



Food and Agriculture  
Organization of the  
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IMPROVED REGIONAL FISHERIES GOVERNANCE IN WESTERN AFRICA (PESCAO)  
PESCAO Component 3 Regional Meeting

# The fleet-based management : towards an ecosystem approach to fisheries

How to define fishing fleets as management units ?  
Some thoughts from the European experience

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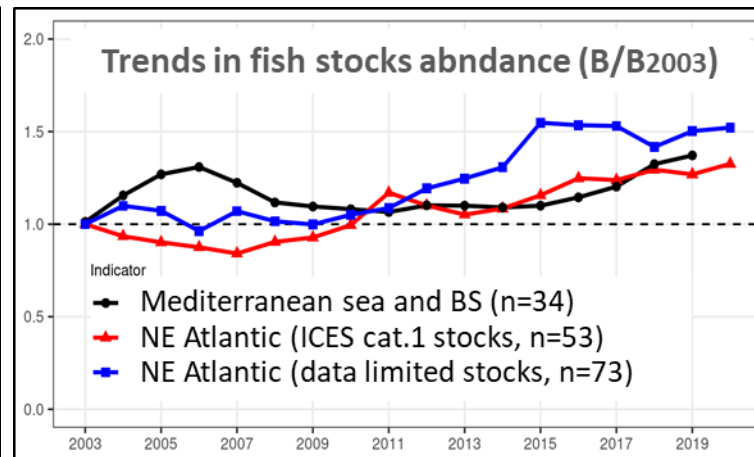
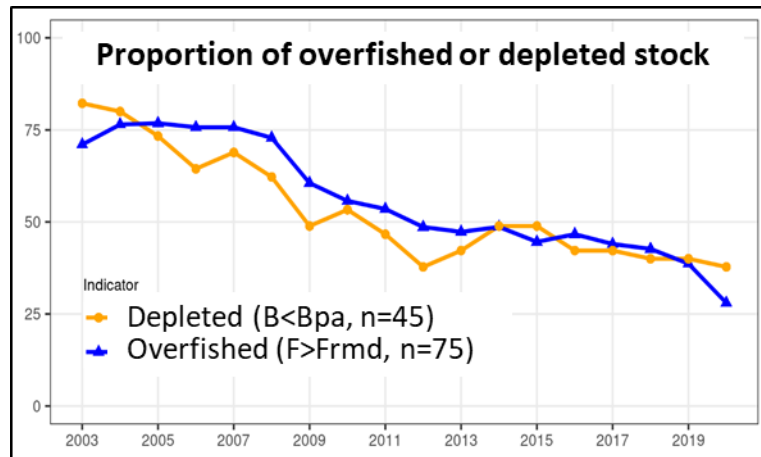


## Introduction : an Ecosystem Approach to Fisheries Management (EAFM) is required

- In European seas (like in many areas, including African waters), fisheries management is mostly based on single species approaches
- Setting TAC (Total acceptable catches) and quotas according to scientific advices is a major tool to end overfishing and restore depleted stocks

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CSTEP, 2022

- A decrease in the fishing pressure
- ... while abundance increases



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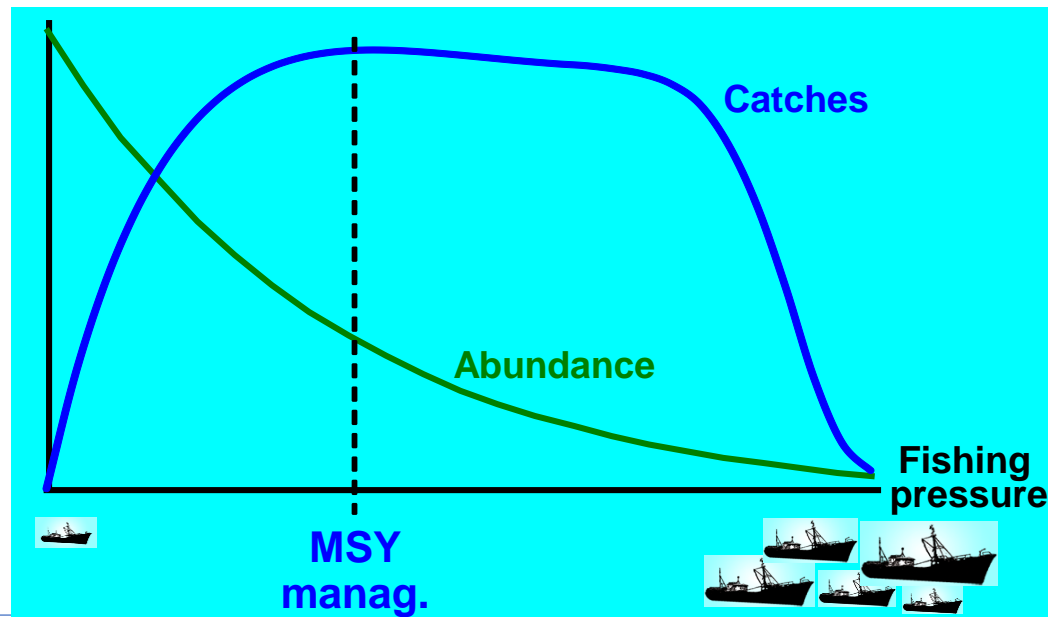
### However :

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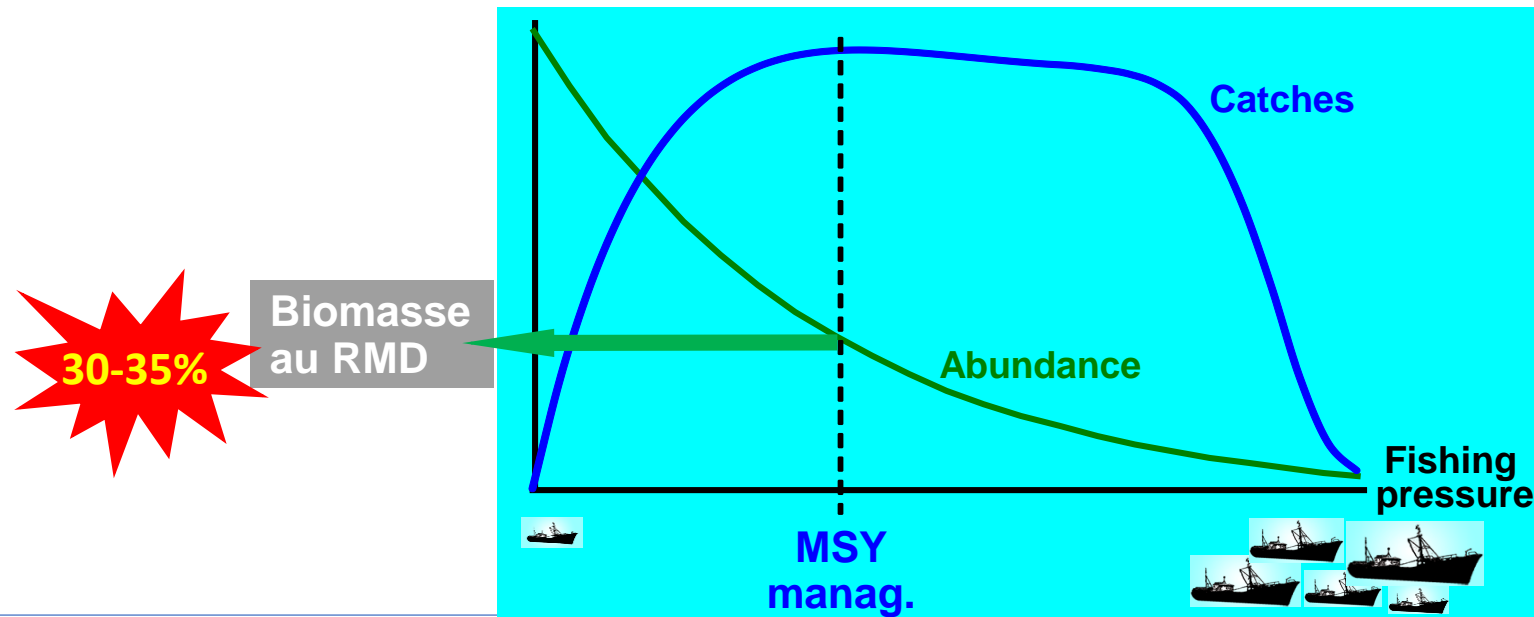
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Not sustainable from the point of view of the ecosystem functioning



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3. Fisheries management also has to consider social and economic aspects
4. A new challenge: the decarbonation of the fisheries sector



## Defining and assessing fleet segments

- ✓ A fishing fleet is defined by:
  - The flag nationality
  - [sometime a province, department or harbor]
  - The type of gear used
  - The vessel length category

## Defining and assessing fleet segments

- ✓ The French case study
  - 13 main gears \* 5 vessel's length classes  
(Fishing effort in kW.Seadays (%))

		VL0012	VL1218	VL1824	VL2440	VL40XX
<b>Passif</b>	D - Autres engins Dormants - PGO	0,5				
	D - Caseyeurs - FPO	5,9	0,2	0,5	0,1	
	D - Combinant engins Dormants - PGP	5,4	0		0,1	
	D - Fileyeurs - DFN	10,8	2,1	1,8	2,2	
	D - Hameçons - HOK	5,4	0,5	0,3	2,7	
<b>Chaluts pelag.</b>	P - Chaluts pélagiques - TM	0,1	0,5	1,2	0,1	1,5
	P - Sennes pélagiques - PS	0,3	0,8	0,1	0,2	15,2
<b>Chaluts demers.</b>	T - Autres engins trainants - MGO	0,7				
	T - Chalut à perche - TBB	0	0			
	T - Sennes et chalut démersaux - DTS	3,3	5,9	11	8,5	4,4
<b>Drague</b>	G - Dragues - DRB	1,3	2,1	0,2	0,1	
	G - Drague et engins trainants - MGP	0,8	1	0,6	0,7	
	G - Drague et engins passifs - PMP	1	0,1			

## Defining and assessing fleet segments

- ✓ The French case study
  - 13 main gears \* 5 vessel's length classes  
(Fishing effort in kW.Seadays (%))

	<b>Artisanal</b> <b>&lt;12 m</b>	<b>Semi-ind.</b> <b>12-24 m</b>	<b>Industriel</b> <b>&gt;24 m</b>
<b>Engins passifs</b>	28,0	5,4	5,1
<b>Chaluts pelagiques</b>	0,4	2,6	17,0
<b>Chaluts demersaux</b>	4,0	16,9	12,9
<b>Dragues</b>	3,1	4,0	0,8

## Assessing the ecological impact of every fishing fleet

- ✓ Defining criteria and indicators (ex. STECF 2012)
  - Sustainability index  $F/F_{msy}$
  - Partial Fishing mortalities
  - Depletion  $B/B_0$  (Food web impact index)
  - Seabed habitat impact index
  - Risk of catch of PET species
  - Fuel efficiency
  - ...

# Assessing the ecological impact of every fishing fleet

## ✓ Defining criteria and indicators

Dimensions	Critères
Gestion de la ressource exploitée	<ul style="list-style-type: none"><li>• Évaluations scientifiques de qualité</li><li>• Populations exploitées en bon état</li><li>• Maillages optimisés – Impact réduit</li></ul>
Impact sur les habitats	<ul style="list-style-type: none"><li>• Pas de pêche dans les habitats sensibles</li><li>• Impact minimum sur les fonds marins</li></ul>
Impact sur la biodiversité	<ul style="list-style-type: none"><li>• Pêche sélective (pas de rejets)</li><li>• Impact non significatif sur les espèces sensibles</li></ul>
Empreinte écologique	<ul style="list-style-type: none"><li>• Empreinte carbone minimale</li><li>• Empreinte pollution et macrodéchets minimale</li><li>• Moyens de production biodégradables ou recyclables</li><li>• Sobriété des moyens de production et des intrants</li></ul>
Bien-être animal	<ul style="list-style-type: none"><li>• Évitement de toute souffrance animale inutile</li></ul>

**Exemple : 32 criteria for a revisited definition of sustainable fisheries**

(Gascuel, 2023 – La pêchécologie)



## Assessing the economic and social performances of every fishing fleet

- ✓ Economic and social performances (STECF 2012, from AER, 2011)
  - Income
  - Gross Value Added
  - Profits / losses
  - Subsidies
  - Employment
  - Wage
  - ...

# Assessing the economic and social performances of every fishing fleet

✓ Economic and social performances

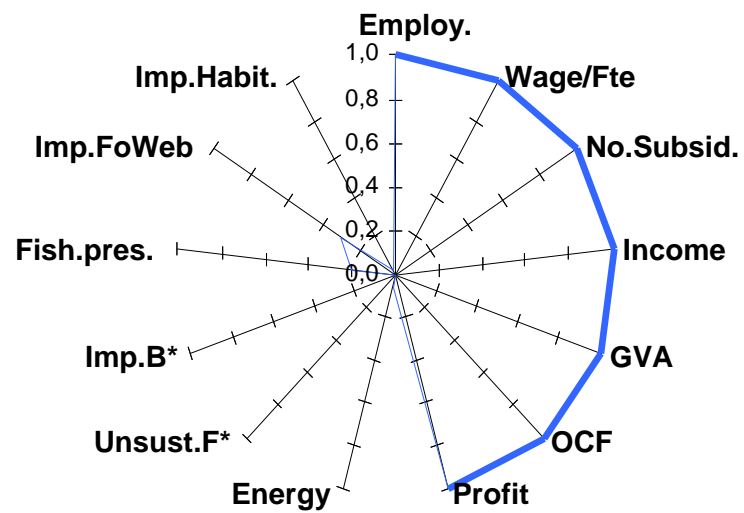
Exemple : 32 criteria for a revisited definition of sustainable fisheries  
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	Dimens.	Critères
<b>Economie</b>	<b>Rentabilité économique</b>	<ul style="list-style-type: none"> <li>• Viabilité économique des entreprises de pêche</li> <li>• Dettes limitées et absence de subventions d'exploitation</li> <li>• Partage de la rente économique au plus grand nombre</li> </ul>
	<b>Environnement économique</b>	<ul style="list-style-type: none"> <li>• Diversification des captures et circuits commerciaux</li> <li>• Valorisation des produits et circuits courts</li> <li>• Développement d'une approche d'économie circulaire</li> </ul>
<b>Social</b>	<b>Emploi</b>	<ul style="list-style-type: none"> <li>• Création de nombreux emplois directs et indirects</li> <li>• Salaires, justice et droits sociaux, égalité des genres</li> <li>• Formation et accès à l'information pour tous</li> <li>• Sécurité</li> </ul>
	<b>Lien au territoire</b>	<ul style="list-style-type: none"> <li>• Contribution à l'aménagement économique du territoire</li> <li>• Contribution à la vie sociale et culturelle locale</li> </ul>
	<b>Lien à la société</b>	<ul style="list-style-type: none"> <li>• Produits de haute valeur sanitaire et gustative</li> <li>• Image du secteur, pesca-tourisme...</li> <li>• Dialogue avec le monde associatif ou culturel, les ONG...</li> <li>• Attractivité du métier</li> </ul>
	<b>Gouvernance</b>	<ul style="list-style-type: none"> <li>• Processus de co-construction et/ou participatif</li> <li>• Respect des avis scientifiques</li> <li>• Respects d'une réglementation comprise par les acteurs</li> <li>• Minimisation des conflits d'usage</li> </ul>

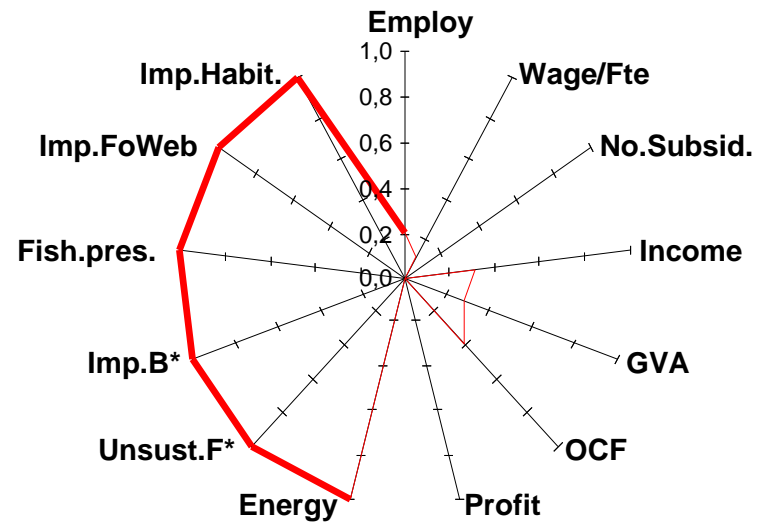


## Identify contrast between fleet segments

✓ Theoretical approach (STECF 2012)



— Low ecological impacts, high economic performances

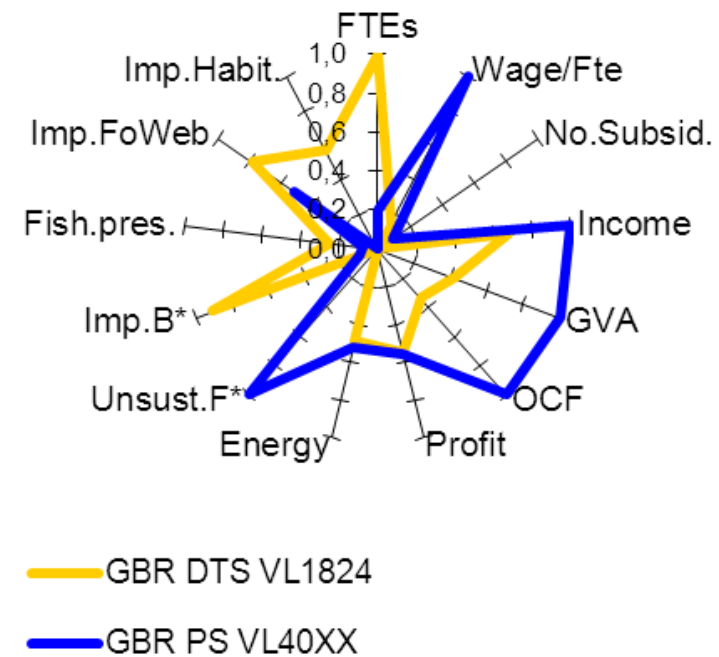
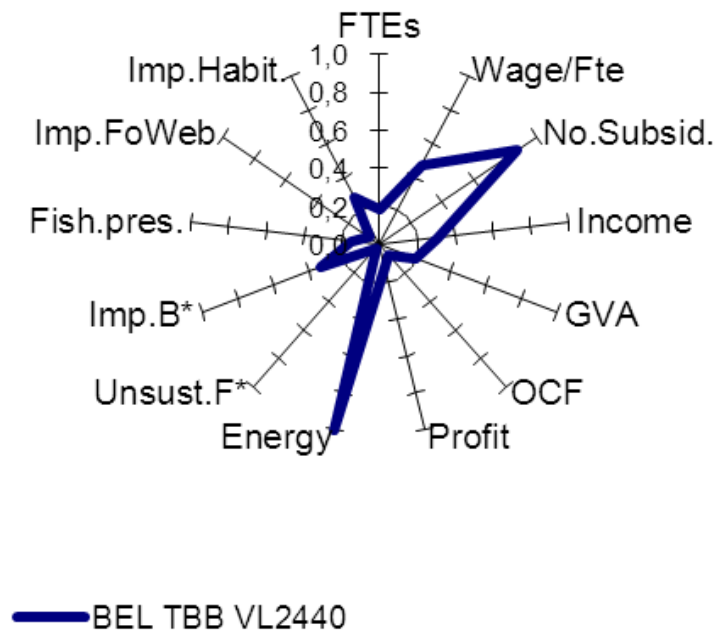


— High ecological impacts, poor economic performances

## Identify contrast between fleet segments

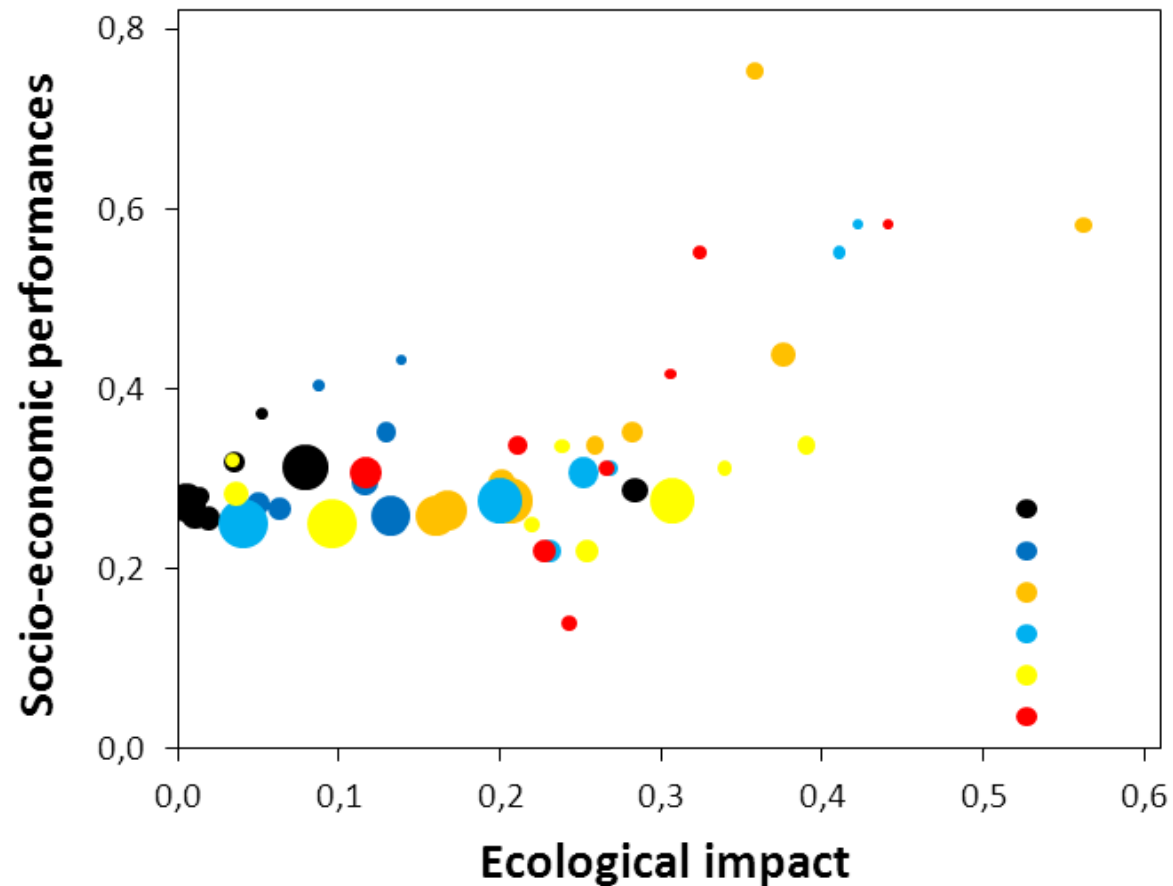
### ✓ Practical approach (STECF 2012)

#### ➤ Example in the North Sea



## Identify contrast between fleet segments

✓ Practical approach (STECF 2012)





## Identify contrast between fleet segments

- ✓ Transpech program (in prep)
  - Sustainability index F/F<sub>msy</sub>
  - Depletion B/B<sub>0</sub>
  - Seabed habitat impact index
  - Risk of catch of PET species
  - Fuel efficiency (CO<sub>2</sub> emissions)
  - Employment

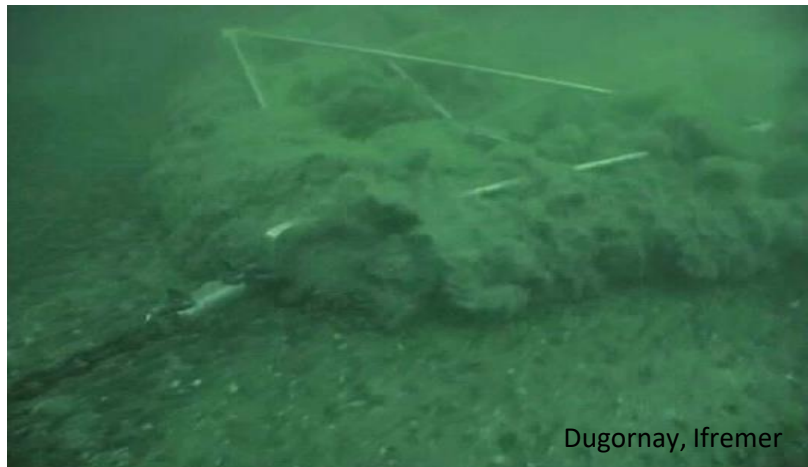


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  - Sustainability index F/Fmsy
  - Depletion B/Bo
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  - Risk of catch of PET species
  - Fuel efficiency (CO2 emissions)
  - Employment
  
- ✓ Building scenarios to maintain employment and catches, while decreasing ecosystem impacts and CO2 emissions

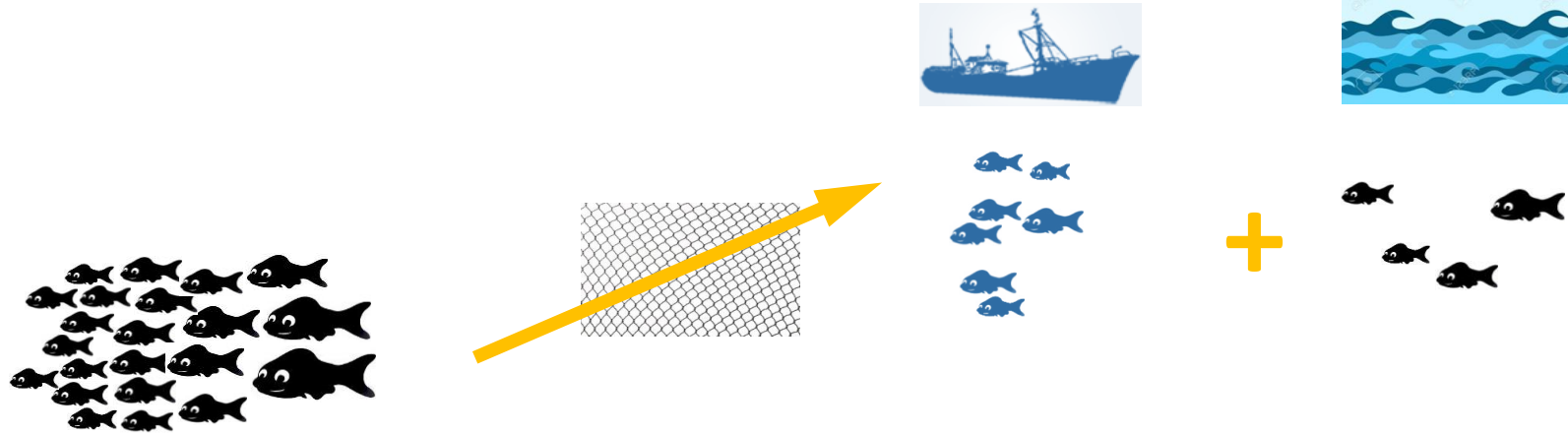
## Two key aspects for an EAFM

- ✓ Promote low impact fishing gears (i.e. passive gear)



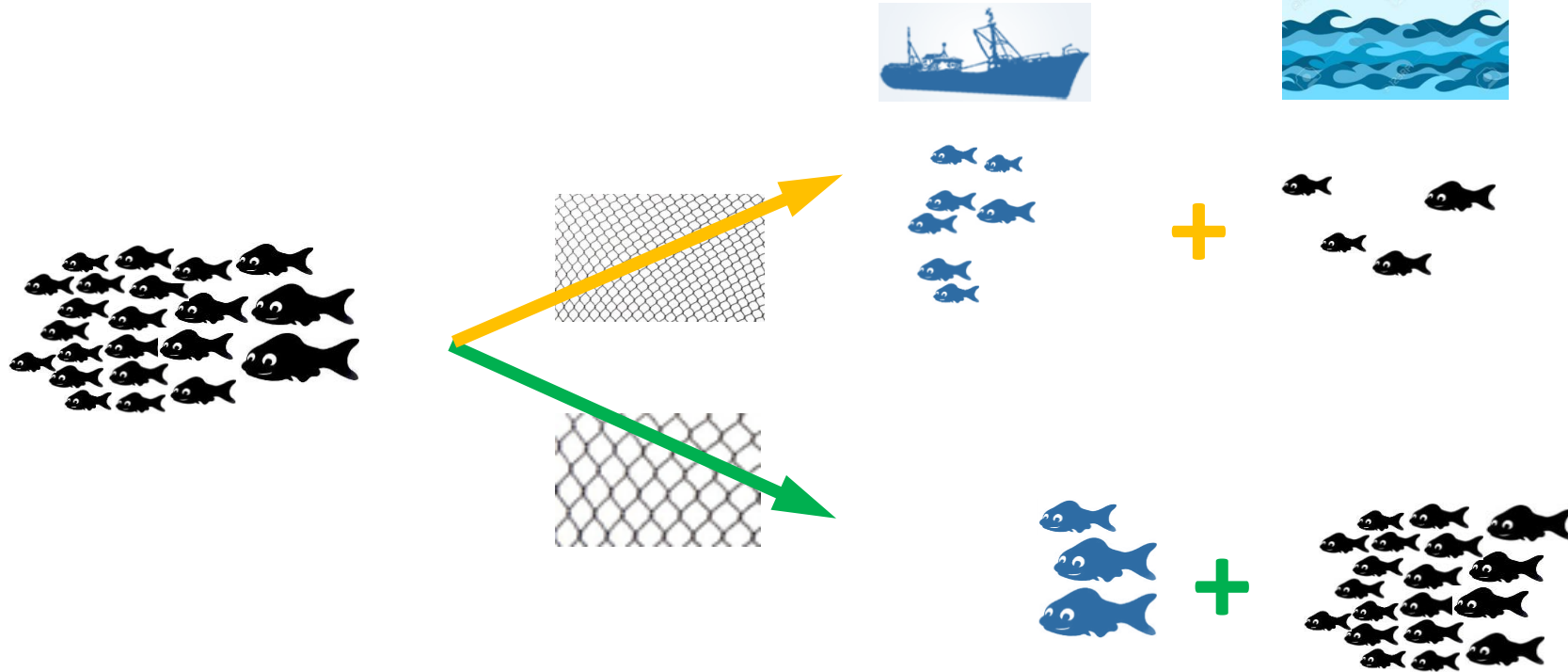
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- ✓ Promote large mesh size (to reduce impacts on exploited species)



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## Take home messages

- ✓ We have to add a fleet-based management to the stock-based one
  - Defining which fleet segments would have to be reduced and which ones could be developed (according to their ecological and economic performances... and CO2 emissions)
  - Building long-term ecosystem management plans including fleet-based access rights and effort regulation
  - Introducing positive or negative economic incentives in order to encourage fleets to improve their fishing practices



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  - Defining which fleet segments would have to be reduced and which ones could be developed (according to their ecological and economic performances... and CO2 emissions)
  - Building long-term ecosystem management plans including fleet-based access rights and effort regulation
  - Introducing positive or negative economic incentives in order to encourage fleets to improve their fishing practices
  
- ✓ Fleet-based management is the pathway to implement an efficient EAFM ...
  
- ✓ ...and to take into account not only ecological sustainability, but also economic profitability and social fairness



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# Thank you

# Merci

## ■ Vers de nouvelles normes de gestion ?

- En augmentant les mailles, on peut pêcher plus, en impactant moins

Des captures identiques, pour un effort divisé par deux, et des biomasses résiduelles multipliées par deux  
(Outrequin et al., in prep.)

