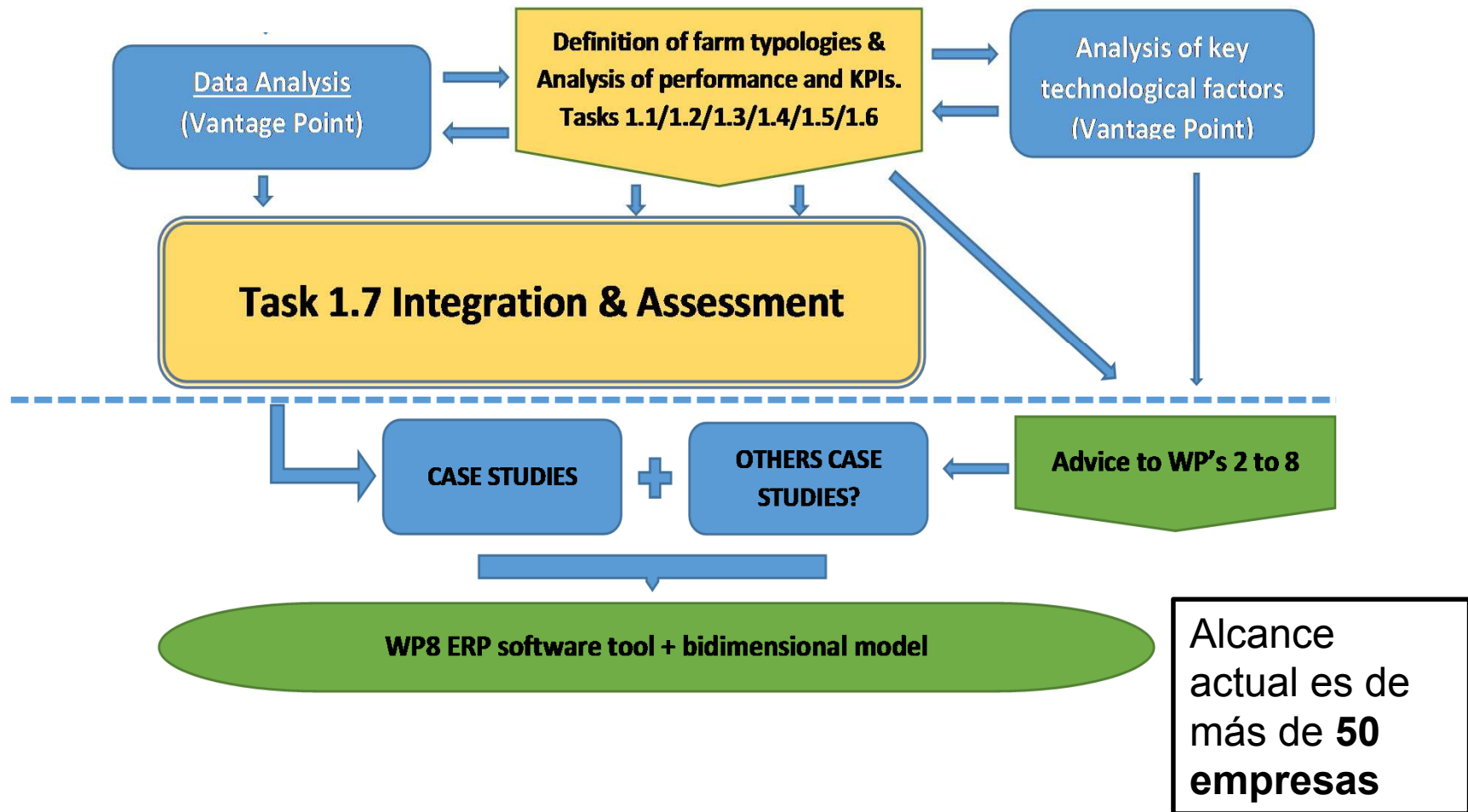
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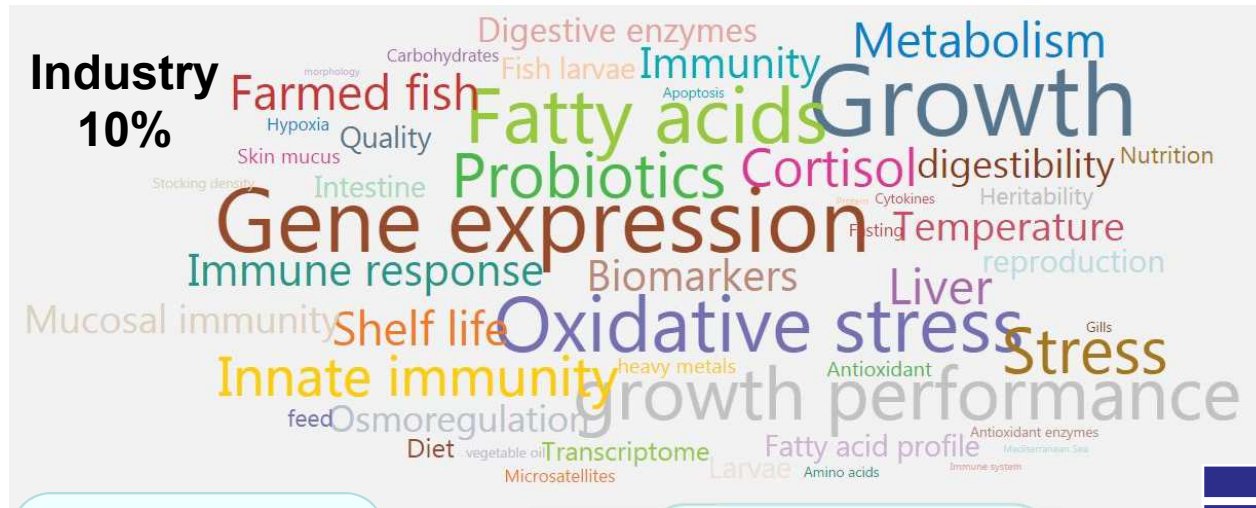
Contexto y confidencialidad de los datos



Análisis comparativo y multidimensional



Análisis de los KPIs en publicaciones y patentes



Publications main topics: fish nutrition and health

Mostly, Universities and R&D centers are in the top 50 publishing organizations

Patents main scope: Fish feed and fish culture

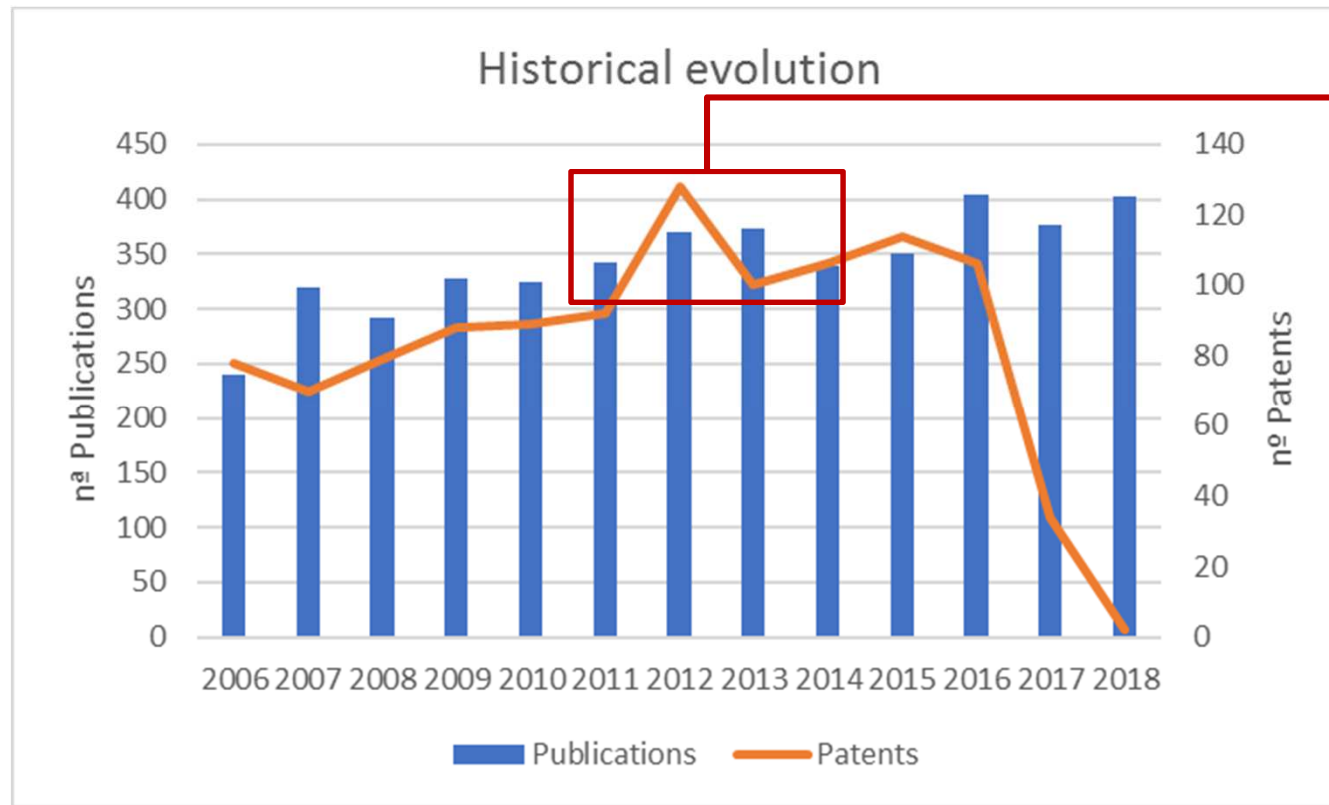
Mostly, Private companies are in the top 50 patenting organizations



Company	Topic
EWOS	Animal feed
BIOMAR LTD	Animal feed
AKER BIOMARINE ANTARTIC	Krill and fish health
NOVUS INTERNATIONAL	Fish nutrition
ECOCEAN	Fish health and sustainability
SKRETTING AQUACULTURE RESEARCH CENTRE	Fish nutrition and health
EXXONMOBIL	Energy company
MARINE HARVEST NORWAY	Fish farm
NIREUS AQUACULTURE	Fish farm
NOREL SA	Animal feed
PLANKTONIC	Animal feed and health



Análisis de tendencia de información estratégica y tecnología



2011-2014:
Improvement of
company
competitiveness

- Increase of production
- Reduction of the average cost
- Technological improvement



Definición de compañía y unidad

- **Company** surveyed.
- **Facilities** within the company. It relies on their geographical localization.
- **Units** within each facility. A distinction between unit production activities performed, such hatchery, on-growing or processing, was made.
- **Species** produced within each unit. In terms of: seabass or seabream (sometimes they specify if maigre is produced side by side).

ACTIVITIES AND SPECIES COMBINATIONS WITHIN ONE FACILITY

		SPECIES		
		Bream	Bass	Multiple
ACTIVITIES	H	Hbream	Hbass	HM
	G	Gbream	Gbass	GM
	HG	HGbream	HGbass	HGM

Nº Production Facilities	%
1	78%
2	11%
3	4%
4	4%
6	4%

LEGEND

ACTIVITIES	SPECIES
H = HATCHERY	bream = Seabream
G = GROWING	bass = Seabass
HG = HATCHERY + GROWING	Multiple = MULTISPECIES (Seabream + Seabass)



Integración de toda la información. Fase II

	HBREAM	HBASS	HM	GBREAM	GBASS	GM	HBREAM+GBREAM	HBREAM+GBASS	HBREAM+GM	HBASS+GBREAM	HBASS+GBASS
HBREAM	HBREAM+HBREAM	HBASS+HBREAM	HM+HBREAM	GBREAM+HBREAM	GBASS+HBREAM	GM+HBREAM	(HBREAM+GBREAM) + HBREAM	(HBREAM+GBASS) + HBREAM	(HBREAM+GM) + HBREAM	(HBASS+GBREAM) + HBREAM	(HBASS+GBASS) + HBREAM
HBASS	HBREAM+HBASS	HBASS+HBASS	HM+HBASS	GBREAM+HBASS	GBASS+HBASS	GM+HBASS	(HBREAM+GBREAM) + HBASS	(HBREAM+GBASS) + HBASS	(HBREAM+GM) + HBASS	(HBASS+GBREAM) + HBASS	(HBASS+GBASS) + HBASS
HM	HBREAM+HM	HBASS+HM	HM+HM	GBREAM+HM	GBASS+HM	GM+HM	(HBREAM+GBREAM) + HM	(HBREAM+GBASS) + HM	(HBREAM+GM) + HM	(HBASS+GBREAM) + HM	(HBASS+GBASS) + HM
GBREAM	HBREAM+GBREAM	HBASS+GBREAM	HM+GBREAM	GBREAM+GBREAM	GBASS+GBREAM	GM+GBREAM	(HBREAM+GBREAM) + GBREAM	(HBREAM+GBASS) + GBREAM	(HBREAM+GM) + GBREAM	(HBASS+GBREAM) + GBREAM	(HBASS+GBASS) + GBREAM
GBASS	HBREAM+GBASS	HBASS+GBASS	HM+GBASS	GBREAM+GBASS	GBASS+GBASS	GM+GBASS	(HBREAM+GBREAM) + GBASS	(HBREAM+GBASS) + GBASS	(HBREAM+GM) + GBASS	(HBASS+GBREAM) + GBASS	(HBASS+GBASS) + GBASS
GM	HBREAM+GM	HBASS+GM	HM+GM	GBREAM+GM	GBASS+GM	GM+GM	(HBREAM+GBREAM) + GM	(HBREAM+GBASS) + GM	(HBREAM+GM) + GM	(HBASS+GBREAM) + GM	(HBASS+GBASS) + GM
HBREAM+GBREAM	HBREAM + (HBREAM+GBREAM)	HBASS + (HBREAM+GBREAM)	HM + (HBREAM+GBREAM)	GBREAM + (HBREAM+GBREAM)	GBASS + (HBREAM+GBREAM)	GM + (HBREAM+GBREAM)	(HBREAM+GBREAM) + (HBREAM+GBREAM)	(HBREAM+GBASS) + (HBREAM+GBREAM)	(HBREAM+GM) + (HBREAM+GBREAM)	(HBASS+GBREAM) + (HBREAM+GBREAM)	(HBASS+GBASS) + (HBREAM+GBREAM)
HBREAM+GBASS	HBREAM + (HBREAM+GBASS)	HBASS + (HBREAM+GBASS)	HM + (HBREAM+GBASS)	GBREAM + (HBREAM+GBASS)	GBASS + (HBREAM+GBASS)	GM + (HBREAM+GBASS)	(HBREAM+GBREAM) + (HBREAM+GBASS)	(HBREAM+GBASS) + (HBREAM+GBASS)	(HBREAM+GM) + (HBREAM+GBASS)	(HBASS+GBREAM) + (HBREAM+GBASS)	(HBASS+GBASS) + (HBREAM+GBASS)
HBREAM+GM	HBREAM + (HBREAM+GM)	HBASS + (HBREAM+GM)	HM + (HBREAM+GM)	GBREAM + (HBREAM+GM)	GBASS + (HBREAM+GM)	GM + (HBREAM+GM)	(HBREAM+GBREAM) + (HBREAM+GM)	(HBREAM+GBASS) + (HBREAM+GM)	(HBREAM+GM) + (HBREAM+GM)	(HBASS+GBREAM) + (HBREAM+GM)	(HBASS+GBASS) + (HBREAM+GM)
HBASS+GBREAM	HBREAM + (HBASS+GBREAM)	HBASS + (HBASS+GBREAM)	HM + (HBASS+GBREAM)	GBREAM + (HBASS+GBREAM)	GBASS + (HBASS+GBREAM)	GM + (HBASS+GBREAM)	(HBREAM+GBREAM) + (HBASS+GBREAM)	(HBREAM+GBASS) + (HBASS+GBREAM)	(HBREAM+GM) + (HBASS+GBREAM)	(HBASS+GBREAM) + (HBASS+GBREAM)	(HBASS+GBASS) + (HBASS+GBREAM)
HBASS+GBASS	HBREAM + (HBASS+GBASS)	HBASS + (HBASS+GBASS)	HM + (HBASS+GBASS)	GBREAM + (HBASS+GBASS)	GBASS + (HBASS+GBASS)	GM + (HBASS+GBASS)	(HBREAM+GBREAM) + (HBASS+GBASS)	(HBREAM+GBASS) + (HBASS+GBASS)	(HBREAM+GM) + (HBASS+GBASS)	(HBASS+GBREAM) + (HBASS+GBASS)	(HBASS+GBASS) + (HBASS+GBASS)
HBASS+GM	HBREAM + (HBASS+GM)	HBASS + (HBASS+GM)	HM + (HBASS+GM)	GBREAM + (HBASS+GM)	GBASS + (HBASS+GM)	GM + (HBASS+GM)	(HBREAM+GBREAM) + (HBASS+GM)	(HBREAM+GBASS) + (HBASS+GM)	(HBREAM+GM) + (HBASS+GM)	(HBASS+GBREAM) + (HBASS+GM)	(HBASS+GBASS) + (HBASS+GM)
HM+GBREAM	HBREAM + (HM+GBREAM)	HBASS + (HM+GBREAM)	HM + (HM+GBREAM)	GBREAM + (HM+GBREAM)	GBASS + (HM+GBREAM)	GM + (HM+GBREAM)	(HBREAM+GBREAM) + (HM+GBREAM)	(HBREAM+GBASS) + (HM+GBREAM)	(HBREAM+GM) + (HM+GBREAM)	(HBASS+GBREAM) + (HM+GBREAM)	(HBASS+GBASS) + (HM+GBREAM)
HM+GBASS	HBREAM + (HM+GBASS)	HBASS + (HM+GBASS)	HM + (HM+GBASS)	GBREAM + (HM+GBASS)	GBASS + (HM+GBASS)	GM + (HM+GBASS)	(HBREAM+GBREAM) + (HM+GBASS)	(HBREAM+GBASS) + (HM+GBASS)	(HBREAM+GM) + (HM+GBASS)	(HBASS+GBREAM) + (HM+GBASS)	(HBASS+GBASS) + (HM+GBASS)
HM+GM	HBREAM + (HM+GM)	HBASS + (HM+GM)	HM + (HM+GM)	GBREAM + (HM+GM)	GBASS + (HM+GM)	GM + (HM+GM)	(HBREAM+GBREAM) + (HM+GM)	(HBREAM+GBASS) + (HM+GM)	(HBREAM+GM) + (HM+GM)	(HBASS+GBREAM) + (HM+GM)	(HBASS+GBASS) + (HM+GM)

H: Hatchery; G: On-growing; bass: Seabass; bream: Seabream; M: Multiple fish species

Clusters: Superspecialist; Specialist; Middle Specialist; Middle Generalist; Generalist; Supergeneralist; Duplicates

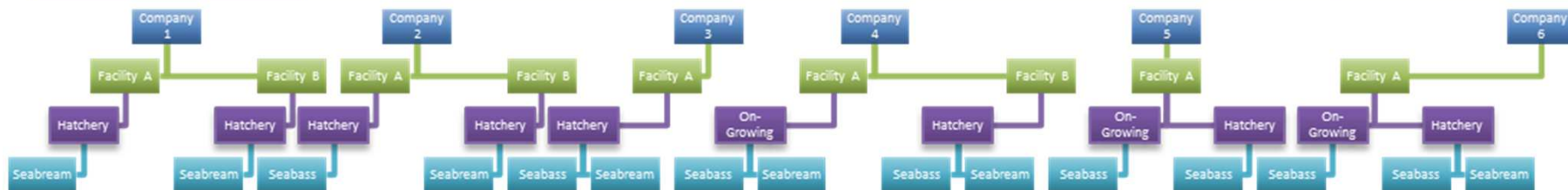


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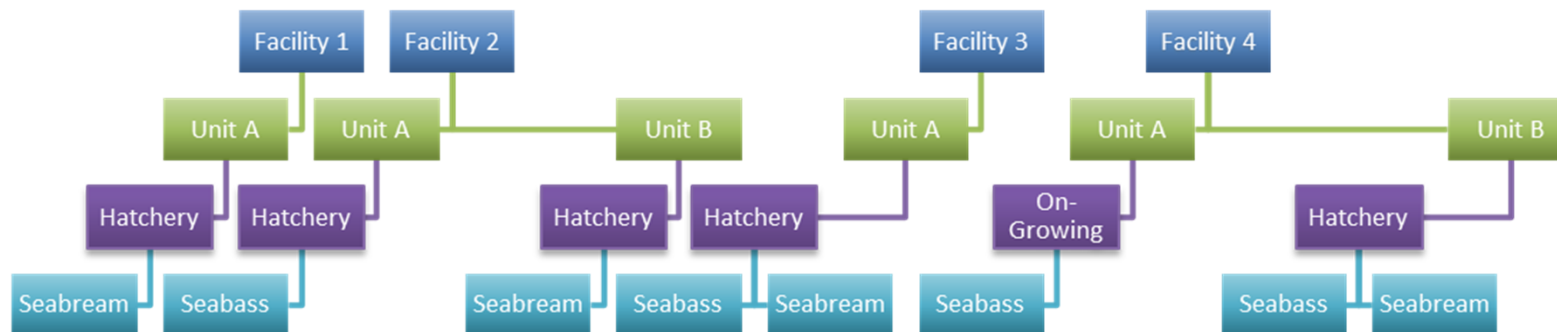
Modelo 1: 6 Niveles de Clusterización (Empresa)

CATEGORIA	DESCRIPTION	Exemple
SUPERSPECIALIST	Only one production activity with one specie throughout the company	Seabream Hatchery/es (Company 1)
SPECIALIST	Same production activity throughout the company with only one specie produced per facility	Seabream Hatchery/es (Facility A) + Seabass Hatchery/es (Facility B) (Company 2)
MIDDLE SPECIALIST	Same production activity throughout the company with one or more species produced per facility	Seabream/Seabass Hatchery/es (Facility A) + Seabass Hatchery/es (Facility B) (Company 3)
MIDDLE GENERALIST	Different production activities throughout the company but only one production activity per facility	Seabream/Seabass On-Growing (Facility A) + Seabream/Seabass Hatchery (Facility B) (Company 4)
GENERALIST	Different production activities throughout the company and facilities with only one specie produced per facility	Seabream Hatchery + Growing (Facility A) + Seabass Hatchery + Growing (Facility B) (Company 5)
SUPERGENERALIST	Without restrictions	Seabream/Seabass On-Growing + Hatchery (Company 6)



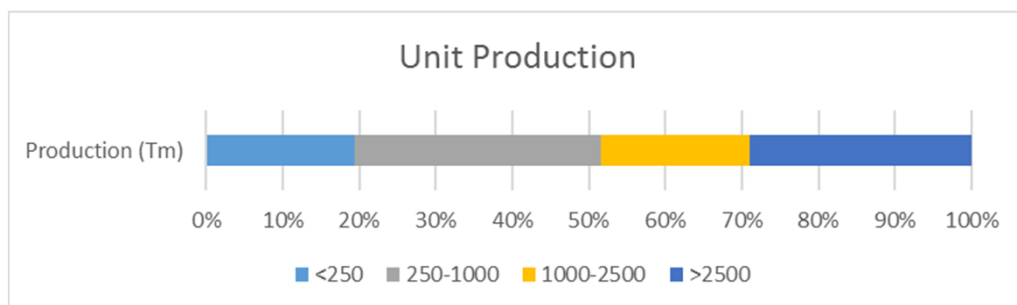
Modelo 2: 4 Niveles de Clusterización (Instalación)

CATEGORIA	DESCRIPTION	Exemple
SUPERSPECIALIST	Only one production activity with one specie throughout the facility	Seabream Hatchery (Facility 1)
SPECIALIST	Same production activity throughout the facility with only one specie produced per unit	Seabream Hatchery (Unit A) + Seabass Hatchery (Unit B) (Facility 2)
MIDDLE SPECIALIST	Same production activity throughout the facility with one or more species produced per unit	Seabream/Seabass Hatchery (Unit A) + Seabass Hatchery (Unit B) (Facility 3)
MIDDLE GENERALIST	Different production activities throughout the facility but only one production activity per unit	Seabream/Seabass On-Growing (Unit A) + Seabream/Seabass Hatchery (Unit B) (Facility 4)

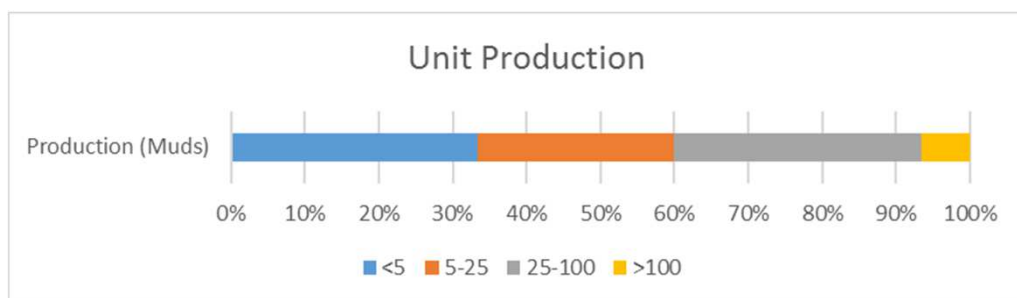


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Company_Categorization	Total of companies (%)	Facility_category	Total of facilities (%)
superspecialist	14,8%	superspecialist	10,64%
middle specialist	51,9%	middle specialist	31,91%
middle generalist	14,8%	superspecialist	10,64%
		middle specialist	12,77%
generalist	3,7%	middle generalist	6,38%
supergeneralist	14,8%	middle specialist	14,89%
		middle generalist	12,77%



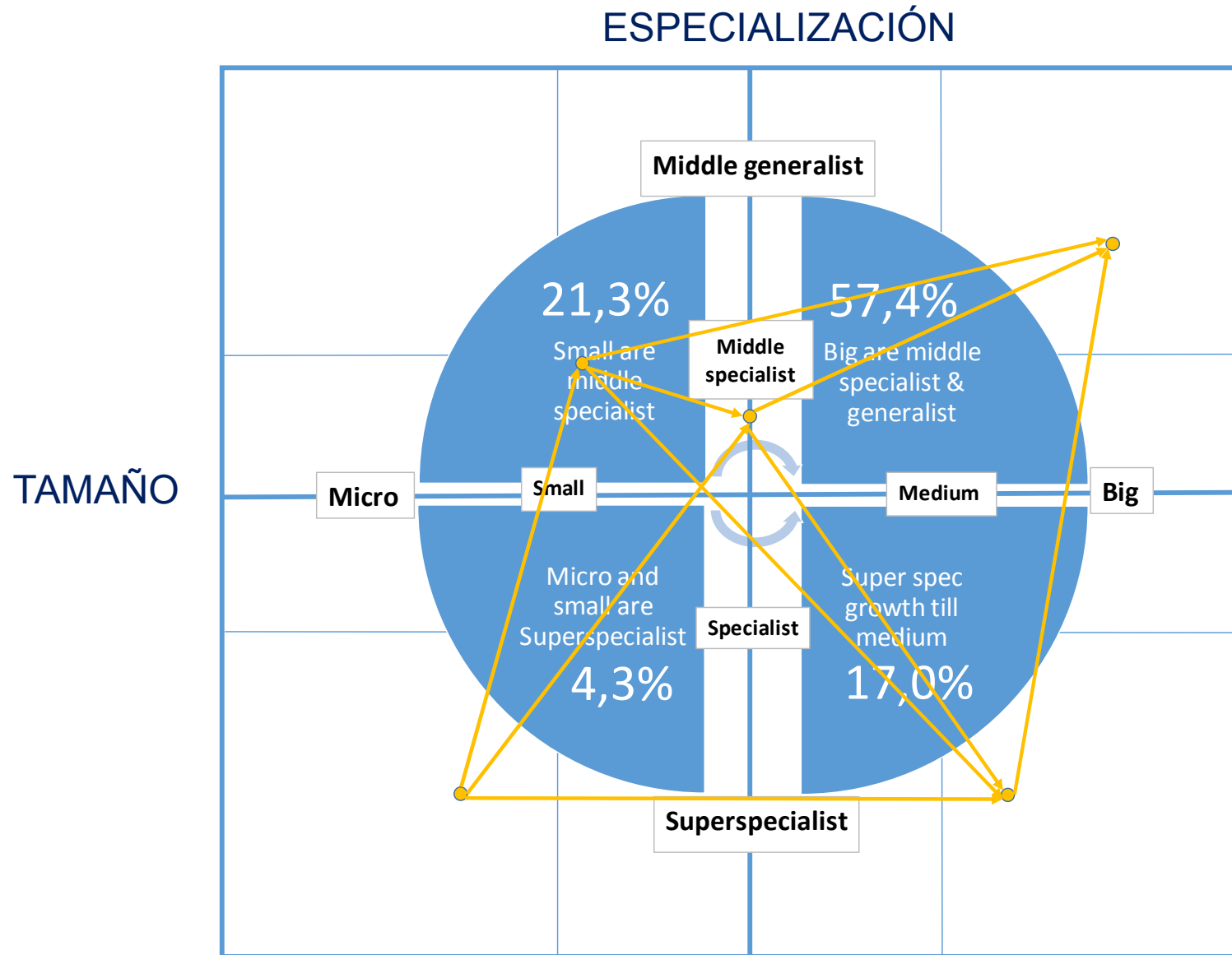
Category	Production (Tm)
Micro	<250
Small	250-1000
Medium	1000-2500
Big	>2500



Category	Production (Muds)
Micro	<5
Small	5-25
Medium	25-100
Big	>100



Modelo bidimensional (especialización y tamaño)



Conclusiones

- Aunque se observa un nivel creciente de agregación y formación de grandes grupos productores en algunos países (España, Grecia, Turquía), el sector mediterráneo de la dorada y la lubina es complejo y diverso. Mucho más que el sector de la salmonicultura.
- No hay una tipología predominante, siendo esta una consecuencia más específica de las adaptaciones de las empresas al entorno y situación y sus modelos de negocio.
- Son varias las tendencias que observamos:
 - .. empresas pequeñas => empresas medianas especializadas o medianas “generalistas/diversificadas”
 - ... empresas medianas => empresas grandes especializadas o grandes “generalistas/diversificadas”



Conclusiones

