



myfish



Maximising yield of fisheries
while balancing ecosystem,
economic and social concerns

REGIONAL IMPLEMENTATION PLAN FOR DEMERSAL FISHERIES FROM THE BALEARIC ISLANDS

Toni Quetglas, IEO-Centre Oceanogràfic de Balears



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FACTSHEET



AT A GLANCE

TITLE: Maximising Yield of Fisheries while Balancing Ecosystem, Economic and Social Concerns

PROGRAMME: FP7, Cooperation, Food, Agriculture and Fisheries, and Biotechnology

INSTRUMENT: Collaborative project

TOTAL BUDGET: €6,513,288.34

EC CONTRIBUTION: €4,999,999.00

DURATION: March 2012 – February 2016 (48 months)

COORDINATOR: National Institute of Aquatic Resources, Technical University of Denmark (DTU Aqua), Denmark

CONSORTIUM: 31 partners from 12 countries

WEB: www.myfishproject.eu





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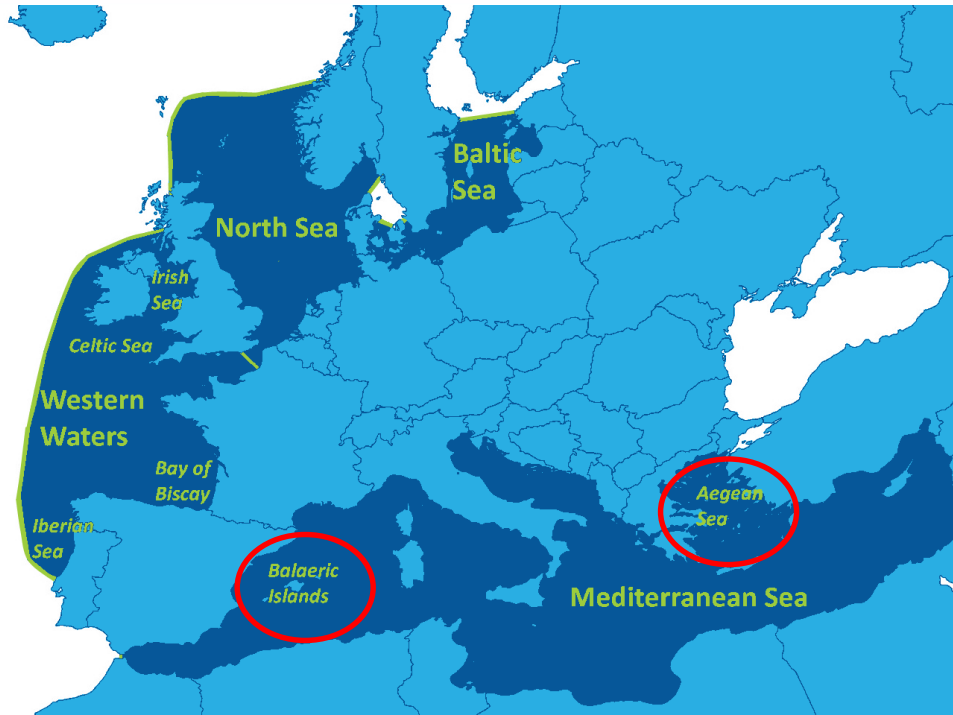
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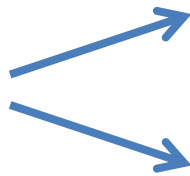


<http://www.myfishproject.eu/>



Main objective:
constructing an operational framework for the implementation of the MSY target as a tool for the future management of European fish stocks

Council Regulation
(EU) N° 1967/2006



MSY target 2020

Multiannual Plans



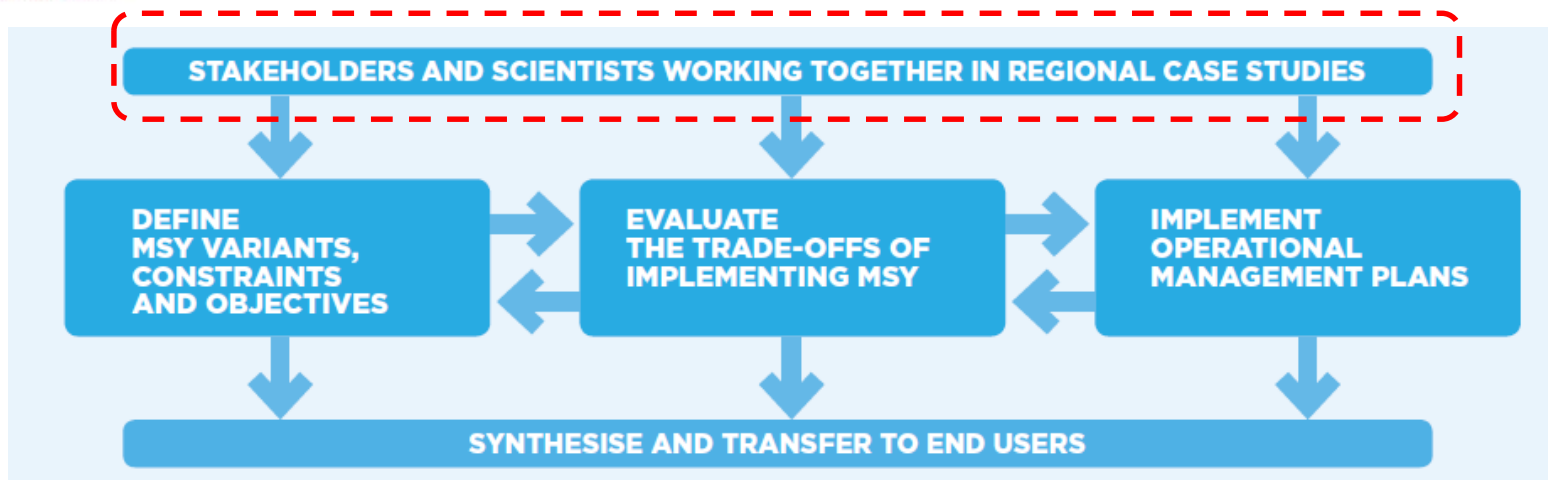
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Main objective:

constructing an operational framework for the implementation of the MSY target as a tool for the future management of European fish stocks

Myfish will achieve this objective in all RAC areas integrating stakeholders (fishing industry, NGOs and managers) throughout the project



Govern de les Illes Balears

Fishermen Association of the Balearic Islands

General Directorate of Fisheries
 Government of the Balearic Islands

Propuesta de Océana para una pesca responsable en las Illes Balears



Propuesta de Océana para una pesca responsable en las Illes Balears



¿EXISTE LA PESCA RESPONSABLE EN LAS ILLES BALEARS?
LA PESCA RECREATIVA EN LAS ILLES BALEARS EN AUGUSTO

Propuesta de Océana para una pesca responsable en las Illes Balears



PESCA RESPONSABLE EN LAS ILLES BALEARS
EL FUTURO DE LA PESCA EN LAS ILLES BALEARS

Propuesta de Océana para una pesca responsable en las Illes Balears



AREAS MARINAS PROTEGIDAS
HERRAMIENTAS PARA LA PESCA RESPONSABLE EN LAS ILLES BALEARS
SOBREPROTECCIÓN DE ECOSISTEMAS MARINOS

Propuesta de Océana para una pesca responsable en las Illes Balears



LA PESCA DE ARRASTRE: UNA PESCA EN DECADENCIA QUE NECESITA DE UNA URGENTE RACIONALIZACIÓN



Barca pesquera de arrastre en el puerto de Ciudadella, Mallorca. © OCEANA, María Cervera

Reserva y subvenciones (2007-2013)

Apartir de 1950, la pesca experimentó un crecimiento gracias a la industria en todo el mundo. El sector animó a gestores y políticos a dotar de embarcaciones ya que se deseaba que se incrementara la capacidad de la flota. Pero determinaron cómo programar a partir de los años 70 se inició un descenso a finales de los 80 y que en la actualidad, se estima que han ido disminuyendo desde el momento de su auge. Según la Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO), por sus cifras en inglés, la pesca artesanal del mundo estaba sobreexplotada o agotada, c en 2006 y al 60% en la actualidad.



Problemas asociados a la pesca recreativa

La pesca recreativa en las Illes Balears es una actividad de gran importancia económica. El número de aficionados que practican esta actividad en las Illes Balears es de unos 100.000 personas al año. Según el estudio de la FAO, el 60% de la población mundial vive en zonas costeras y el 80% de la población mundial vive en zonas costeras.

La pesca recreativa ha sido la historia de la humanidad sin provocar problemas ni de contaminación ni de sobrepesca. Sin embargo, debido a la gran disponibilidad de tiempo y recursos, el aumento considerable de la población y el aumento de recursos pesqueros en las zonas costeras.

OCEANA, María Cervera

La pesca en las Illes Balears, al igual que en otros países del Mediterráneo, se ha desarrollado históricamente por ser artesanal. Ha representado únicamente un complemento de ingresos para los habitantes de las islas de cualquier otro lugar. A pesar de que el número de embarcaciones, el 2% de las de las islas, continúa habiendo disminuido de forma constante. Una de las causas más importantes ha sido la sobrepesca pesquera, causada principalmente por la pesca industrial a lo largo de la zona costera, que, además, ha provocado un impacto negativo en los hábitats del fondo marino, y sobre todo la sobrepesca de especies poco abundantes y de gran valor comercial. Para revertir esta situación, es necesario implementar medidas de gestión que permitan la sostenibilidad de la pesca artesanal y que actualmente se considera que la transición de la pesca artesanal a la zona costera.

INTRODUCCIÓN

Los océanos y mares de todo el mundo se encuentran en una situación preocupante debido a la contaminación, el sobrepesca y la contaminación, llevada al medio marino y su degradación y degradación. Para revertir esta situación, es necesario implementar medidas de gestión que permitan la sostenibilidad de la pesca artesanal y que actualmente se considera que la transición de la pesca artesanal a la zona costera.

La pesca con artes de arrastre es la más importante en volumen de capturas de las Illes Balears. Aunque solo representa el 12% de las 202 embarcaciones que componen la flota de las islas, en la modalidad que obtiene más capturas e ingresos de primera venta, representando el 61% y 64% respectivamente sobre el total de la pesca extractiva del archipiélago.

by-cc-by, que frecuentemente son devueltas muertas al mar como desechos debido a su bajo interés comercial o por tratarse de juveniles.

Cada año se arrastra en el Promontorio Balear una superficie del fondo marino equivalente, como mínimo, a la superficie total emergida de las islas

Sin embargo, el arrastre de fondo es un arte destructivo que degrada el fondo marino y que se cuenta con un marco de gestión apropiado para asegurar la sostenibilidad de los recursos que explota. Estas embarcaciones arrastran sus redes arrastradas de grandes puertos por el fondo marino, destruyendo los hábitats bentónicos que encuentran a su paso, cuya integridad es muchas veces crucial para la supervivencia de las especies comerciales.

Estos impactos ambientales, junto con la ausencia de una gestión adecuada para la explotación de los recursos, han dado lugar a que todas las especies comerciales objetivo del arrastre que han sido evaluadas se encuentren actualmente sobreexplotadas.

El arrastre de fondo es además un arte de pesca poco selectivo, con altas tasas de capturas accidentales o by-catch.

Adicionalmente, la pesca de arrastre resulta ser la modalidad menos eficiente en términos económicos. La elevada potencia de motor que emplea esta flota

1 Fuente: Datos proporcionados por la Dirección General de Pesca del Consejo de las Illes Balears.

Construct an operational framework for the implementation of the MSY target as a tool for the future management of European fish stocks ...

... integrating stakeholders (fishing industry, NGOs and managers) throughout the project

Operational Framework



Regional Implementation Plan for Demersal Fisheries from the Balearic Islands (Western Mediterranean)



Regional Implementation Plan for Demersal Fisheries from the Balearic Islands (Western Mediterranean)

Authors:

Quetglas¹ A., Merino^{2,3} G., González¹ J., Ordines¹ F., Garau⁴ A.,
Grau⁵ A.M., Guijarro¹ B., Oliver¹ P., Massutí¹ E.

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Govern
de les Illes Balears



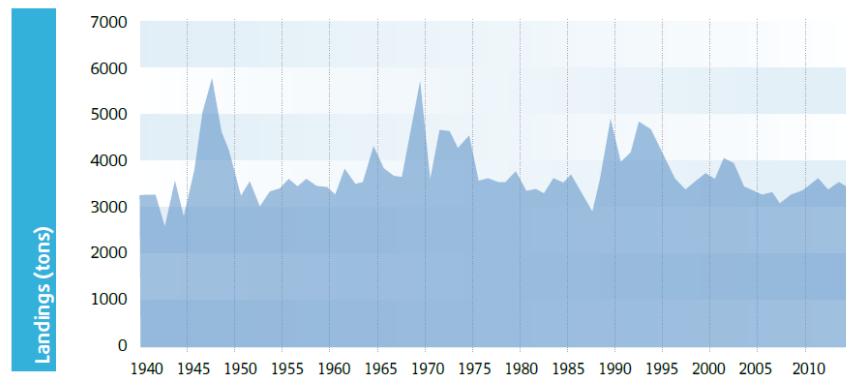
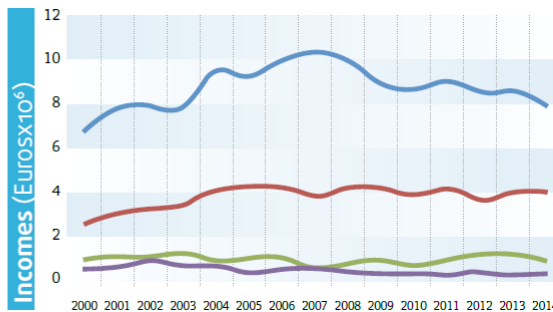
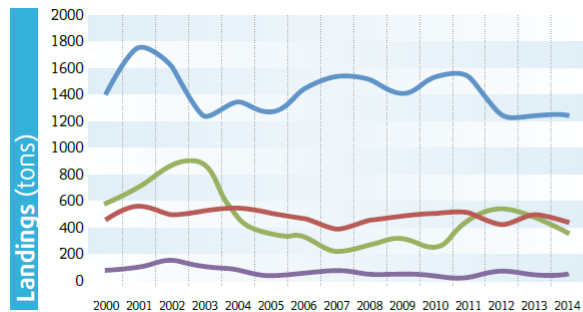
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1. Fisheries description

	Trawl		Small-scale		Purse seine		Longline		Total	
	V	C	V	C	V	C	V	C	V	C
Mallorca	28	139	147	202	7	33	2	11	184	385
Menorca	7	37	54	74	0	0	0	0	61	111
Ibiza	6	23	49	49	0	0	0	0	55	72
Formentera	3	11	17	19	0	0	0	0	20	30
Balearic Islands	44	210	267	344	7	33	2	11	320	598

■ Bottom trawl ■ Small-scale ■ Purse seine ■ Pelagic longline



1. Fisheries description: **bottom trawl**

Shallow shelf



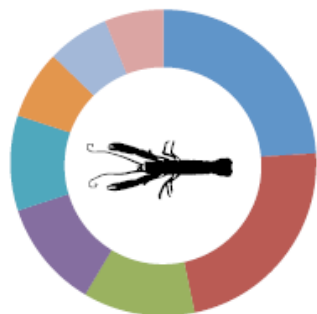
- *Mullus surmuletus*
- *Octopus vulgaris*
- *Spicara smaris*
- *Scyliorhinus canicula*
- *Chelidonichthys lastovia*
- *Raja* spp.
- *Serranus cabrilla*
- *Trachinus draco*
- *Loligo vulgaris*
- *Scorpaena scrofa*
- *Pagellus erythrinus*

Deep shelf



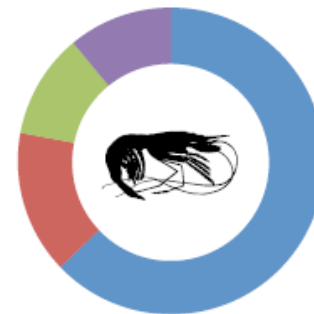
- *Merluccius merluccius*
- *Scyliorhinus canicula*
- *Trachurus mediterraneus*
- *Mullus surmuletus*
- *Lophius budegassa*
- *Raja* spp.
- *Trachinus draco*
- *Mullus barbatus*
- *Centracanthus cirrus*
- *Zeus faber*
- *Lepidorhombus boscii*
- *Chelidonichthys cuculus*

Upper Slope



- *Micromesistius poutassou*
- *Merluccius merluccius*
- *Parapenaeus longirostris*
- *Phycis blennoides*
- *Lepidorhombus boscii*
- *Scyliorhinus canicula*
- *Lophius budegassa*
- *Nephrops norvegicus*

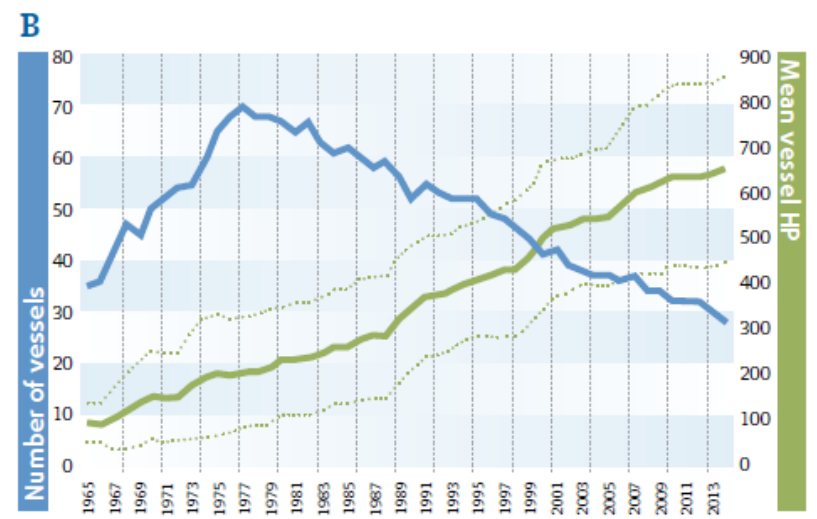
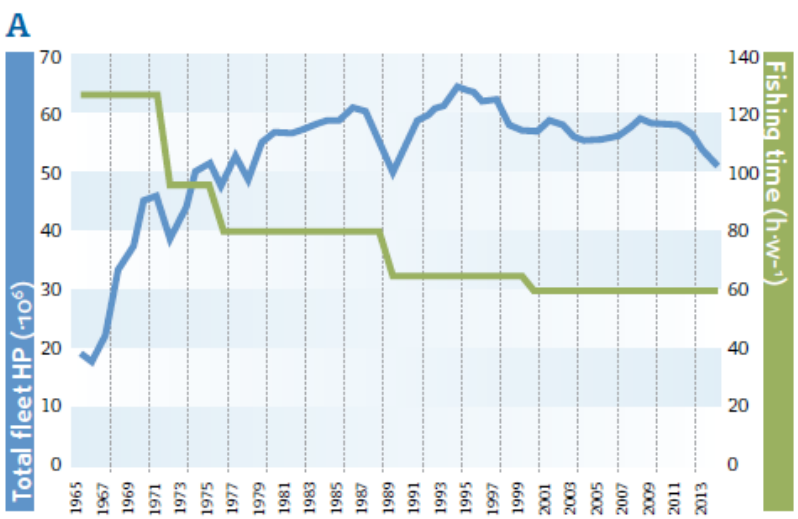
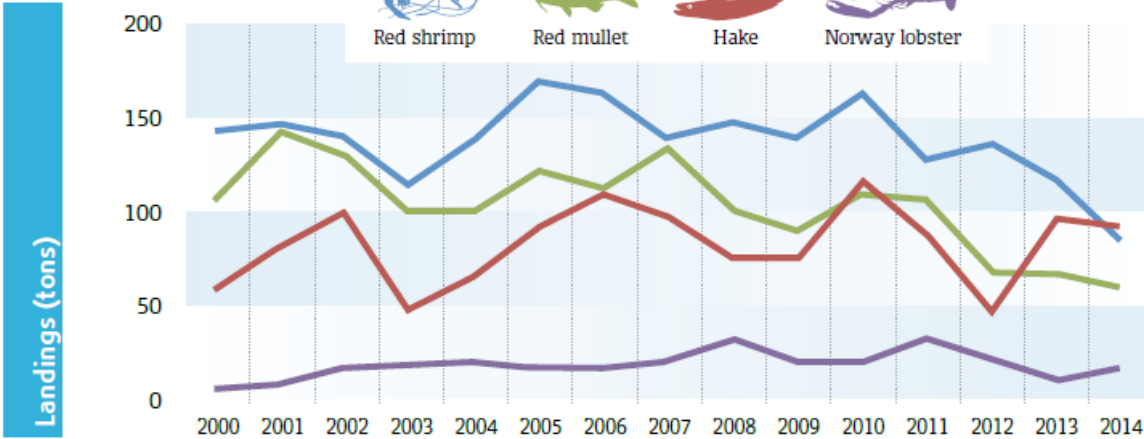
Middle Slope



- *Aristeus antennatus*
- *Phycis blennoides*
- *Micromesistius poutassou*
- *Merluccius merluccius*



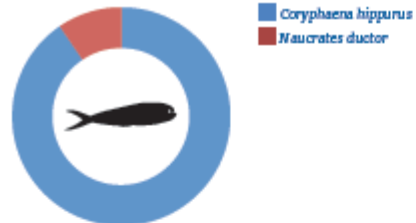
1. Fisheries description: **bottom trawl**



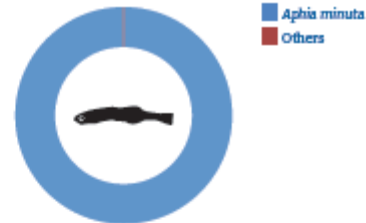
1. Fisheries description: **small-scale**



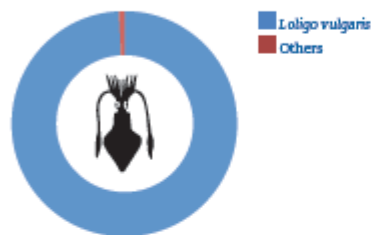
FT1 - LA-SLPF



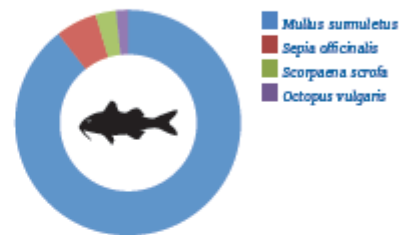
FT2 - SV-DEMSP



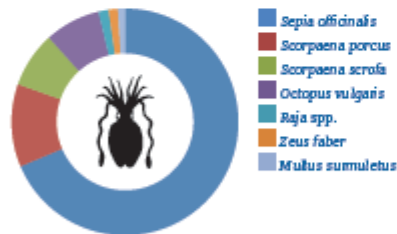
FT3 - LHM-DEMSP



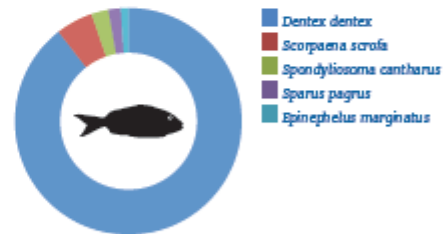
FT4 - GTR-DEMSP



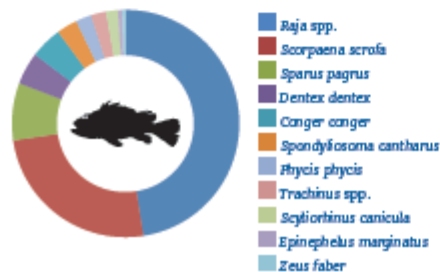
FT5 - GTR-DEMSP



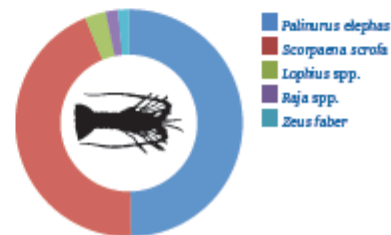
FT6 - LLS-DEMSP



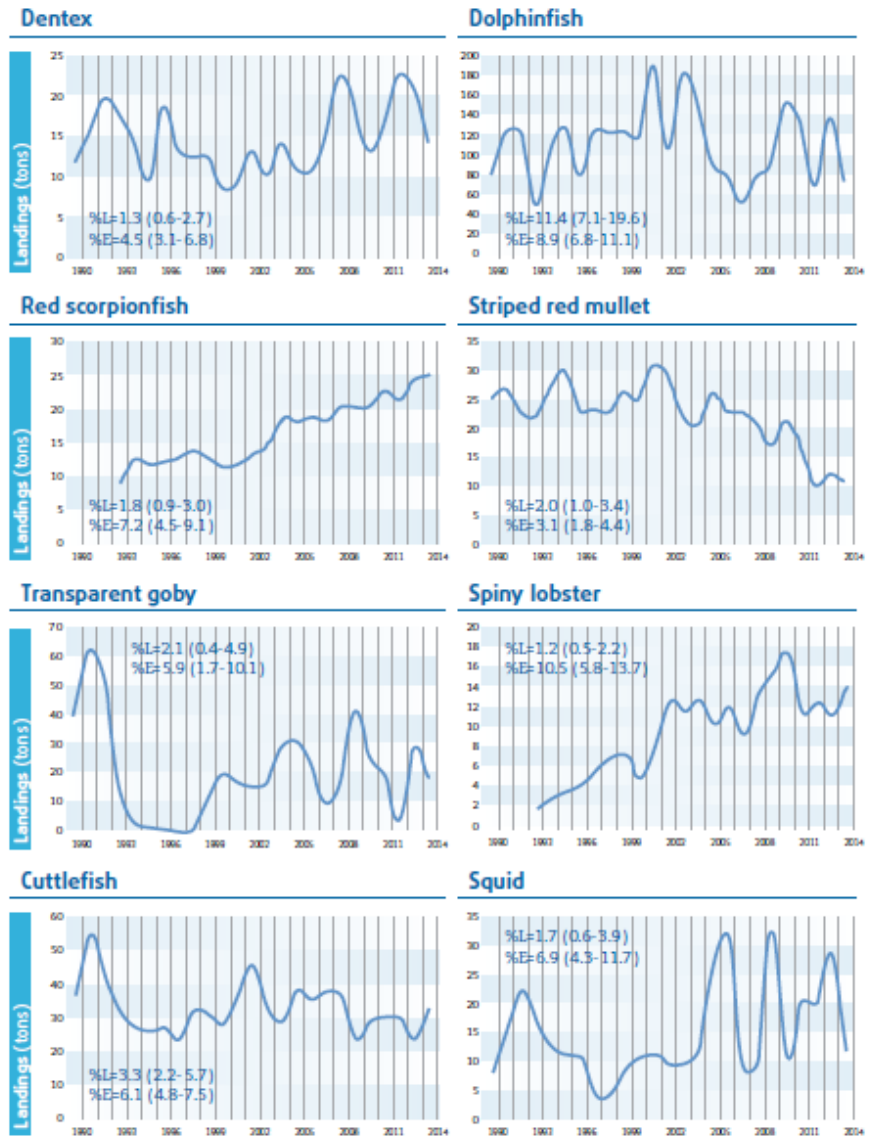
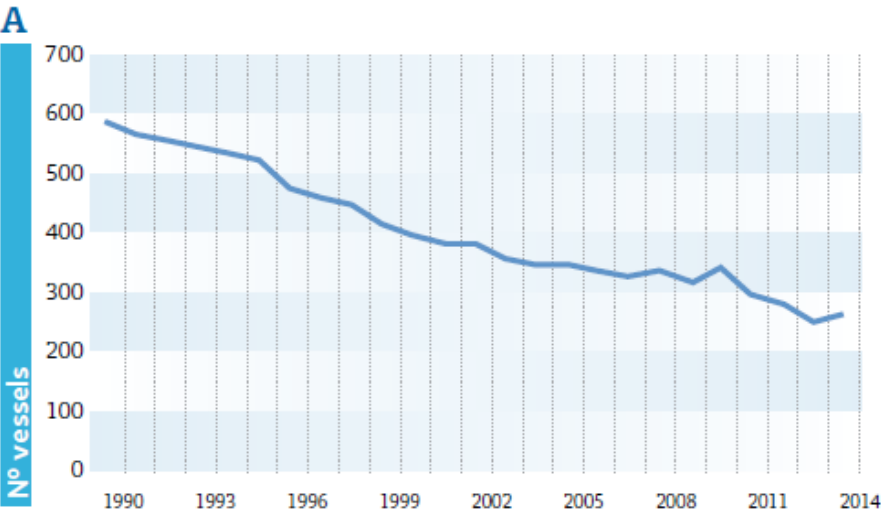
FT7 - GTR-DEMSP



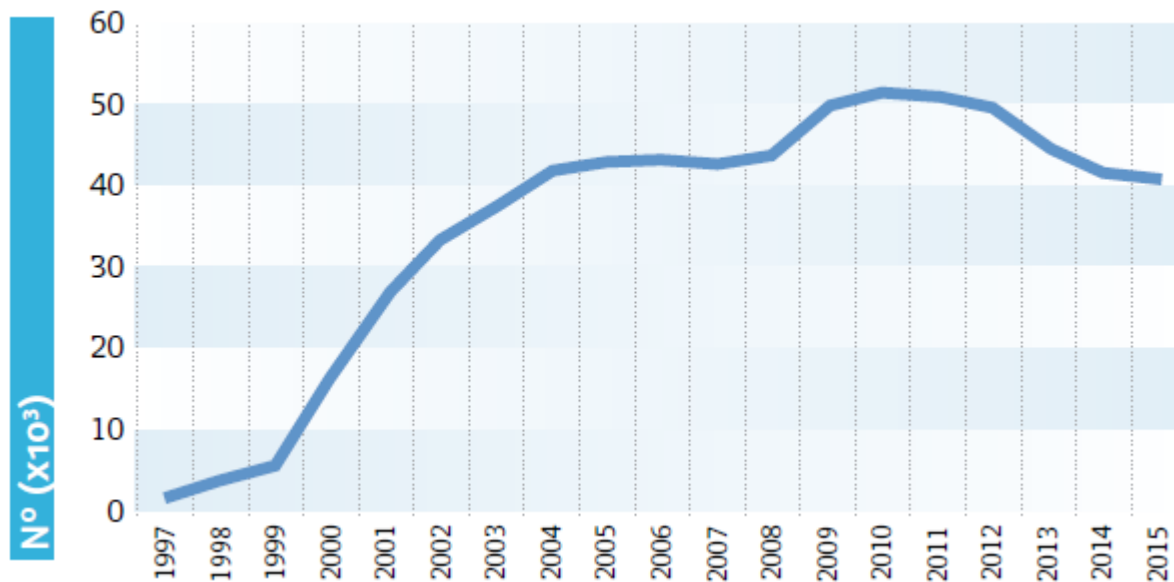
FT8 - GTR-DEMSP



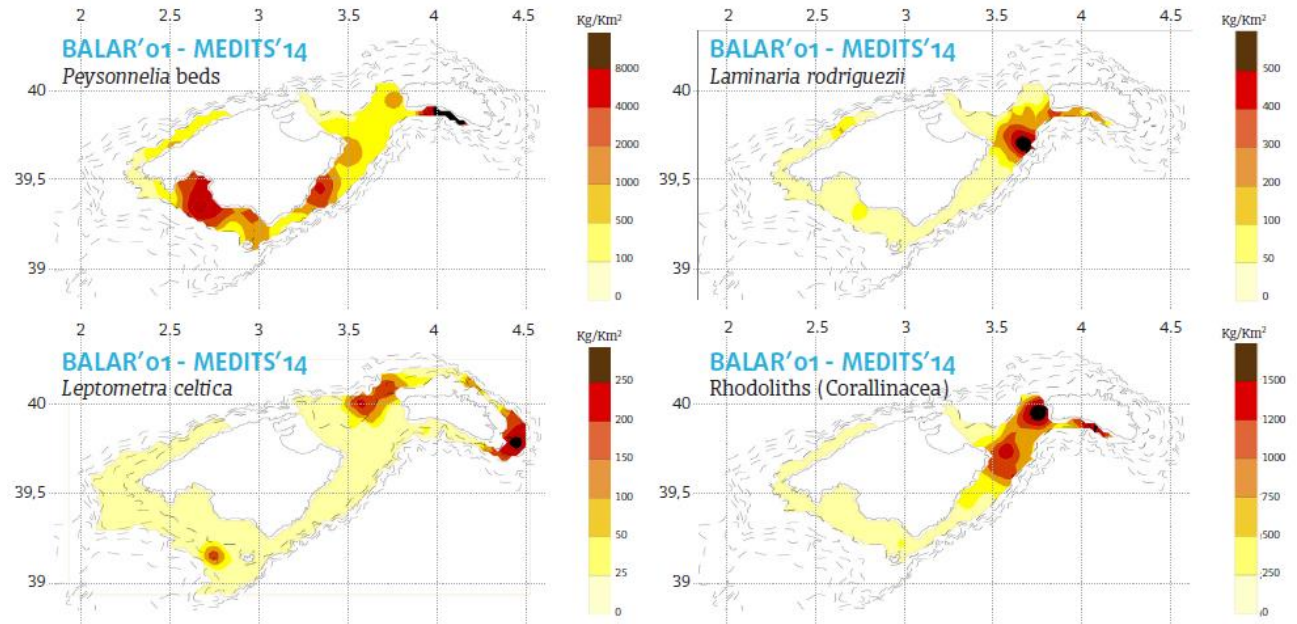
1. Fisheries description: **small-scale**



1. Fisheries description: **recreational**



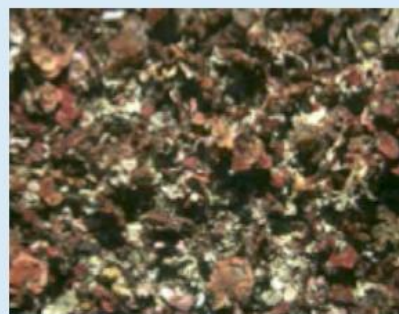
2. Demersal fishing grounds



Maërl beds

Peysonnelia beds

Crinoid beds



3. Stock status: **bottom trawl**

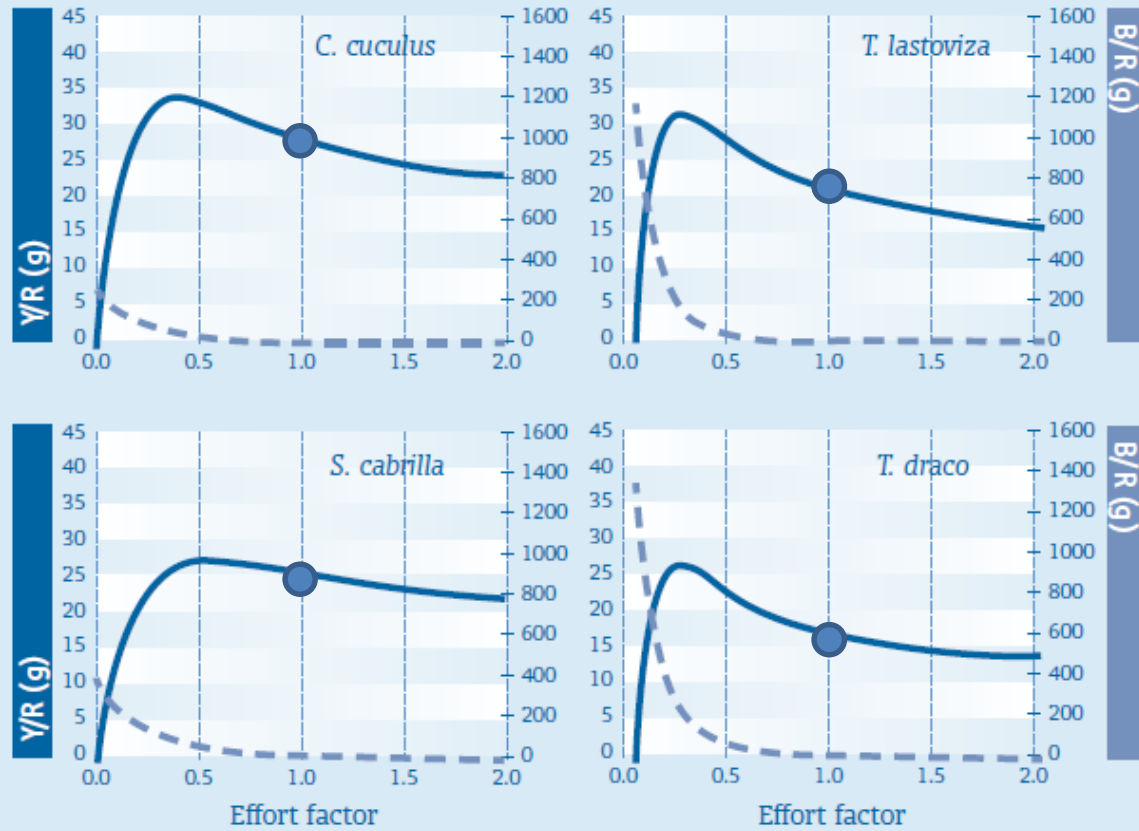
Stock	F_c	$F_{0.1}$	$F_c/F_{0.1}$	Source
Black-bellied angler (<i>L. budegassa</i>)	0.84	0.08	10.5	STECF (2014)
European hake (<i>M. merluccius</i>)	1.15	0.15	7.7	GFCM (2014)
Red mullet (<i>M. barbatus</i>)	0.93	0.15	6.2	GFCM (2014)
Striped red mullet (<i>M. surmuletus</i>)	0.17	0.51	3.0	GFCM (2014)
Red shrimp (<i>A. antennatus</i>)	0.42	0.24	1.7	GFCM (2014)
Norway lobster (<i>N. norvegicus</i>)	0.29	0.17	1.7	STECF (2014)
Common octopus (<i>O. vulgaris</i>)	0.47	0.32	1.5	STECF (2012)
Deep-water pink shrimp (<i>P. longirostris</i>)	0.77	0.62	1.2	STECF (2013a)
Cuttlefish (<i>S. officinalis</i>)	0.44	0.41	1.1	Quetglas et al. (2015)

Target species and main by-catch





3. Stock status: **bottom trawl**



Mixed fish category (morralla)



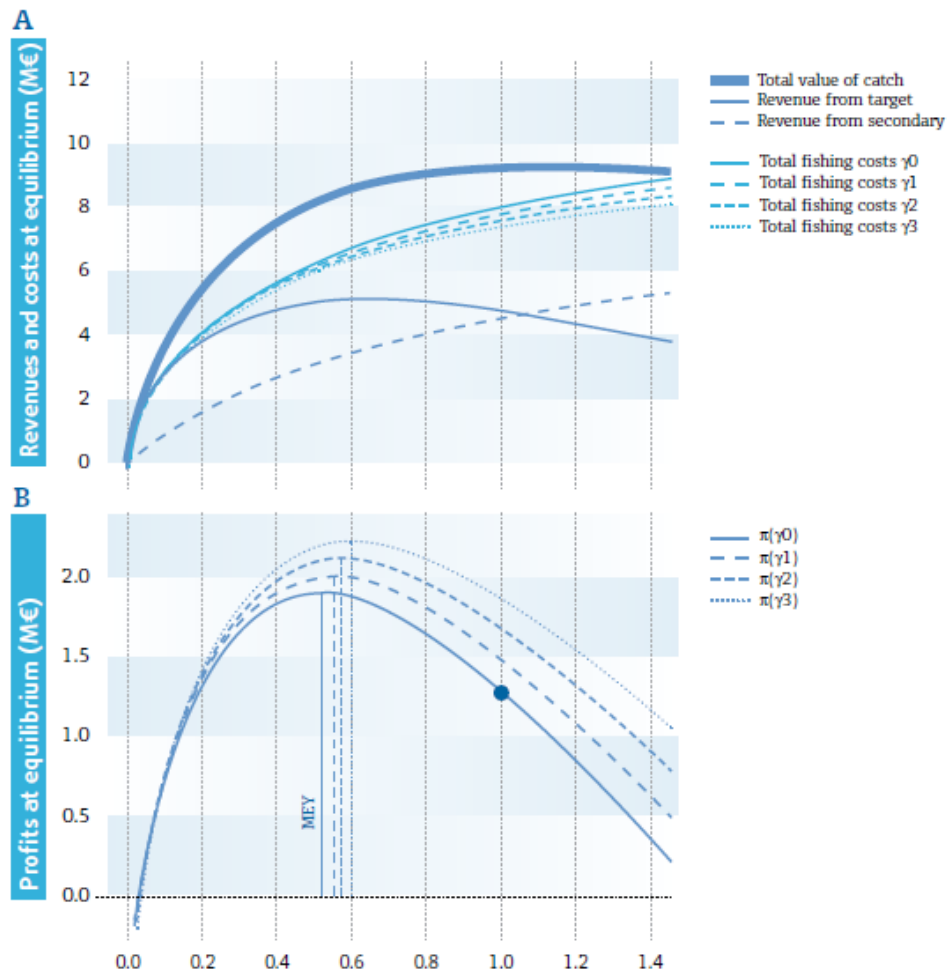
3. Stock status: **small-scale**

Parameter	Dentex	Red scorpionfish	Striped red mullet	Transparent goby	Spiny lobster	Cuttlefish	Squid
B1/K	0.30	0.20	0.40	0.15	0.10	0.30	0.20
K	265.5 (255.3-282.1)	266.1 (253.9-290.3)	344.8 (323.8-377.4)	1150.0 (892.1-1965.0)	217.7 (207.2-235.0)	596.7 (577.3-620.1)	260.7 (226.1-301.8)
MSY	16.8 (16.7-16.9)	20.63 (20.55-20.85)	24.57 (24.23-24.82)	46.97 (41.24-51.76)	15.82 (15.61-15.17)	41.64 (41.41-41.84)	20.87 (20.68-21.06)
B ₂₀₁₅ /B _{MSY}	0.411 (0.356-0.482)	0.562 (0.485-0.660)	0.657 (0.552-0.792)	0.258 (0.145-0.405)	0.398 (0.332-0.452)	0.624 (0.566-0.687)	0.601 (0.377-0.880)
F ₂₀₁₄ /F _{MSY}	2.023 (1.739-2.321)	2.044 (1.760-2.333)	0.708 (0.582-0.847)	1.534 (0.996-2.697)	2.135 (1.918-2.486)	1.273 (1.154-1.400)	0.982 (0.668-1.532)
Ye ₂₀₁₅	10.97 (9.76-12.36)	16.67 (15.18-18.28)	21.67 (19.41-23.76)	21.14 (12.14-30.39)	10.09 (8.92-11.01)	35.74 (33.66-37.75)	17.55 (12.68-20.49)
Ye ₂₀₁₄ /MSY	0.653 (0.585-0.731)	0.808 (0.735-0.884)	0.882 (0.799-0.957)	0.450 (0.268-0.646)	0.638 (0.553-0.700)	0.858 (0.812-0.902)	0.841 (0.617-0.976)



4. Bioeconomic analysis: **bottom trawl**

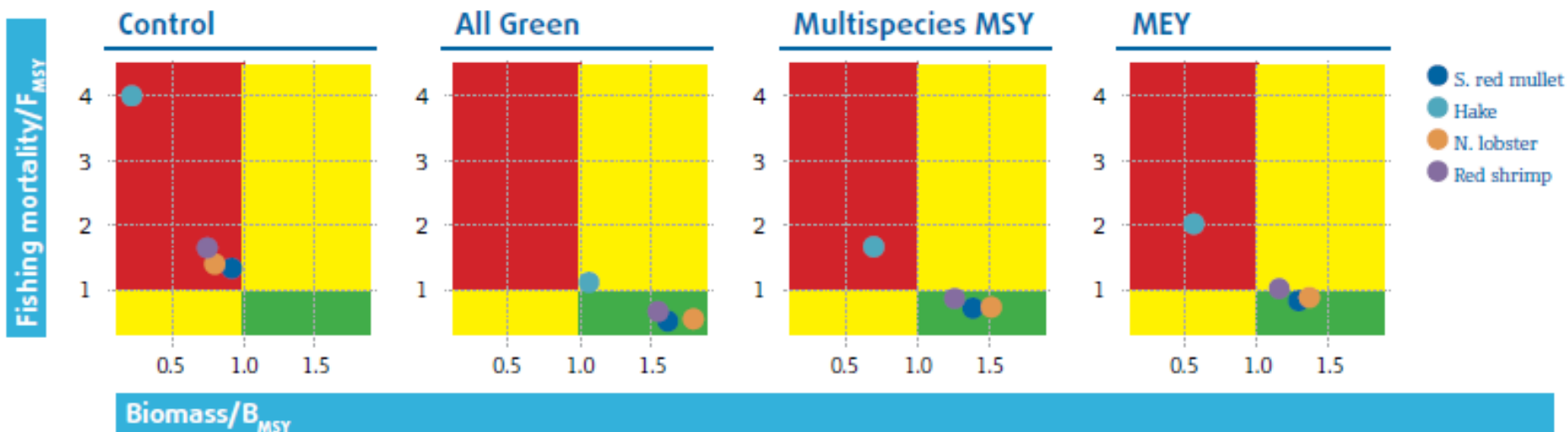
Bioeconomic modelling (mefisto)



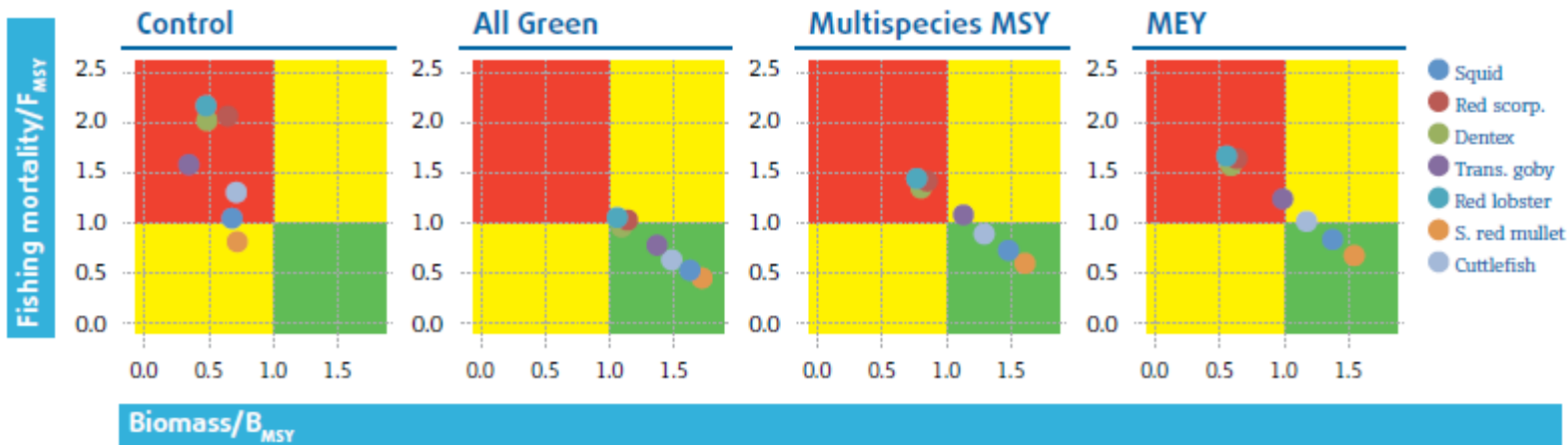
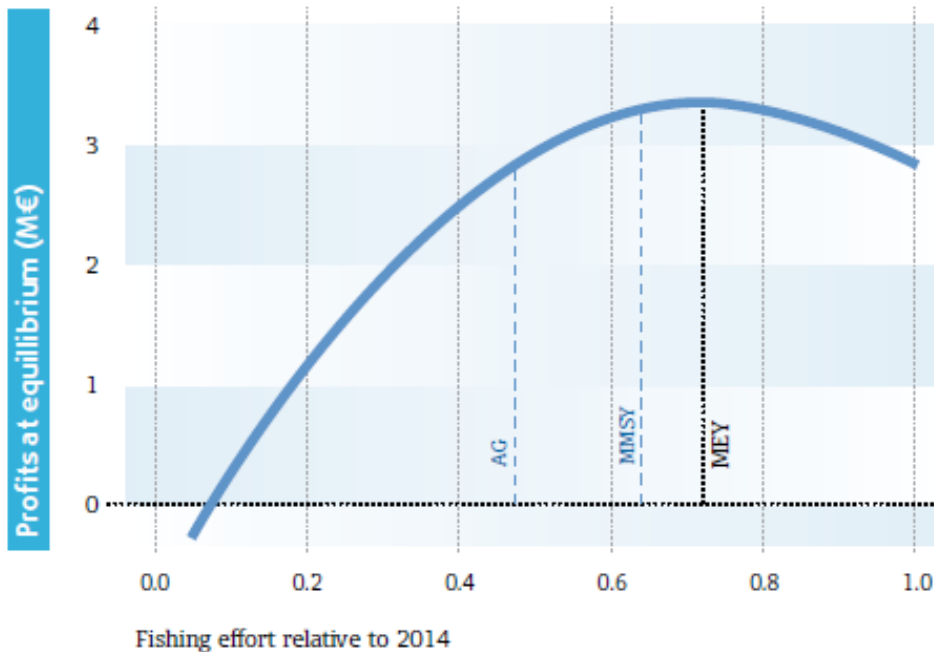
4. Bioeconomic analysis: **bottom trawl**

Four management scenarios were tested:

- i) Control: projection of current conditions;
- ii) All Green: main target species underexploited;
- iii) MMSY: maximum aggregated catch;
- iv) MEY: maximum economic profits










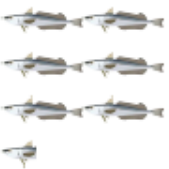







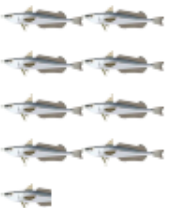










4. Bioeconomic analysis: **small-scale**






























5. Decision Support Tables (DSTs): **bottom trawl**



West Mediterranean DST: Bottom Trawl Fishery

Options	Stock Conservation Status	Catch (tonnes)				Fishery Gross Revenues	Fishing Sector Viability	Employment	Dependence on Subsidies	Ecosystem Impacts
		Red Mullet	Hake	Norway Lobster	Red Shrimp					
Current	Unsafe	 93 t	 85 t	 32 t	 111 t	€€€€ €€ €9.4 mil				
Intermediate	High	 94 t	 128 t	 26 t	 125 t	€€€€ € €8.7 mil				
MEY	Optimum	 95 t	 172 t	 19 t	 139 t	€€€€ € €8 mil				

Indicators (five point scale)	1 Very Bad	2 Bad	3 Medium	4 Good	5 Very Good
Icons	 = 20 tonnes			 = 2 million euros	

West Mediterranean DST: Small-Scale Fishery

Options	Stock Conservation Status	Catch (tonnes)				Fishery Gross Revenues	Fishing Sector Viability	Employment	Dependence on Subsidies	Ecosystem Impacts
		Spiny Lobster	Striped Red Mullet	Cuttlefish	Mixed					
Current	Unsafe	 14 t	 11 t	 33 t	 70 t	€  €2.9 mil				
Intermediate	High	 13 t	 14 t	 37 t	 84 t	€€  €3.7 mil				
MEY	Optimum	 13 t	 18 t	 41 t	 98 t	€€  €4.5 mil				

Indicators (five point scale)	1 Very Bad	2 Bad	3 Medium	4 Good	5 Very Good
Icons	 = 20 tonnes			 = 2 million euros	

6. Fish price analysis

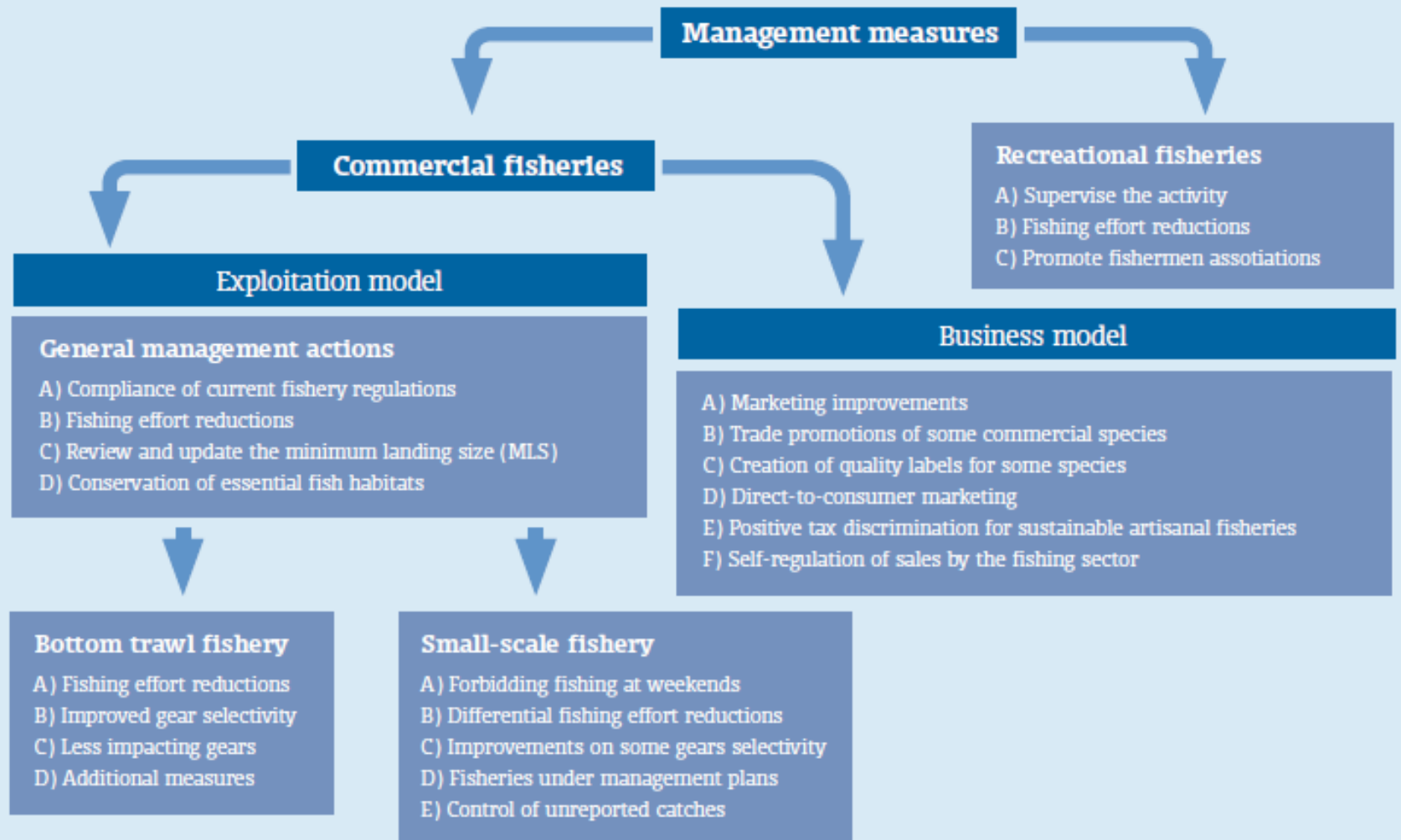


According to stakeholders, the fishery viability depends more on economic aspects than on the exploitation state of the stocks



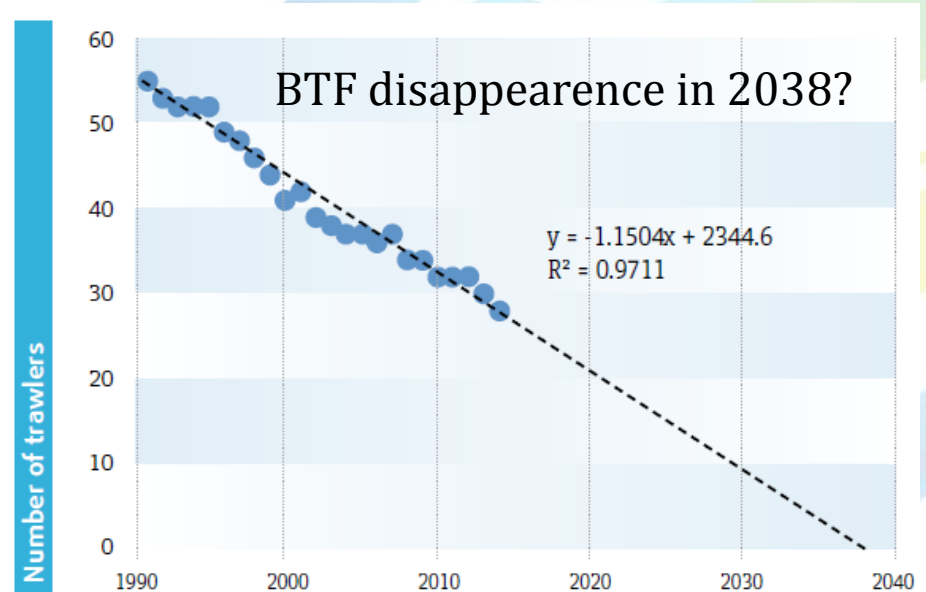
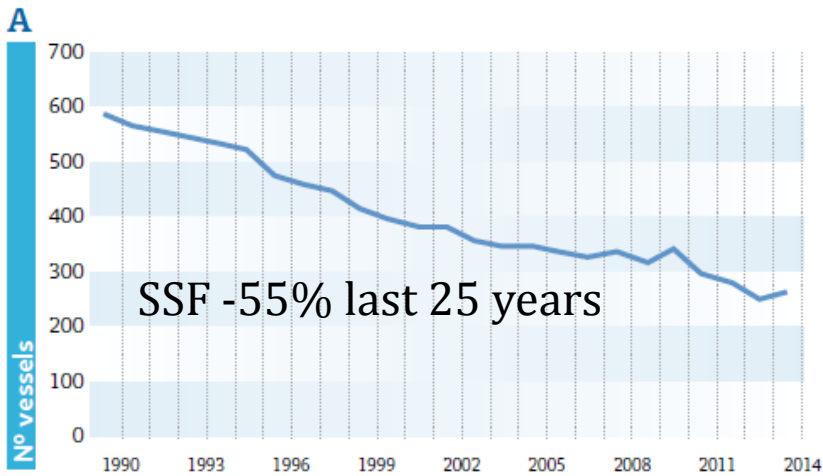
- Most species show inverse price-quantity elasticity, but it does not compensate the dissipation of rents derived from the effort reductions needed to achieve the MSY.
- Size or commercial category is the most important attribute influencing prices.
- Reductions of fishing days per week should target the days with the lowest prices to minimize economic losses.
- Market-based incentives are paramount to ensure the long-term economic viability of the fisheries.

Proposed management measures in the Balearic Islands



7. Management proposals

In no case vessel removals



8. Monitoring



- Full compliance of fishery regulations: a reliable control system should be set up.
- A scientific surveillance system to monitor the effects of the management measures:
 - i) Fishery-dependent data: fishery statistics + scientific sampling at fish markets or on board commercial vessels;
 - ii) Fishery-independent data: scientific sampling on board research vessels (MEDITS).
- Assessment of the exploitation state of the main target and by-catch stocks. Conservation reference points consistent with the MSY target by 2020 (EU Regulation 1380/2013) will be set out.
- Conservation indicators agreed within the Marine Strategy Framework Directive (MSFD), to achieve Good Environmental Status (GES) of the EU's marine waters by 2020.

9. Conclusions

- The serious overfishing of most Mediterranean stocks contrasts with the improvement observed in other European areas.
- Fisheries management in the Mediterranean has been ineffective, necessitating urgent sustainable reform measures.
- This reform should focus on reducing the exploitation rate and improving selectivity but also on political and socioeconomic changes beyond fishery management.
- Most urgent measure: clear determination of law enforcement, which probably would do unnecessary establishing new, more restrictive regulations.

9. Conclusions

- Ad hoc measures suited to differences in the exploitation state, not only among the main stocks but also among different regions.
- Differential effort reductions in line with the status of the stocks and/or GSAs.
- The MSY target is not an easy task in mixed Mediterranean fisheries where it is difficult to regulate the fishing mortality for each species independently.
- Environmental effects (e.g. global change) should be considered for fisheries management, demanding an adaptive approach to face changing conditions.
- Fisheries management should make compatible the conservation of essential habitats and the sustainability of fisheries.
- Fisheries management should also ensure the viability and maintenance of the fish market chain, from fishers to consumers.



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Email: toni.quetglas@ba.ieo.es