



# SOSTENIBILIDAD PESQUERA Y LA PROTECCIÓN DE LOS ECOSISTEMAS MARINOS

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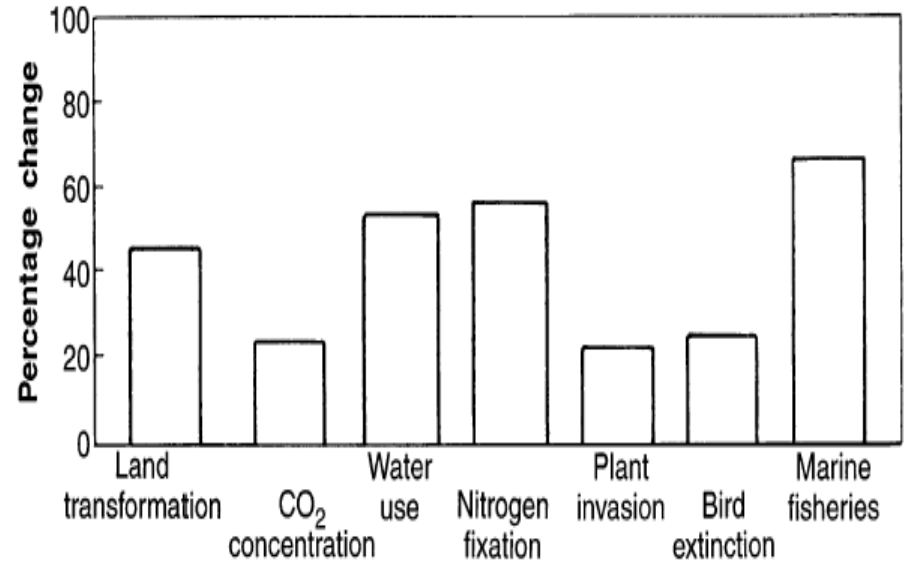
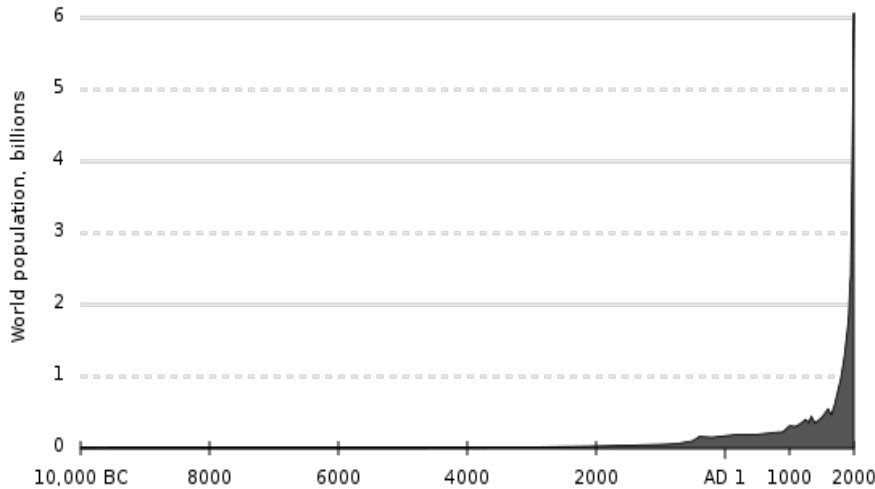
**ECOSAFIMED Project** “Towards Ecosystem Conservation and  
Sustainable Artisanal Fisheries in the Mediterranean basin”

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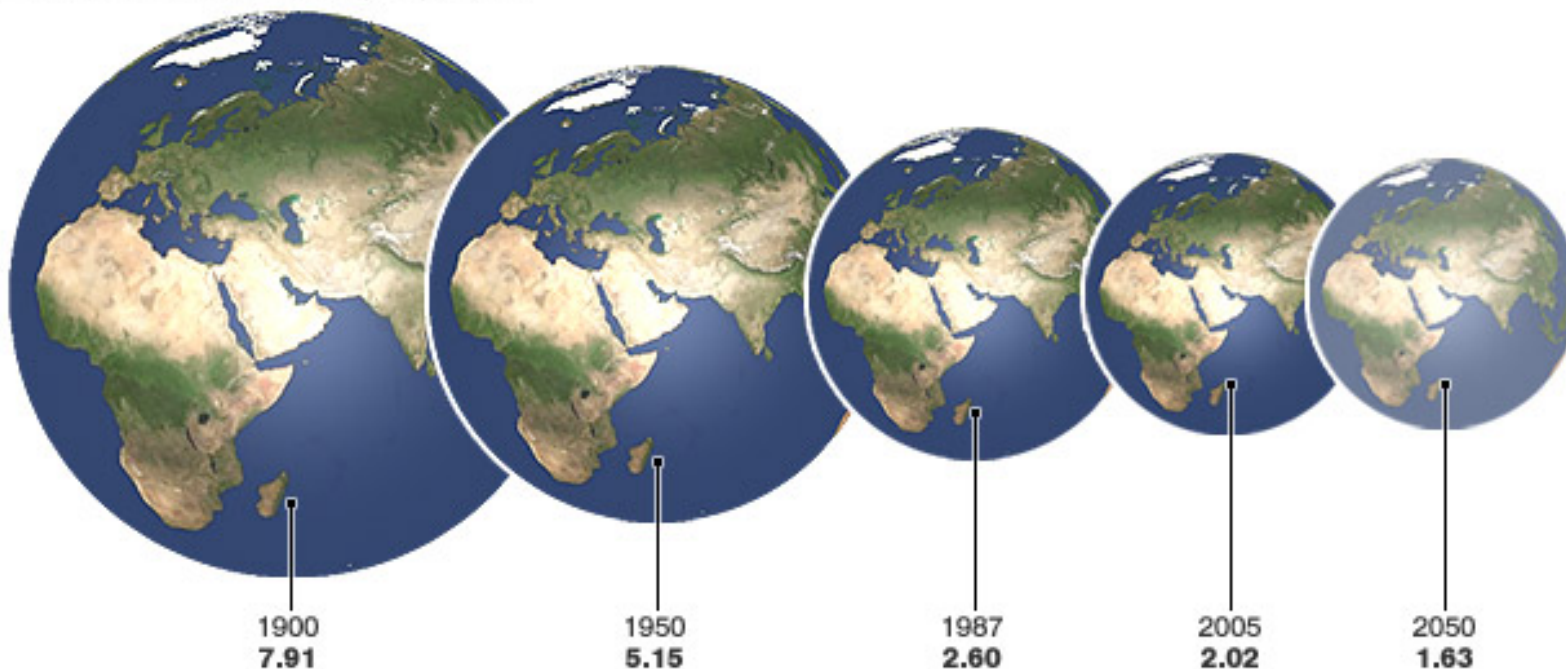
[04/12/14]



## CAMBIOS SIGNIFICATIVOS EN LA ESTRUCTURA Y FUNCIONAMIENTO DE LOS ECOSISTEMAS TERRESTRES Y MARINOS



**RISING POPULATION**  
Hectares of available land per person

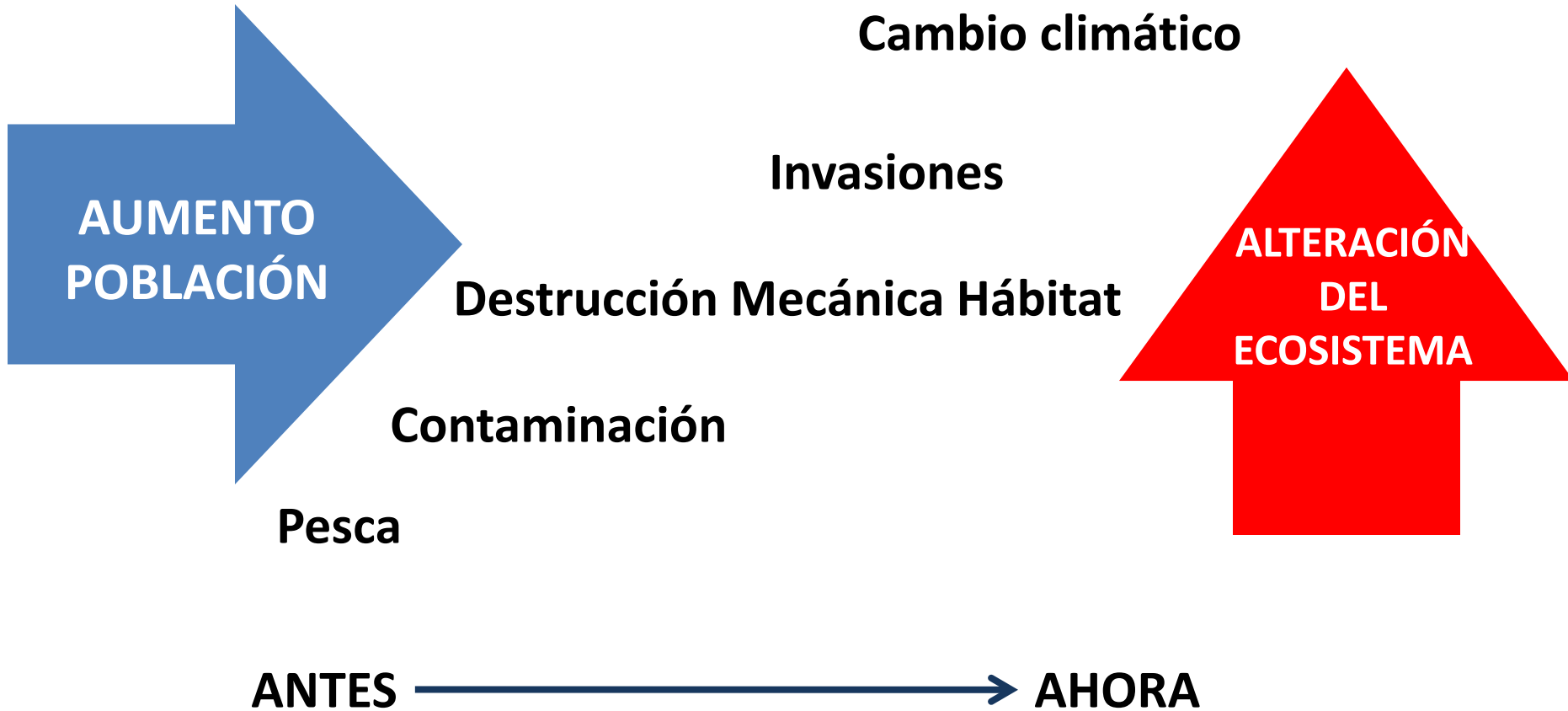




**60% de la humanidad  
concentrada en el litoral**

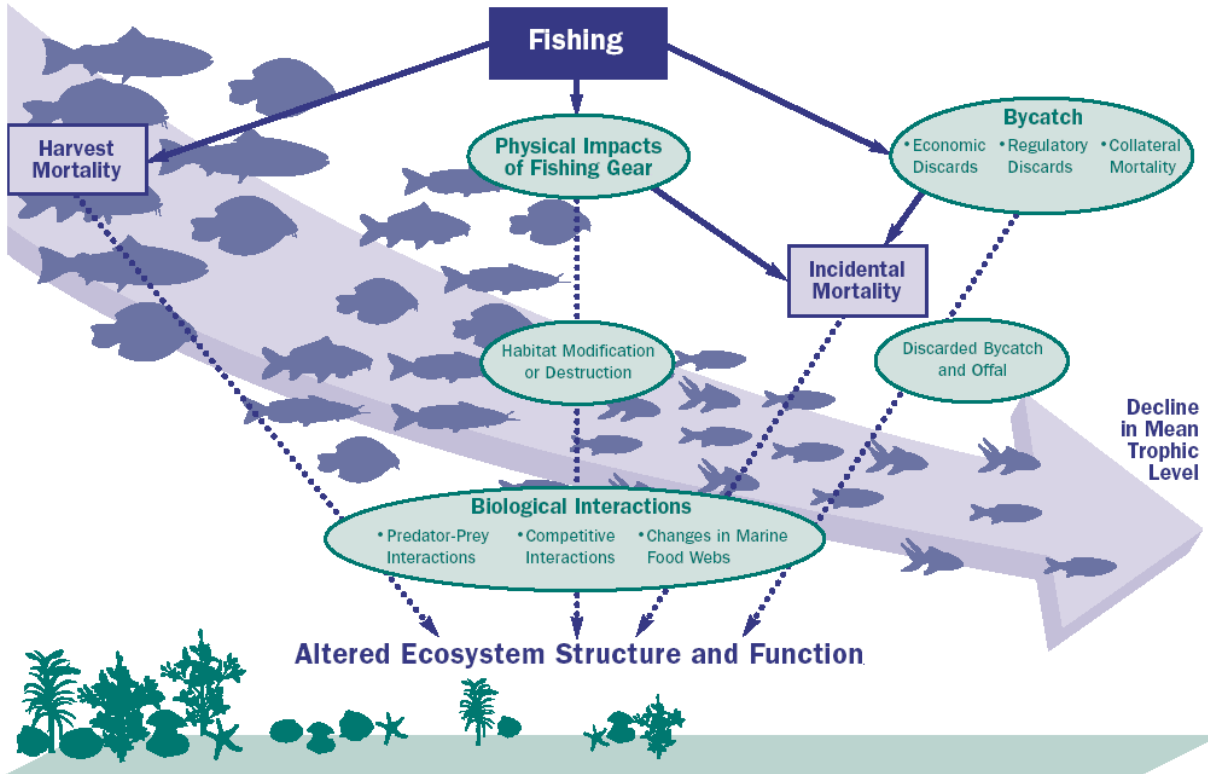


**El litoral español no es una  
excepción**





## EL AUMENTO DE LA PESCA HA PRODUCIDO PROFUNDOS CAMBIOS EN LOS ECOSISTEMAS MARINOS



Source: Adapted from Pauly et al., 1998; Goñi, 2000.





- **Contaminación orgánica**
- **Contaminación química**

Fertilizantes, pesticidas y agroquímicos

Residuos domésticos

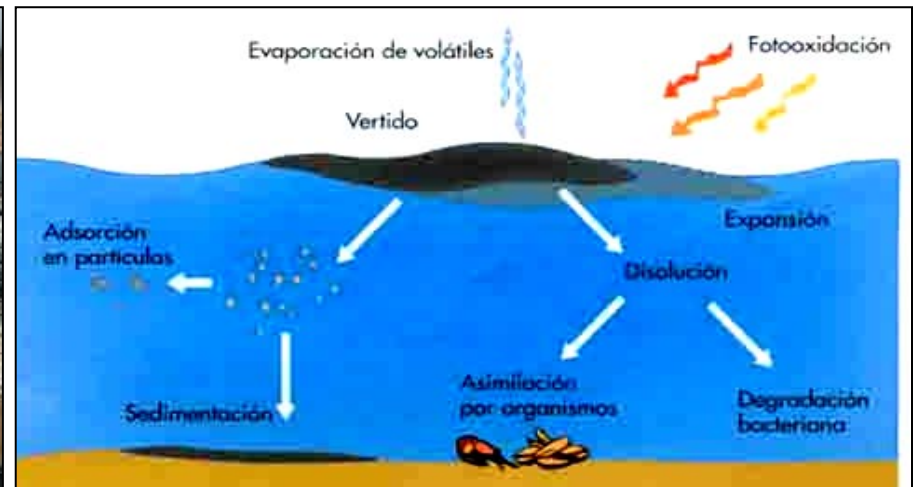
Hidrocarburos

Metales pesados

Compuestos orgánicos (PCB, DDT y derivados)

Plásticos sólidos

Sedimentos





## **Pesca industrial mecanizada**

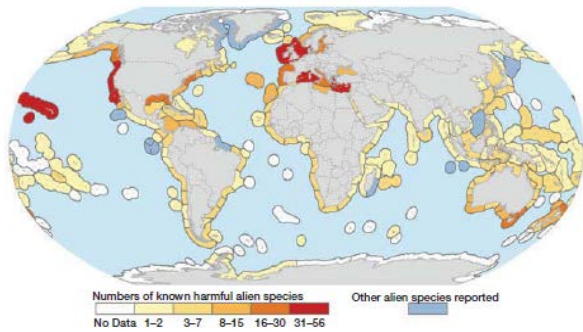


## **Modificación Litoral Extracción de sedimentos**



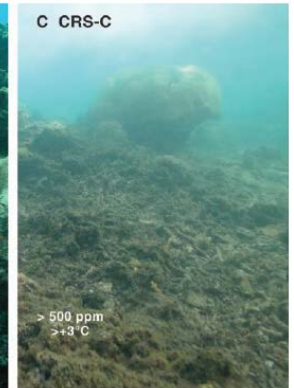
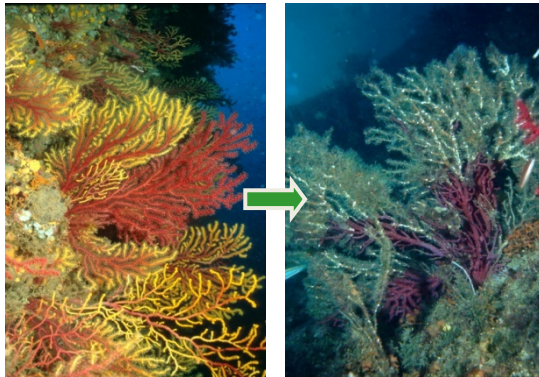


# FUERTES CAMBIOS EN ESTRUCTURA Y FUNCIONAMIENTO ECOSISTEMAS



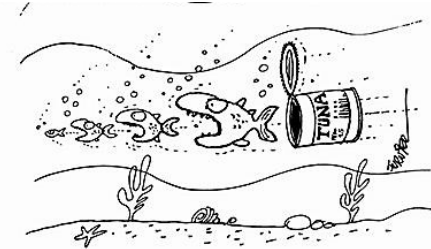
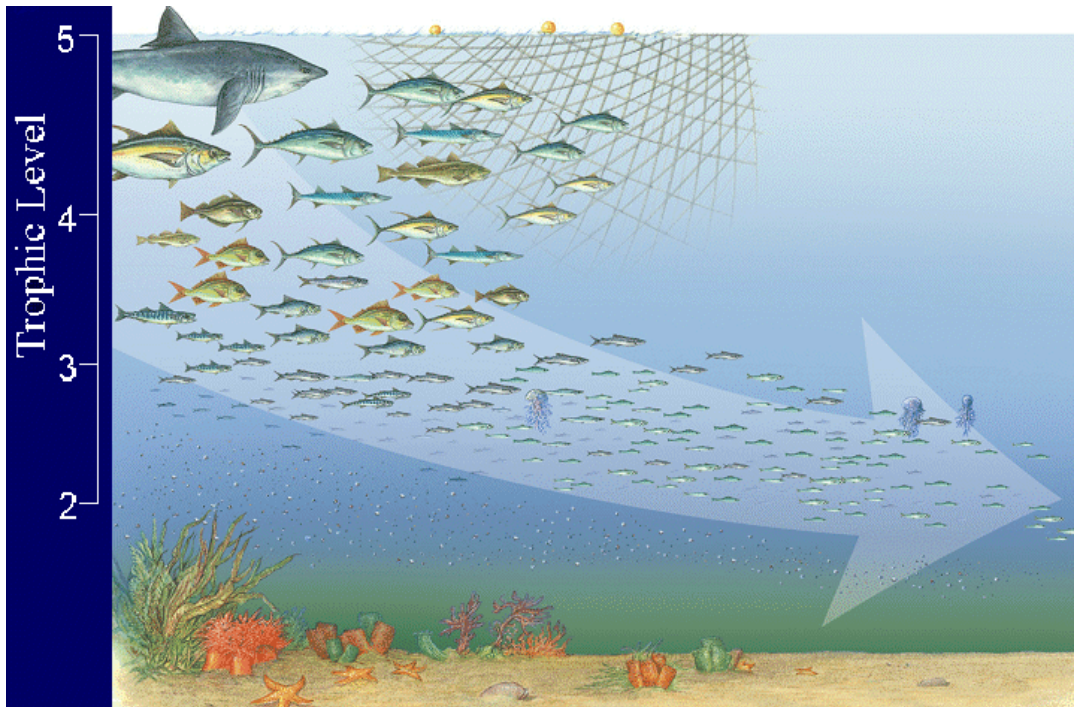
## CALENTAMIENTO

## ACIDIFICACIÓN AMBIENTE MARINO



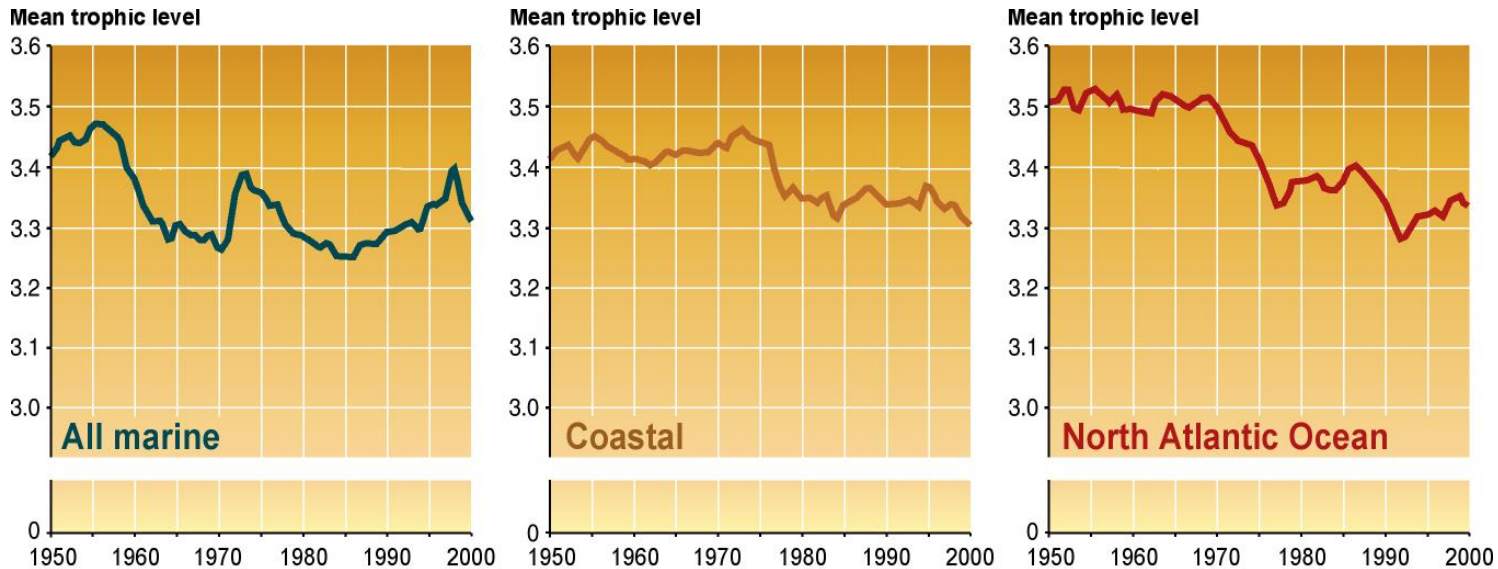


# EXPLOTACION DE LA CADENA TRÓFICA





## 25% de las especies ícticas comercialmente explotadas presentan síntomas de sobreexplotación

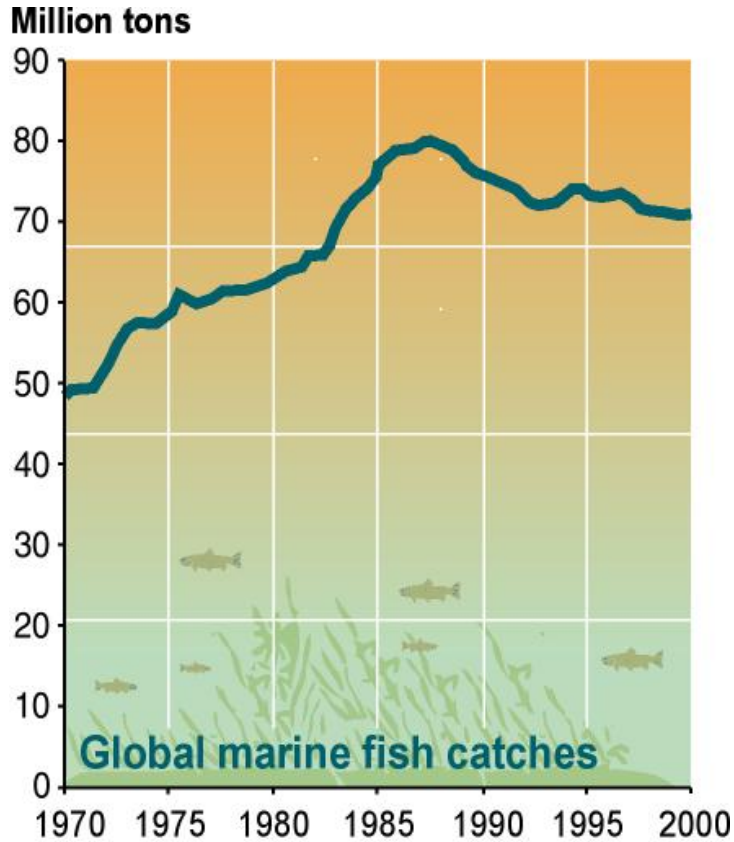


Source: Millennium Ecosystem Assessment

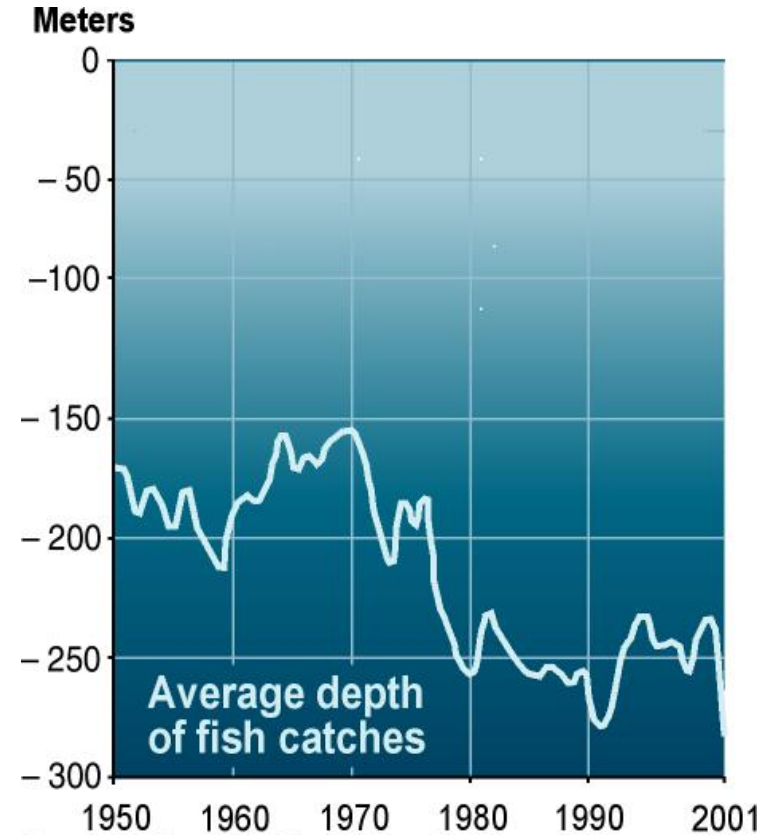
El nivel trófico de los peces capturados muestra un declive tanto para los sistemas marinos como los de agua dulce



## EVOLUCIÓN DE LAS CAPTURAS EN LOS OCÉANOS



Source: Millennium Ecosystem Assessment



Source: Millennium Ecosystem Assessment

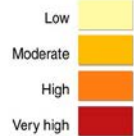


		Habitat change	Climate change	Invasive species	Over-exploitation	Pollution (nitrogen, phosphorus)
Forest	Boreal	↗	↑	↗	→	↑
	Temperate	↘	↑	↑	→	↑
	Tropical	↑	↑	↑	↗	↑
Dryland	Temperate grassland	↗	↑	→	→	↑
	Mediterranean	↗	↑	↑	→	↑
	Tropical grassland and savanna	↗	↑	↑	→	↑
	Desert	→	↑	→	→	↑
Inland water	↑	↑	↑	→	↑	
Coastal	↗	↑	↗	↗	↑	
<b>Marine</b>	↑	↑	→	↗	↑	
Island	→	↑	→	→	↑	
Mountain	→	↑	→	→	↑	
Polar	↗	↑	→	↗	↑	

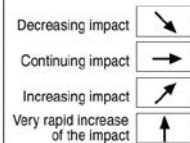
**SOBREEXPLOTACIÓN**

**CAMBIOS/DESTRUCCIÓN DEL HÁBITAT**

Driver's impact on biodiversity over the last century



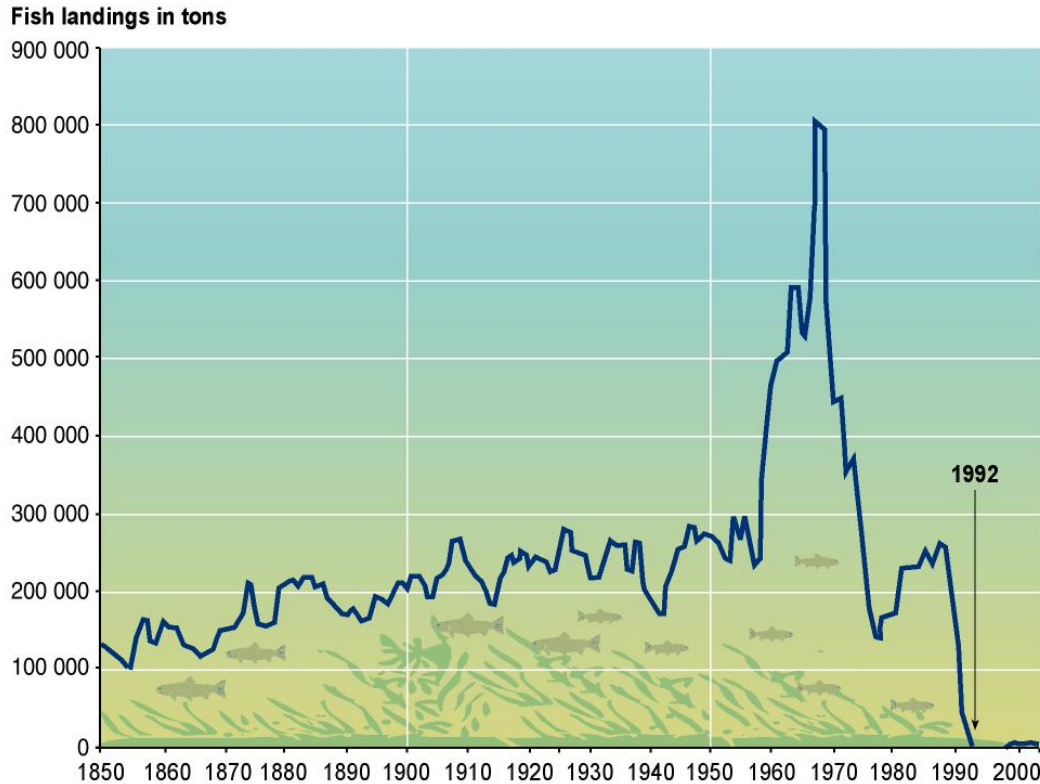
Driver's current trends



Source: Millennium Ecosystem Assessment



## Colapso de la pesquería del Bacalao de Terranova en 1992



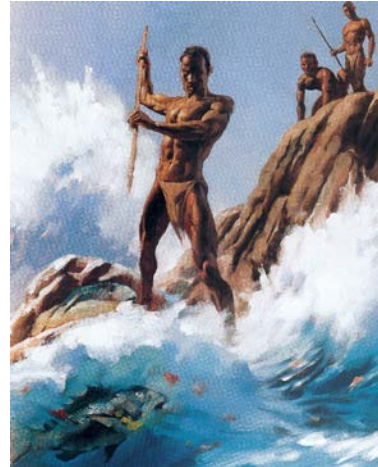
Source: Millennium Ecosystem Assessment

**La recuperación del stock no se producirá si no se elimina por completo la pesca o se reduce drásticamente**



El mare Nostrum  
ha estado cuna  
de la civilización

Probablemente las  
costas italianas ya  
estaban  
sobrepescadas  
desde el S-I d.C.



**ECOSAFIMED - II-B/2.1/1073**  
*Towards Ecosystem Conservation and Sustainable Artisanal Fisheries in the Mediterranean basin*



Project funded by the **EUROPEAN UNION**



**MUY DIVERSO**



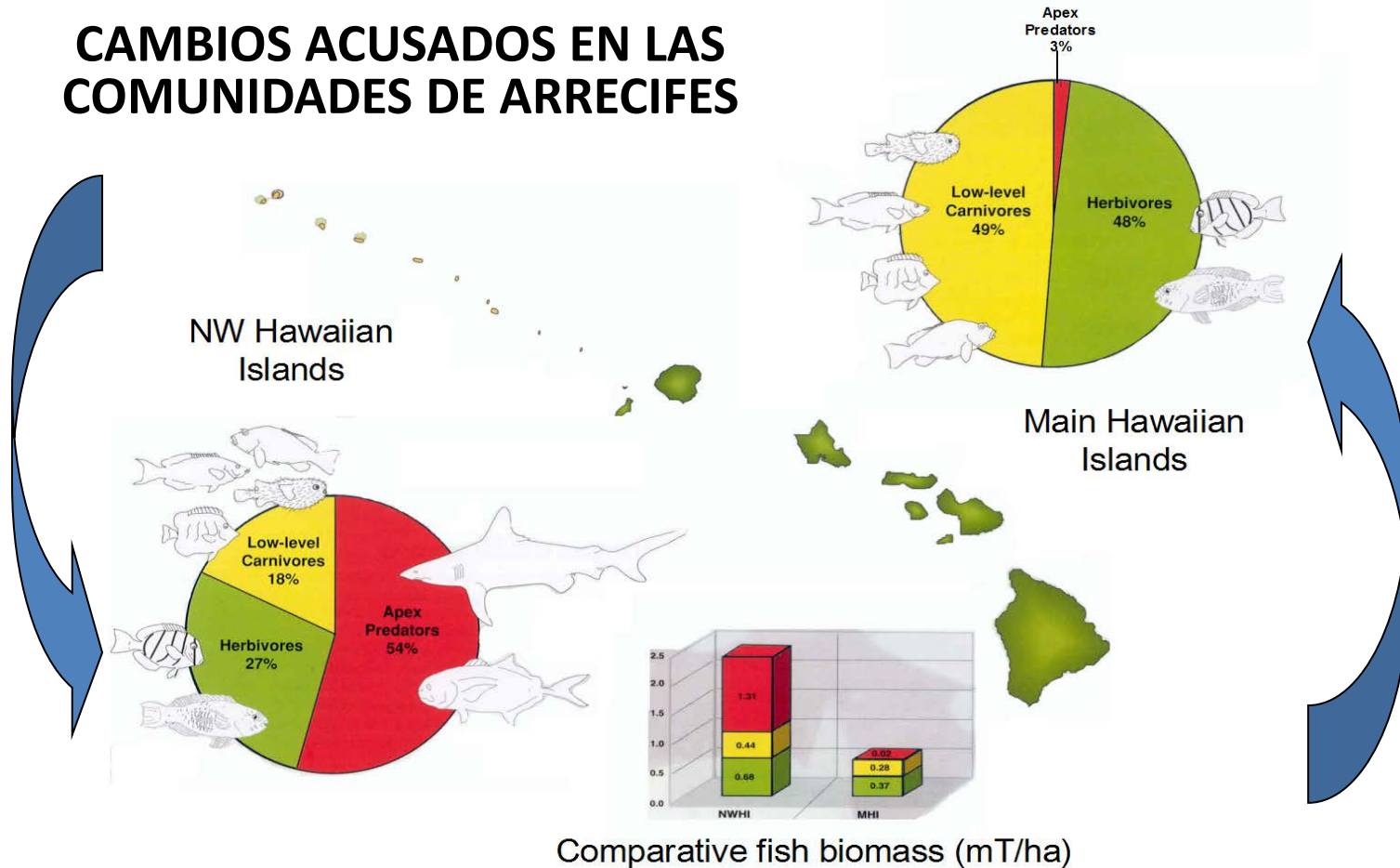
**POCO DIVERSO**

[04/12/14]





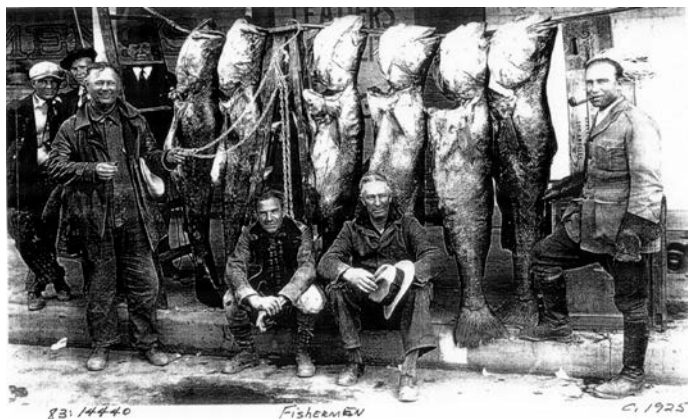
## CAMBIOS ACUSADOS EN LAS COMUNIDADES DE ARRECIFES

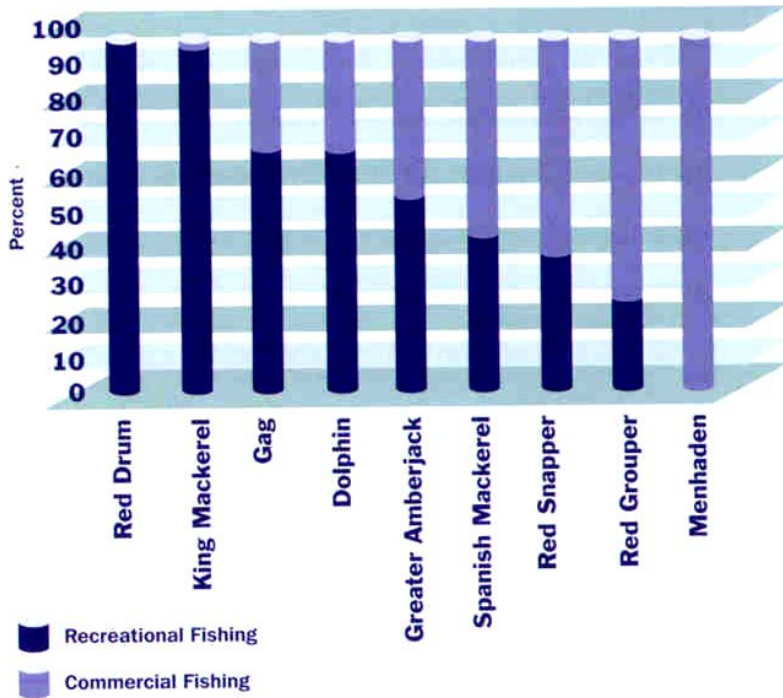


**GRAN PÉRDIDA DE BIODIVERSIDAD EN LOS ARRECIFES**

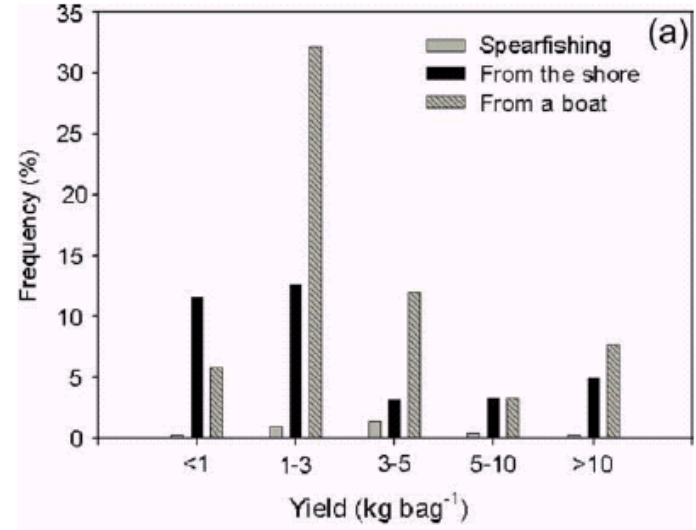


# ¿CÓMO ERAN LAS CAPTURAS?

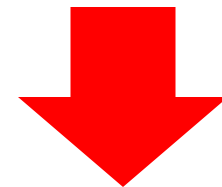




Source: NMFS, 2002.



De 1200 - 2700 Tm/any



28 % de la captura comercial anual en les Balears

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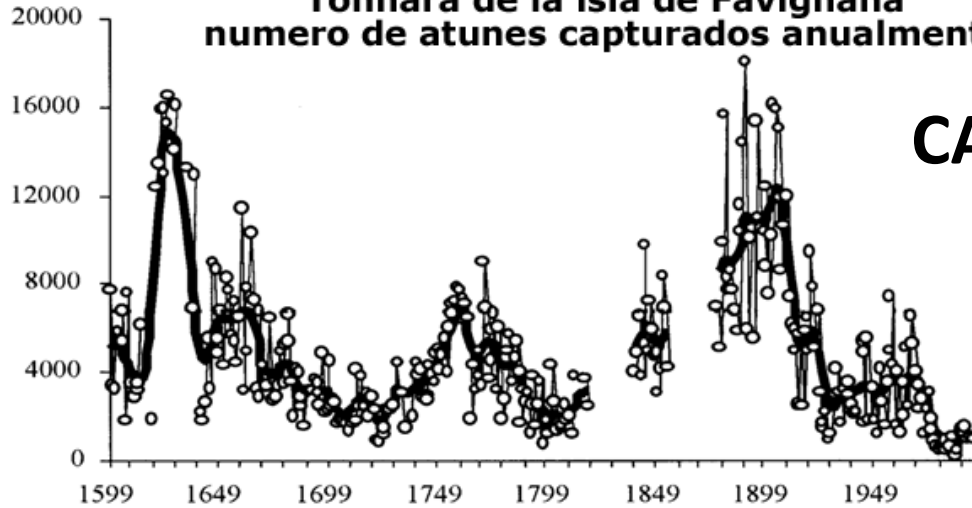


[04/12/14]





**Tonnara de la isla de Favignana**  
**numero de atunes capturados anualmente**

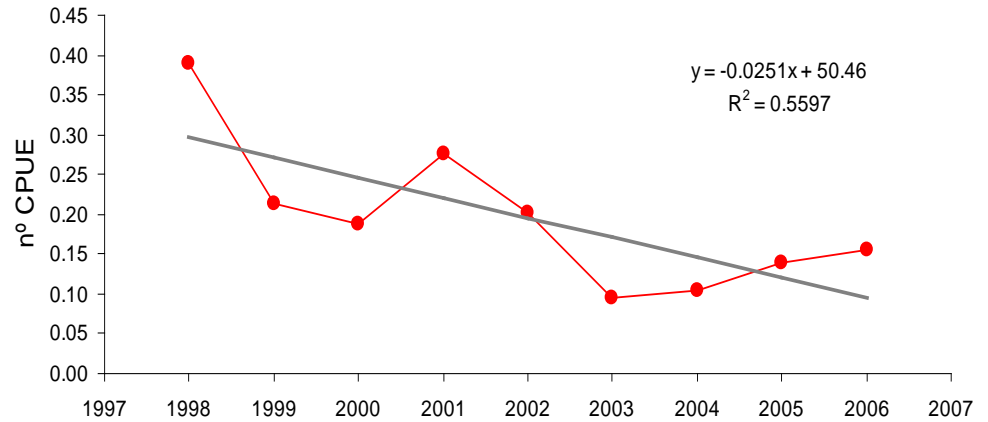


**CAMBIOS A ESCALA HUMANA**

**1975** → **1 RED**  
**1 NOCHE**  
**1 LANGOSTA**

**2014** → **7 REDES**

CALA RATJADA CPUE (nº/dia/red)





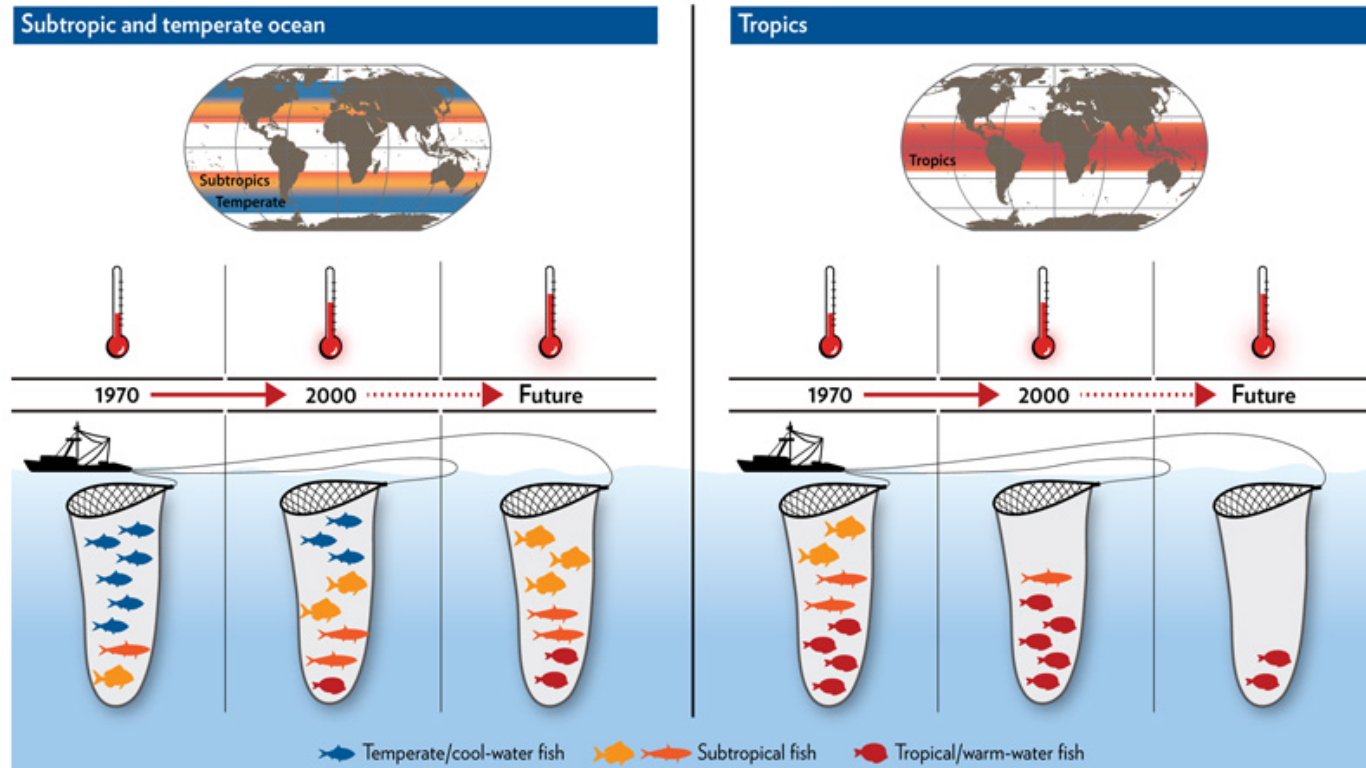
**1500 SPECIES**

**100 SPECIES**





# EL CAMBIO CLIMÁTICO AFECTA A LA BIODIVERSIDAD



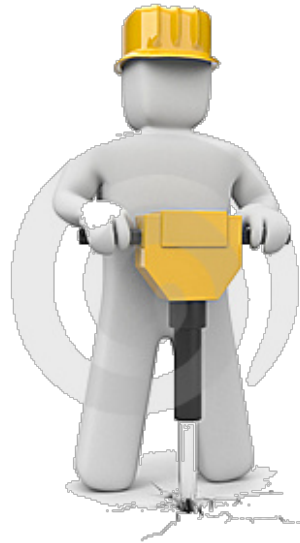
Species from warmer waters are replacing those that are traditionally caught in fisheries worldwide.



# DESTRUCCIÓN BIODIVERSIDAD



Complejo, Estable, Funcional



Frágil, Inestable, Ineficaz



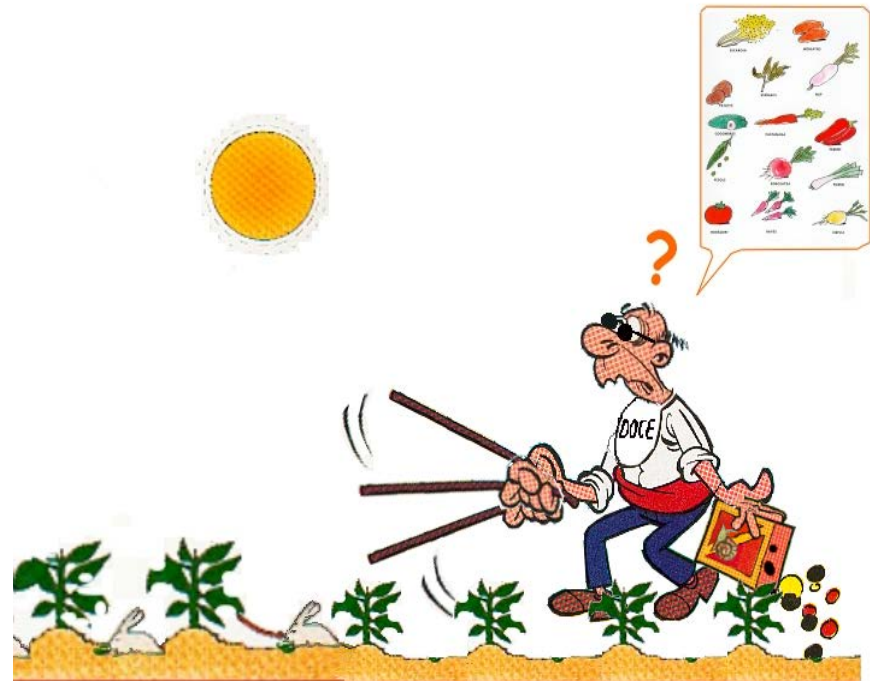
Débil, Improductivo, Inerte





# HERRAMIENTAS DE GESTIÓN/CONSERVACIÓN MEDIO MARINO - PESCA-

- REDUCCIÓN DEL ESFUERZO
- REDUCCIÓN DE LA FLOTA
- GESTIÓN MEDIO MARINO
- INNOVACIÓN TECNOLÓGICA



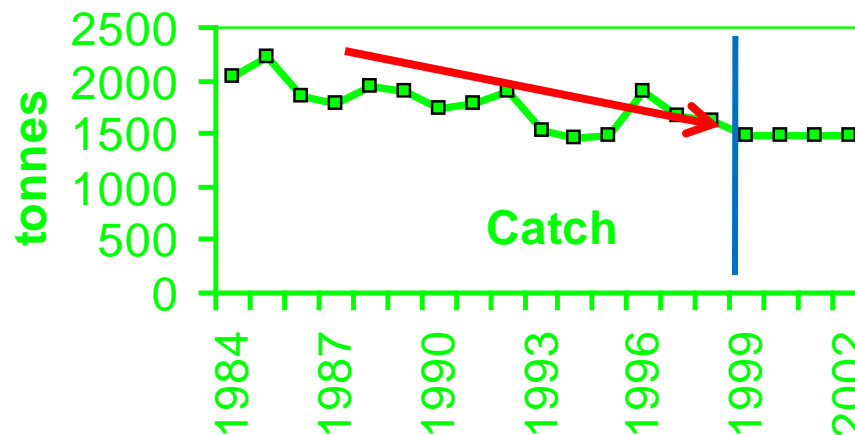


**TODO ESTO REQUIERE  
APOYO POLÍTICO Y DE LOS  
USUARIOS  
+  
ADECUADO CONSEJO  
CIENTÍFICO**



# REDUCCIÓN DEL ESFUERZO

- NÚMERO DE HORAS DE LA ACTIVIDAD
- NÚMERO DE REDES /ANZUELOS
- REDUCCIÓN DE LA POTENCIA EMBARCACIÓN
- ESTABLECIMIENTO TAQ

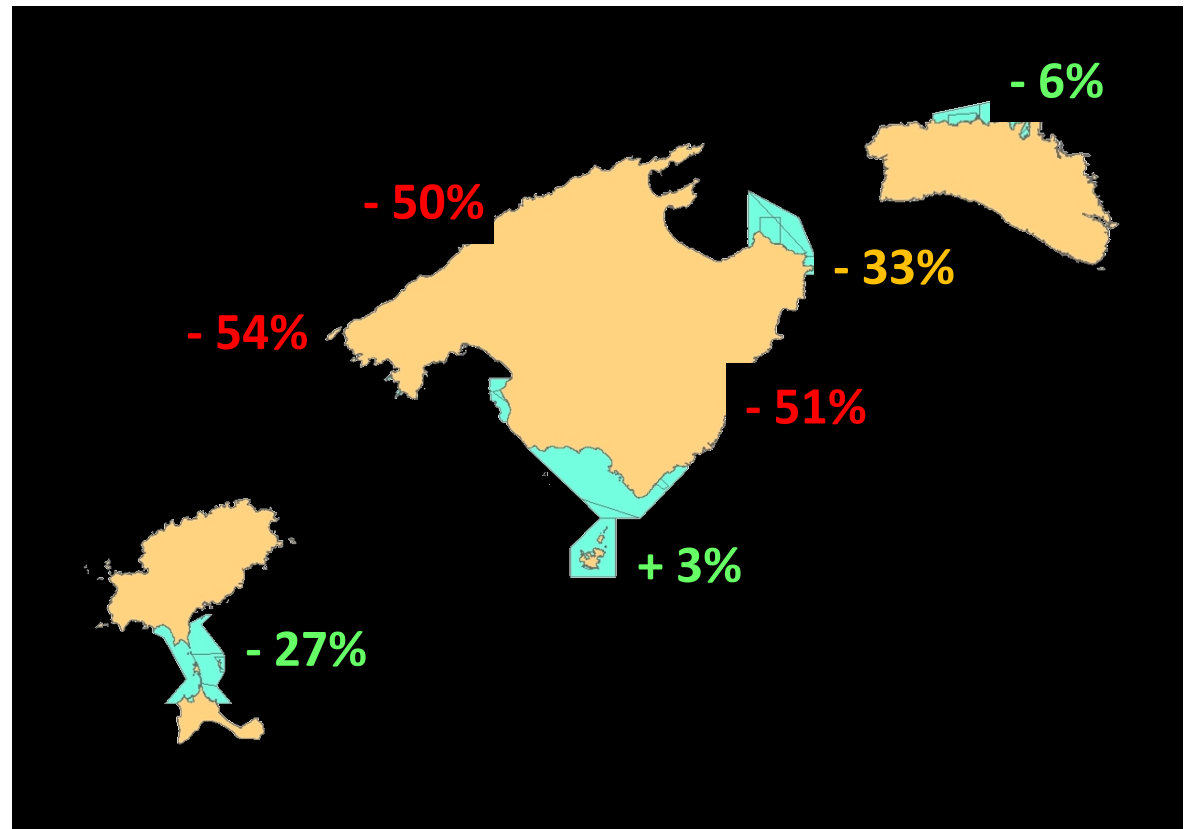




# REDUCCIÓN DE LA FLOTA 1997-2013

- DIVERSIFICACIÓN DE LOS ARTES DE PESCA

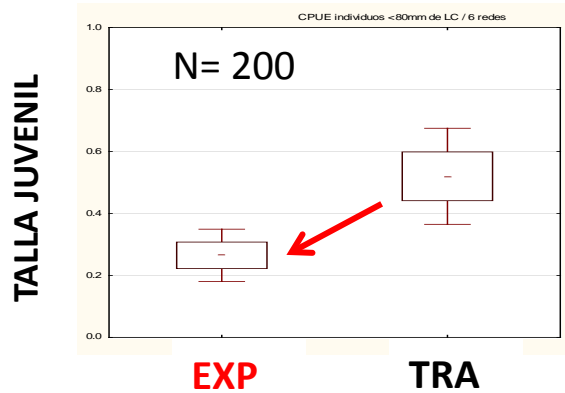
- ESTACIONALIDAD DE LA ACTIVIDAD





# INNOVACIÓN TECNOLÓGICA

## Selectividad captura de langosta

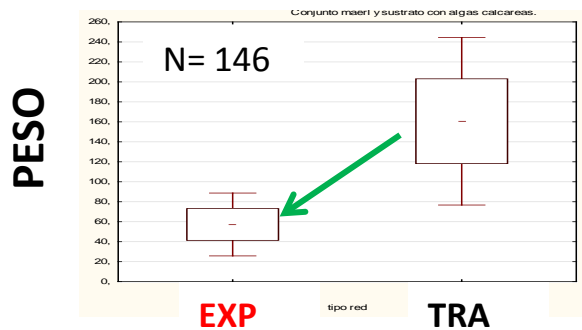


PMF - tradicional

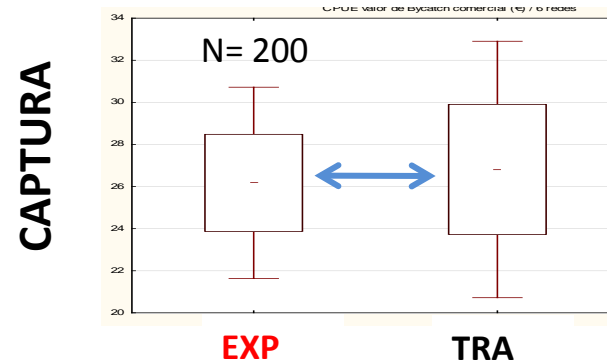


MMF - experimental

## Reducción del impacto sobre las comunidades bentónicas



## Rendimiento similar en el byatch





# GESTIÓN DEL MEDIO MARINO

## HERRAMIENTA

## RESERVAS MARINAS

- Aplicar gestión adaptativa
- Resultados efectivos
- Gran capacidad de respuesta

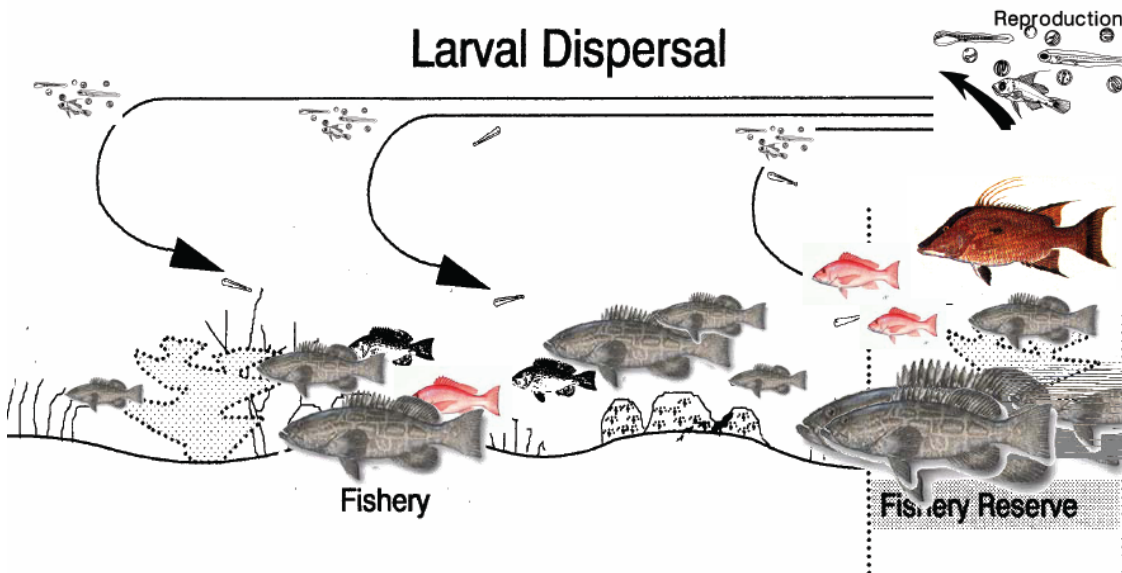




# EFECTO DE LAS ÁREAS MARINAS PROTEGIDAS

Spillover

Reproduction & Dispersal



Colonization & Growth

Abundance

Diversity

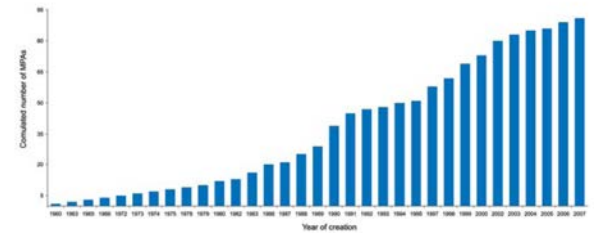
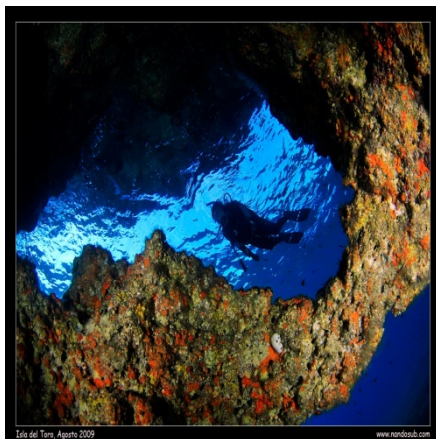


Figure 1. Cumulative number of MPAs established in the Mediterranean between 1960 and 2007, including the Pelagos Sanctuary and the three deep-sea sites of biodiversity interest of GFCM (three MPAs, for which we had no data regarding their date of establishment, were not included in this graph).



# RESERVAS SON ESPACIOS MULTIUSOS























# PESCA INDUSTRIAL

VS

# PESCA ARTESANAL

FISHERY	LARGE SCALE 	SMALL SCALE 
<b>BENEFITS</b>	<b>LARGE SCALE</b>	<b>SMALL SCALE</b>
Subsidies	 25-27 billion	 5-7 billion
Number of fishers employed	 about 1/2 million	 over 12 million
Annual catch for human consumption	 about 30 million t	 same: about 30 million t
Annual catch reduced to fishmeal and oils	 35 million t	 Almost none
Annual fuel oil consumption	 about 37 million t	 about 5 million t
Catch per tonne of fuel consumed	 1-2 t	 4-8 t
Fish and other sealife discarded at sea	 8-20 million tonnes	 Very little



# Objetivos proyecto ECOSAFIMED

El fin último del proyecto es dar recomendaciones a las partes interesadas y la administración para la protección de las comunidades bentónicas, con base en **criterios científicos**

## Objetivos específicos del proyecto

- Selección de áreas sin actividad la pesca de arrastre
- Estudiar la actividad de la flota artesanal en esas áreas
- Evaluar las comunidades bentónicas de acuerdo con el diferente grado de impacto
- Lista de recomendaciones con el fin de preservar las comunidades bentónicas

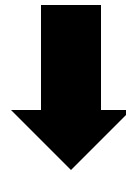


**Acuerdos de custodia  
marina**



# PRINCIPAL PROBLEMA

La superficie más impenetrable del mundo es la fina capa azul del mar. Es imposible ver lo que está sucediendo bajo el agua.



**GRAN DESCONOCIMIENTO**

**EDUCAR**

**DIVULGAR**

**CONVENCER**

**ECOSAFIMED - II-B/2.1/1073**  
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Project  
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**EUROPEAN UNION**



**ENPI  
CBCMED**  
CROSS-BORDER COOPERATION  
IN THE MEDITERRANEAN



[04/12/14]





- *The 2007-2013 ENPI CBC Mediterranean Sea Basin Programme is a multilateral Cross-Border Cooperation initiative funded by the European Neighbourhood and Partnership Instrument (ENPI). The Programme objective is to promote the sustainable and harmonious cooperation process at the Mediterranean Basin level by dealing with the common challenges and enhancing its endogenous potential. It finances cooperation projects as a contribution to the economic, social, environmental and cultural development of the Mediterranean region. The following 14 countries participate in the Programme: Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Lebanon, Malta, Palestine, Portugal, Spain, Syria (participation currently suspended), Tunisia. The Joint Managing Authority (JMA) is the Autonomous Region of Sardinia (Italy). Official Programme languages are Arabic, English and French ([www.enpicbmed.eu](http://www.enpicbmed.eu)).*
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