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BENTHIS

SEVENTH FRAMEWORK PROGRAMME

Management innovations:
A Fisheries Credit System
using Seafloor Integrity Quota
to support Smart fishing practices

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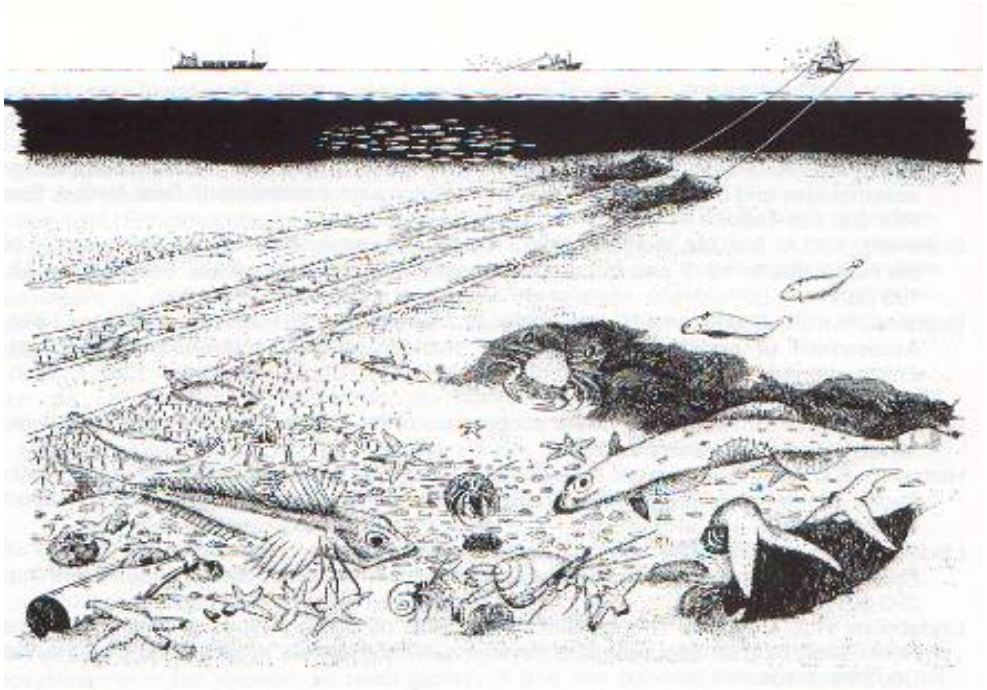
MSFD

- “**Seafloor integrity** is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected”.
- In order to achieve “**Good Environmental Status**” (GES), two criteria need to be considered in relation to “physical disturbance”:

  - D6C2: Spatial extent and distribution of physical disturbance pressures on the seabed. ”
  - D6C3: Spatial extent of each habitat type which is adversely affected

P → I S



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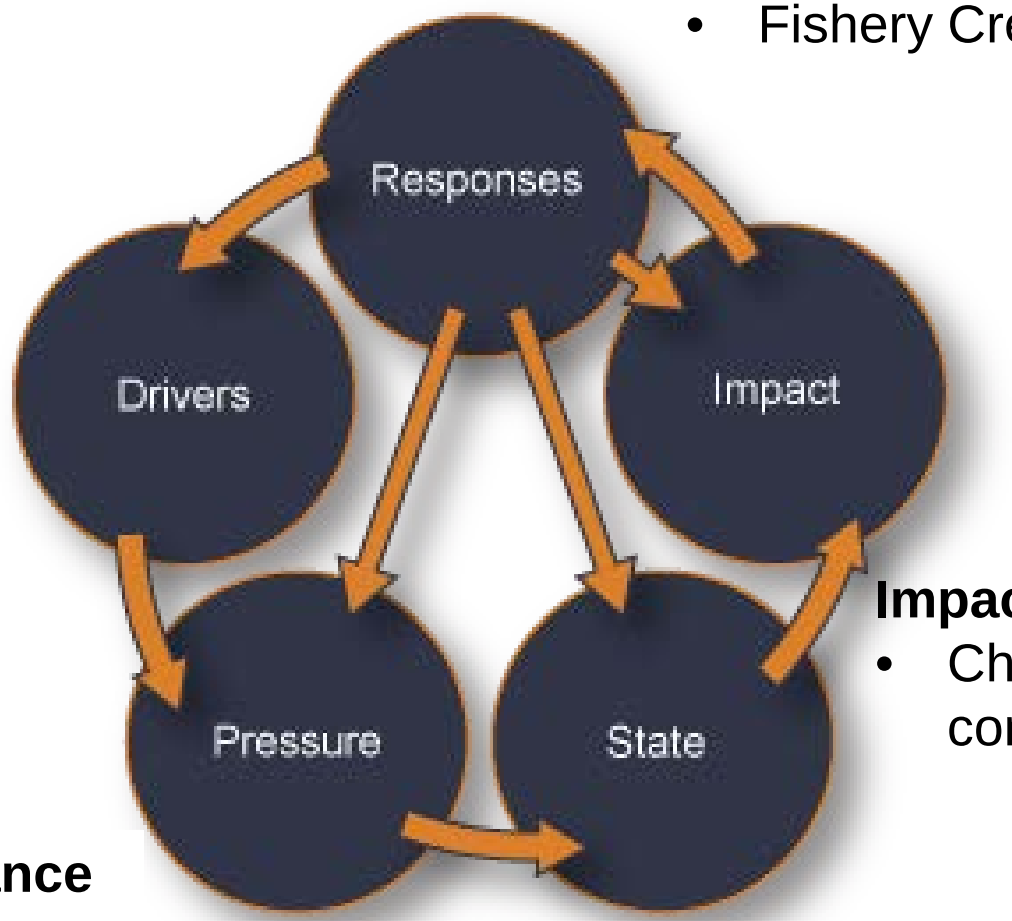
DPSIR

Response: Management

- Fishery Credit System

Fishing



Impact of the seafloor

- Change in benthic community

Physical disturbance to the seafloor

- Footprint of the gear
- Distribution and intensity of fishing activities

State of the seafloor

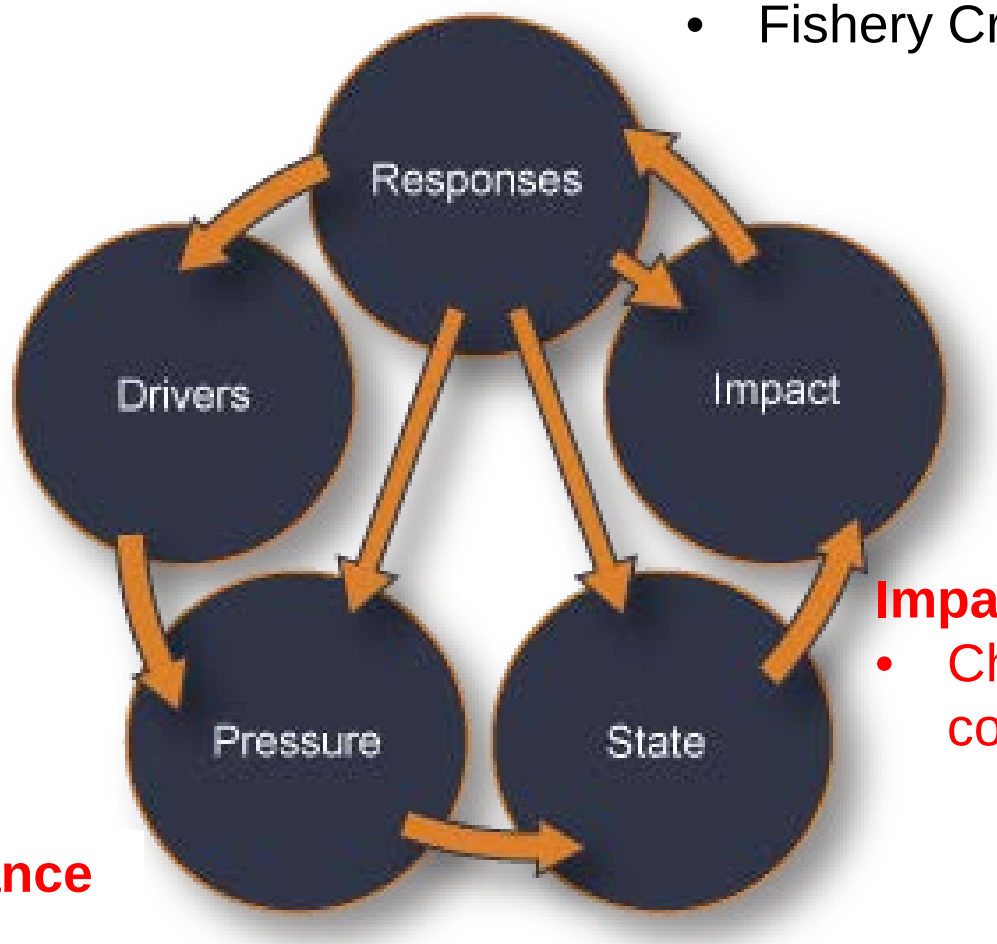
- Habitats and their distribution
- Benthic community and its sensitivity

DPSIR

Response: Management

- Fishery Credit System

Fishing



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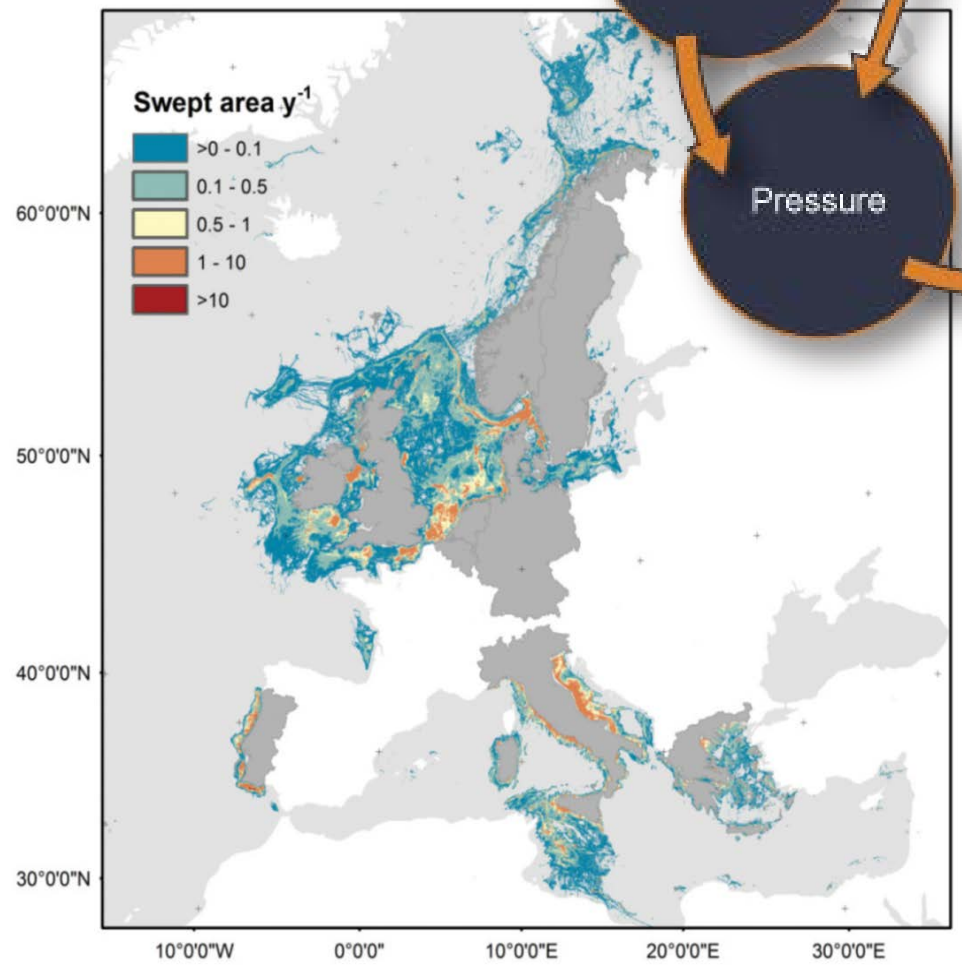
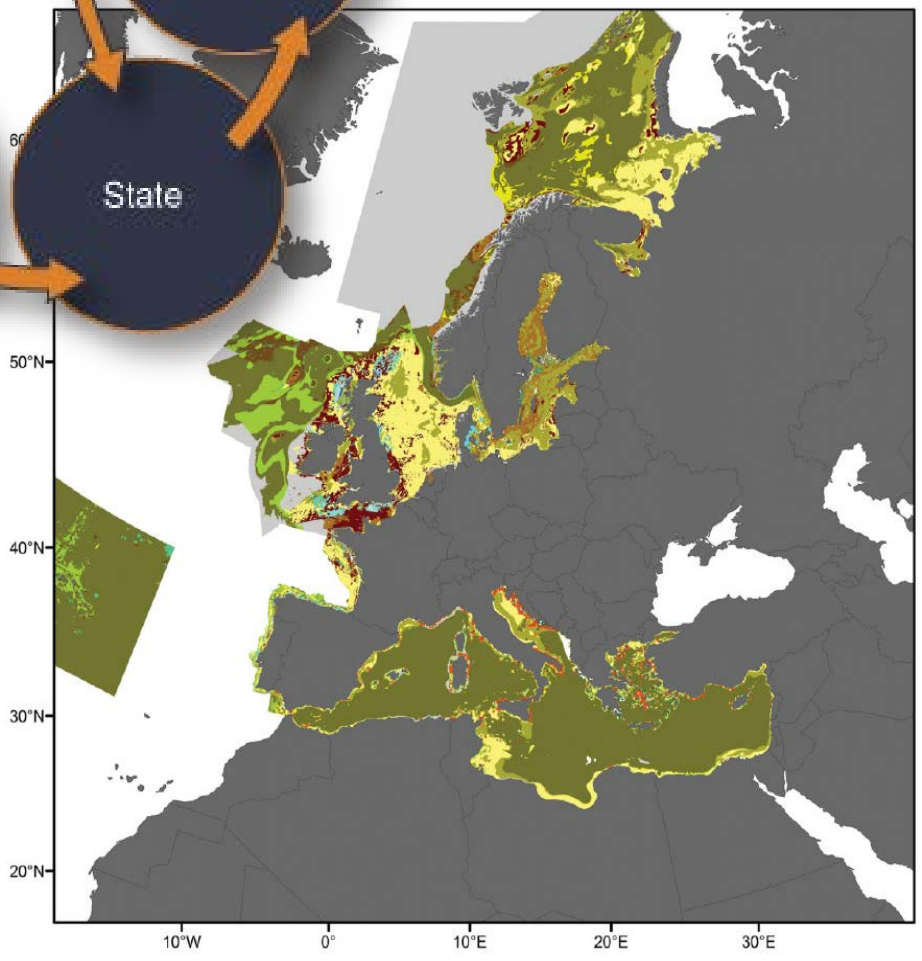
Fishing Impact and Seafloor Integrity

Pressure

State

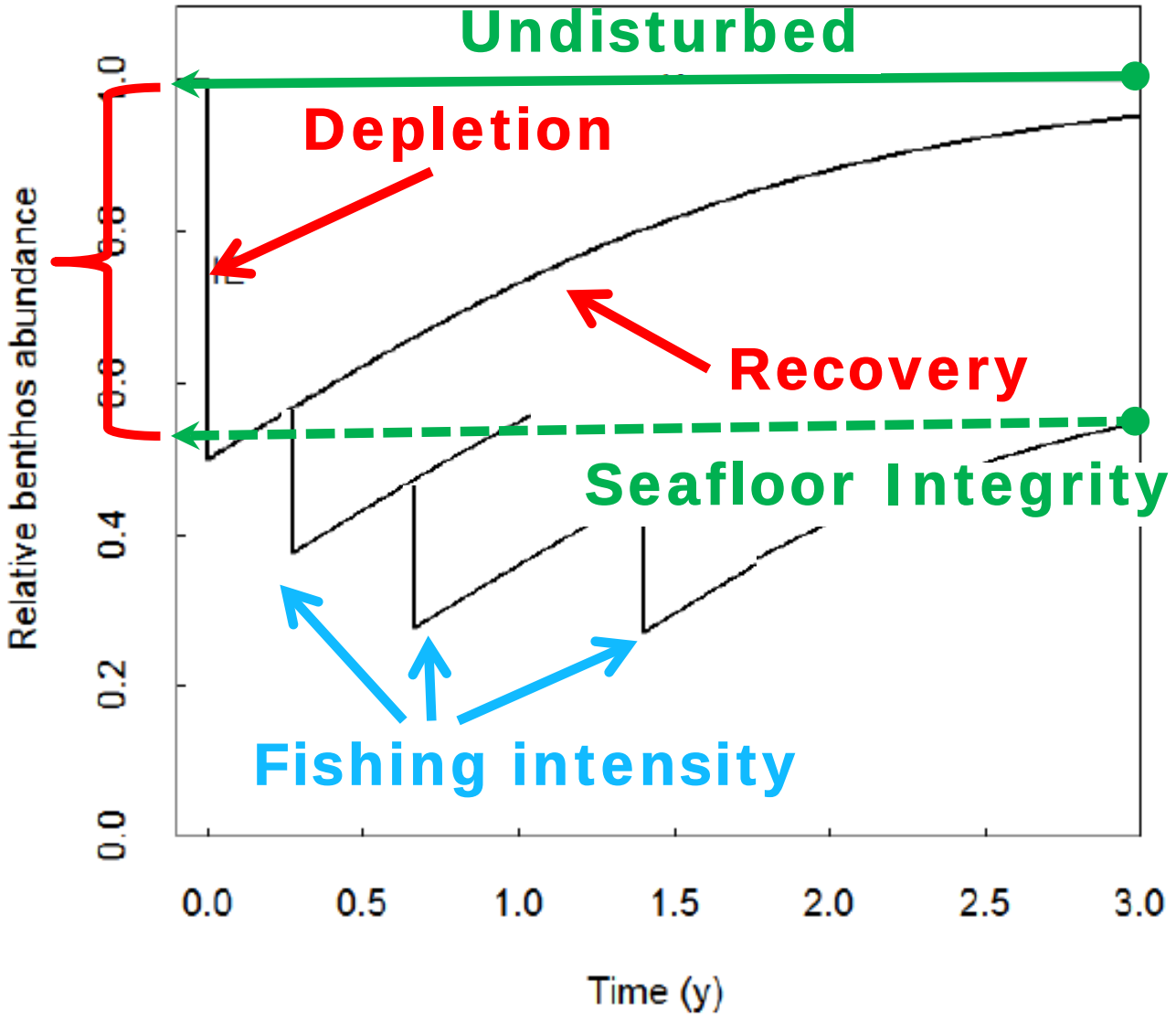




Seafloor integrity and fishing impact

Meta-Analysis:
Impact

Systematic review of the literature of trawling impact studies:
Before / After, Control / Impact
Provides status of the seafloor relative to undisturbed



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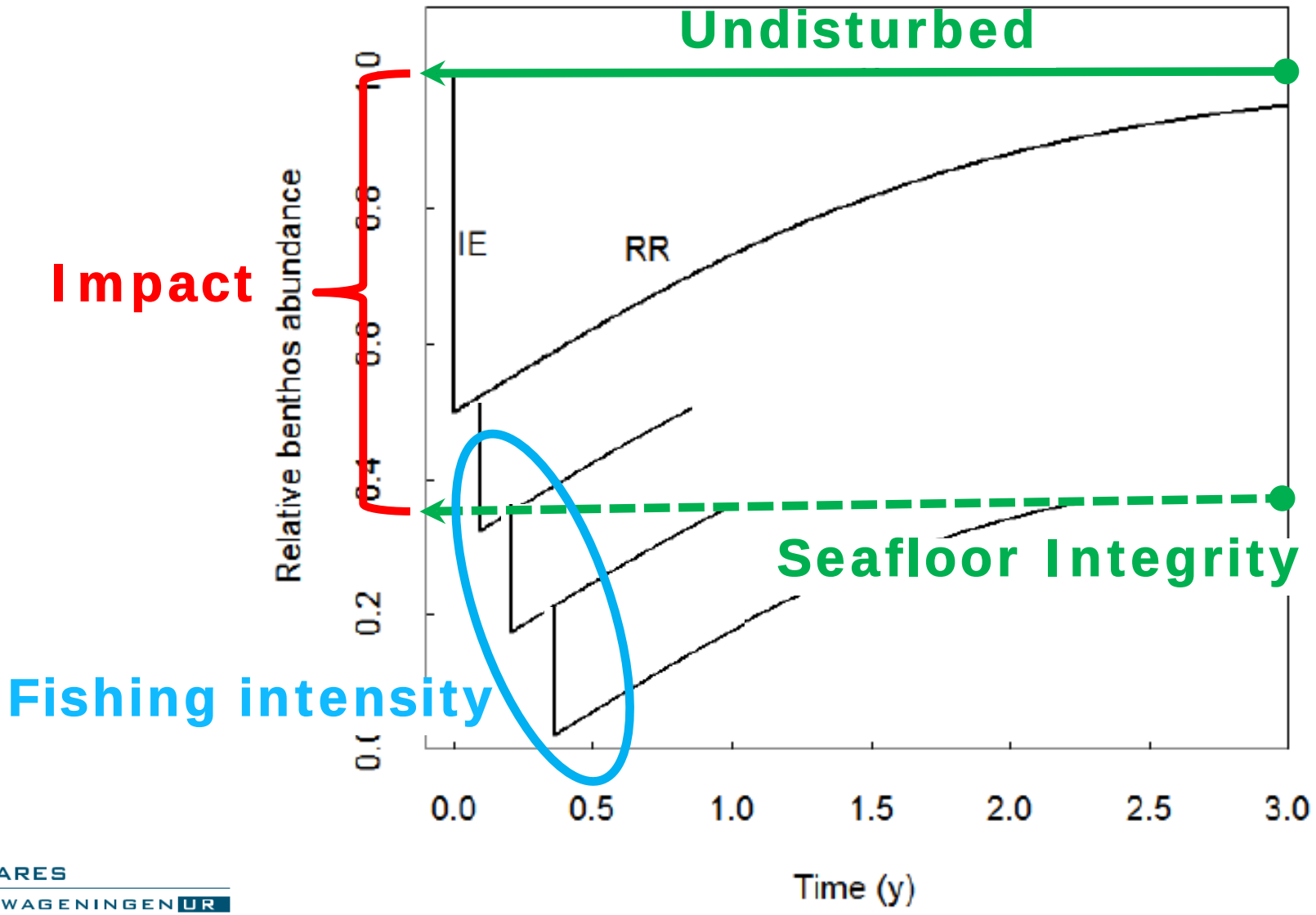
Seafloor integrity and fishing impact



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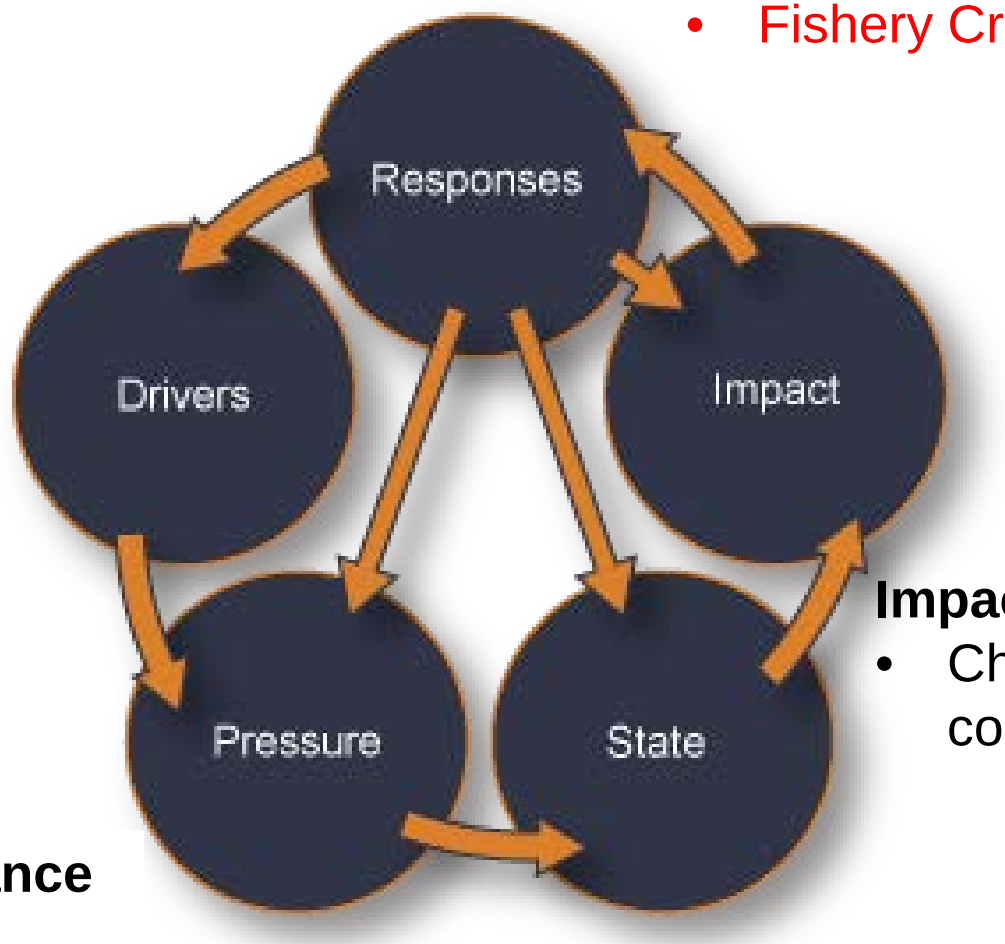

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Management (innovations)

- MPAs
  - VMEs
  - N2000
- Technical measures
  - Beam → Pulse trawl
- Fisheries Credit System

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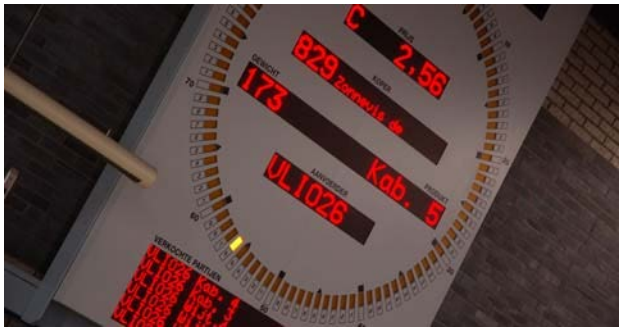
Fishery Credit Systems (FCS)
Incentivizing change in fishers behaviour

Fishers behaviour:
What determines where to go fishing?

Catch



Revenue

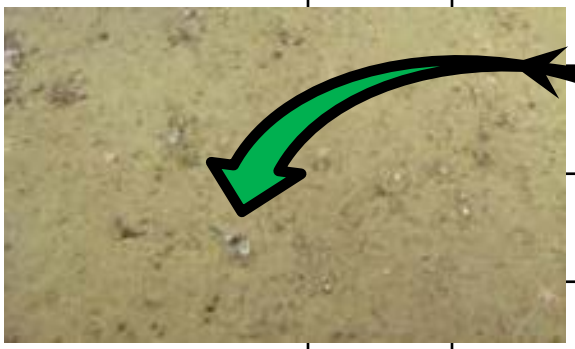
Efficiency

=

Catch or Revenue relative to Pressure or Impact

Seafloor Disturbance

Seafloor Integrity Quota



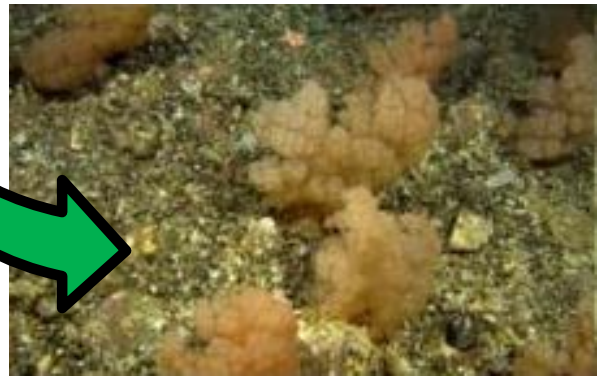
40

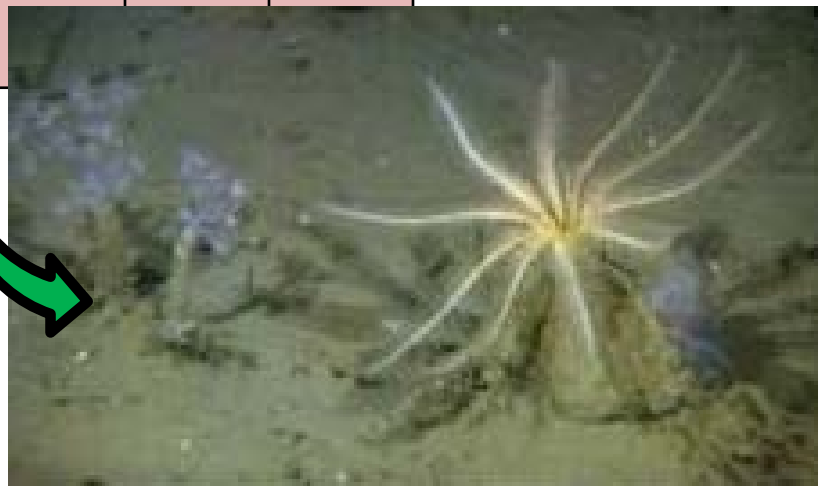
80

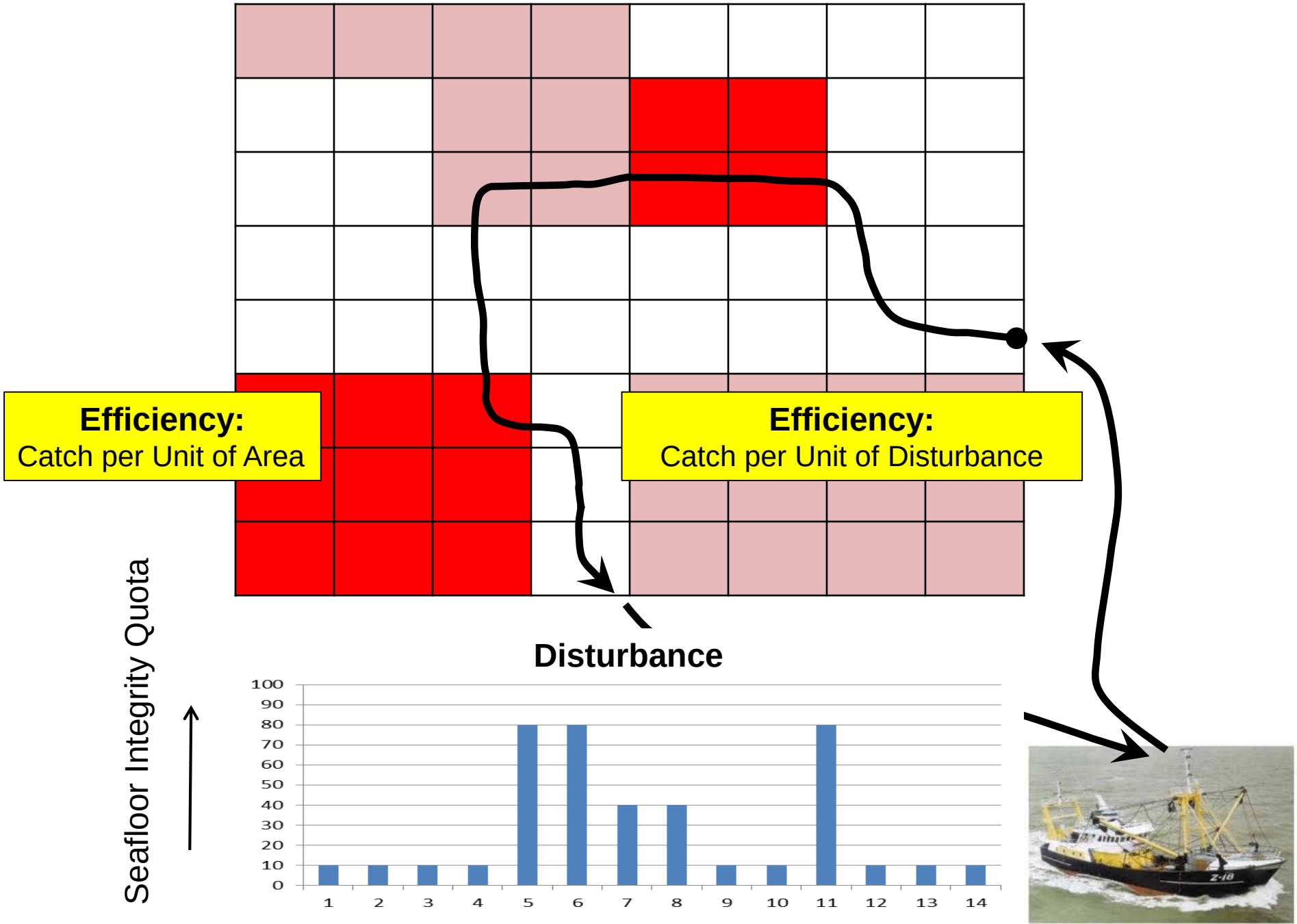
10

80

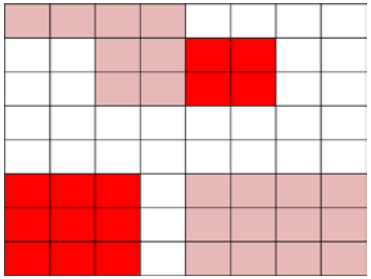
40

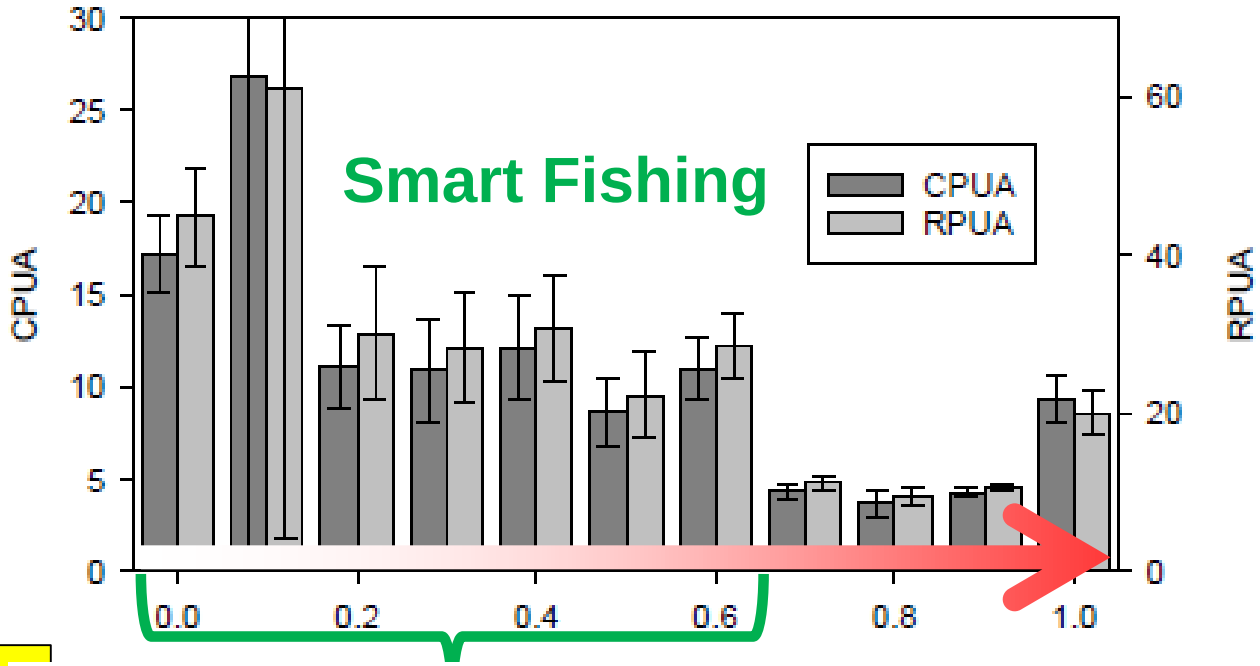





Efficiency:
Catch per Unit of Area
Efficiency:
Catch per Unit of Disturbance
Disturbance
Seafloor Integrity Quota
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14

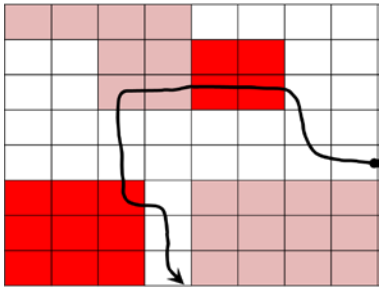
Efficiency:
Catch/Pressure
=
Catch per Unit of Area

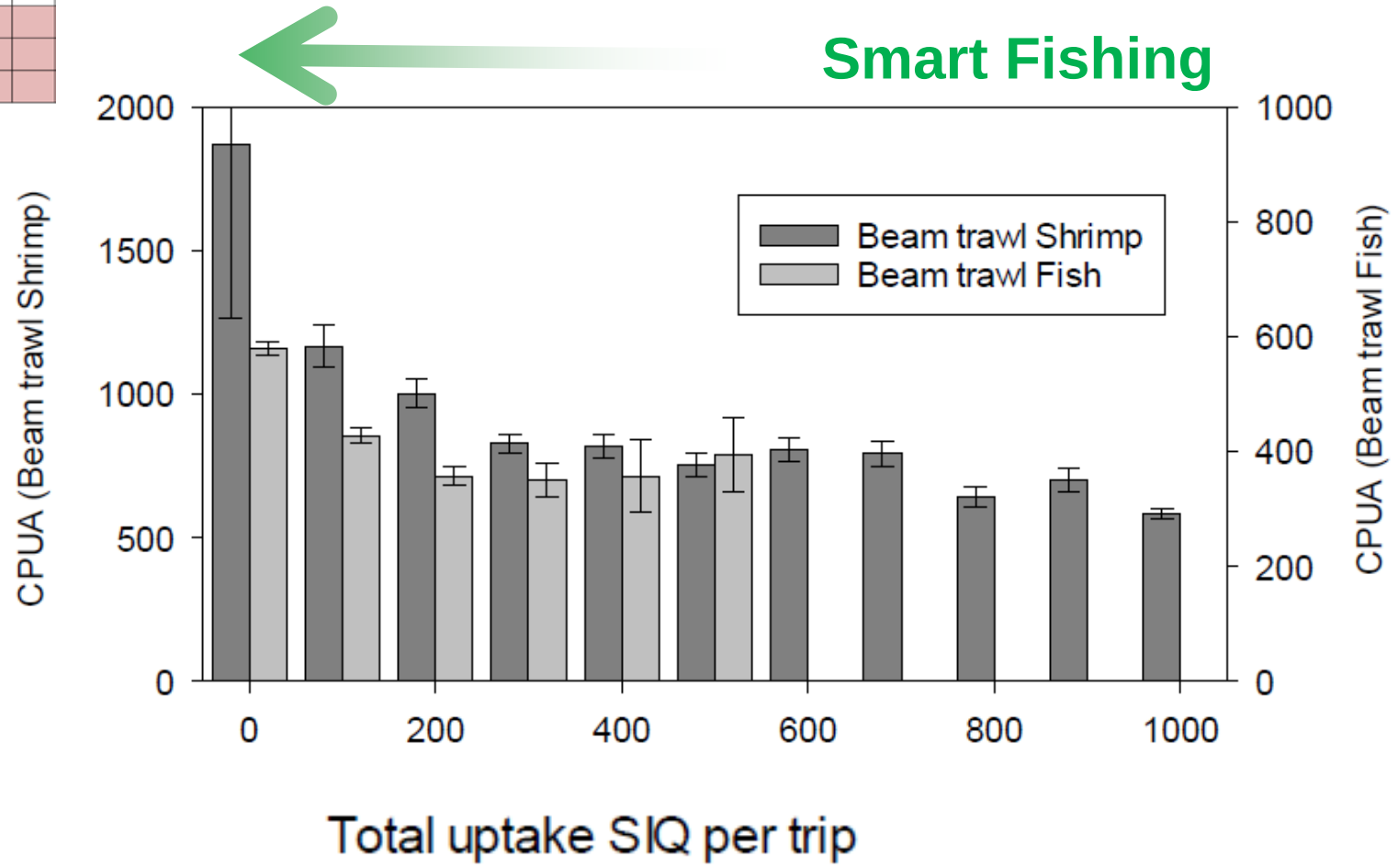




Efficiency:
Catch/Impact
=
Catch per Unit of Disturbance

Efficiency (Catch per Unit of Area) per trip





Summary/Conclusions

- BENTHIS methodology to assess State (=seafloor integrity) and Pressure (= swept area) also allows an estimate of Impact due to physical disturbance (=uptake of Seafloor Integrity Quota SIQ)
  - Fishing Pressure = area disturbed
  - Fishing Impact = area disturbed * recovery time
- Efficiency is a measure of performance of a fishing fleet or vessel in terms of seafloor conservation and can be expressed as:
  - Catch per Unit of Area (CPUA)
  - Catch per Unit of Disturbance (CPUD)
- Efficiency is highest in areas where seafloor integrity is low and hence SIQ uptake is low. Application of a Fisheries Credit System (FCS) should therefore result in an increased efficiency of the fishing fleet (= less disturbance for the same catch).

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Instituut voor Landbouw- en Visserijonderzoek

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HAVFORSKNINGSINSTITUTTET

PRIFYSGOL BANGOR UNIVERSITY

Marine Institute
Foras na Mara

DTU

Ifremer

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