Overfishing and the replacement of demersal finfish by shellfish: an example from the English Channel

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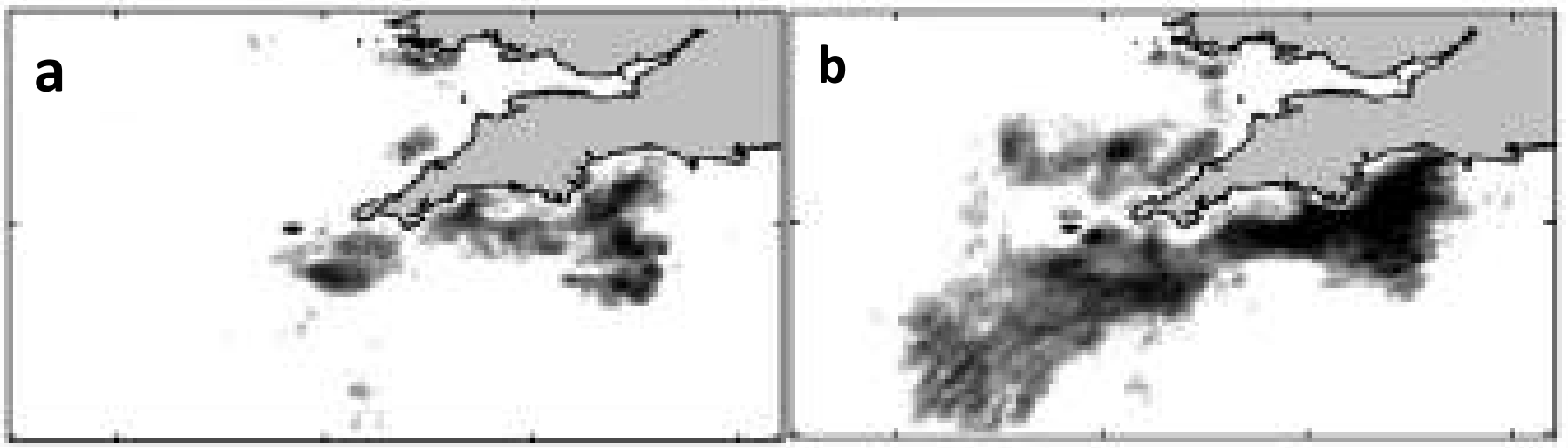
Scallop dredges and trawls alter the seabed; scallops are resilient but many long-lived organisms (e.g. maerl) are not

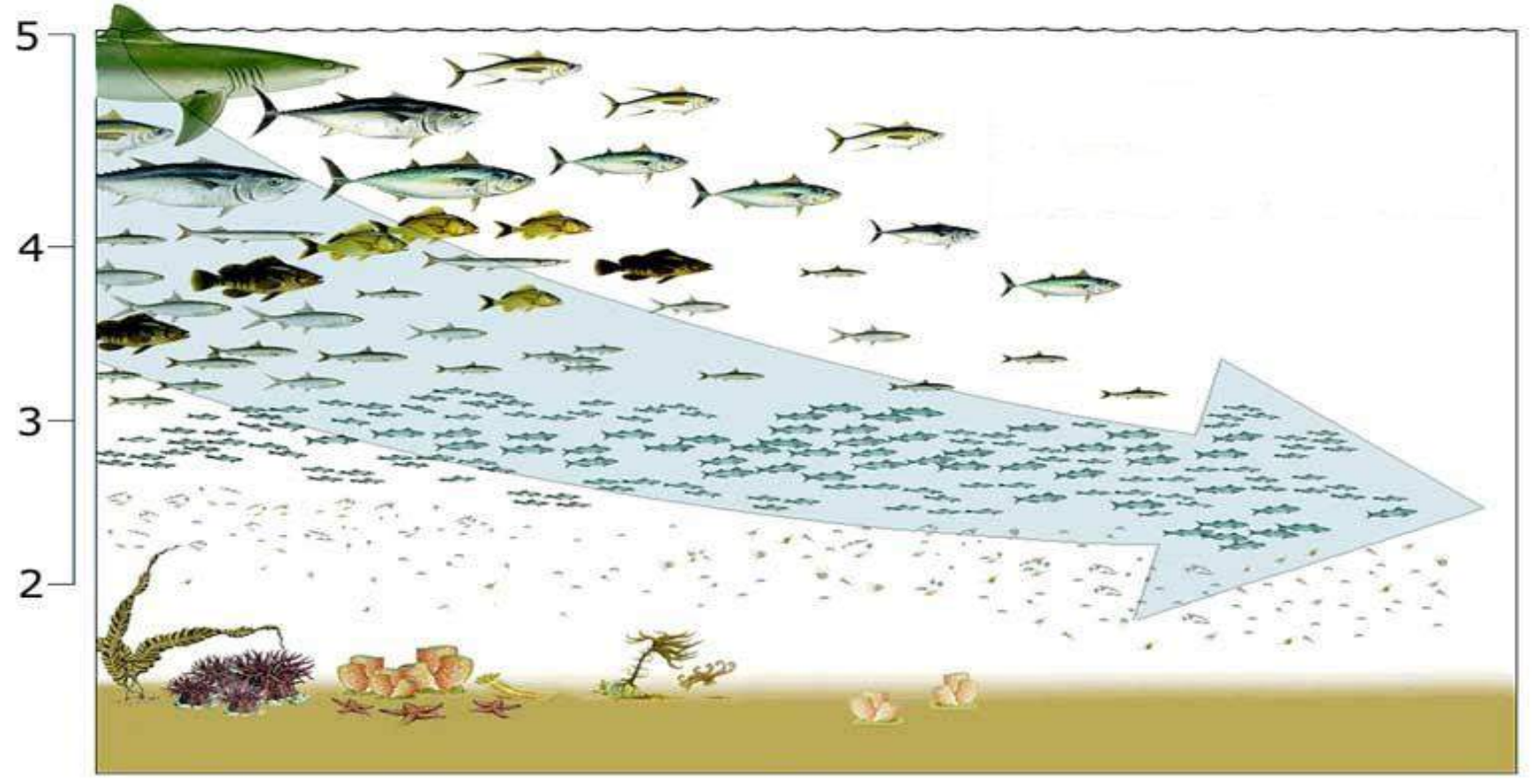
Satellite data show the large area affected by modern heavy gear types in the English Channel



Footprint of a) UK scallop dredgers and b) beam trawlers >15 m length (Campbell et al. 2014 *Marine Policy*)

Pauly et al. (1998): Fishing Down Marine Food Webs

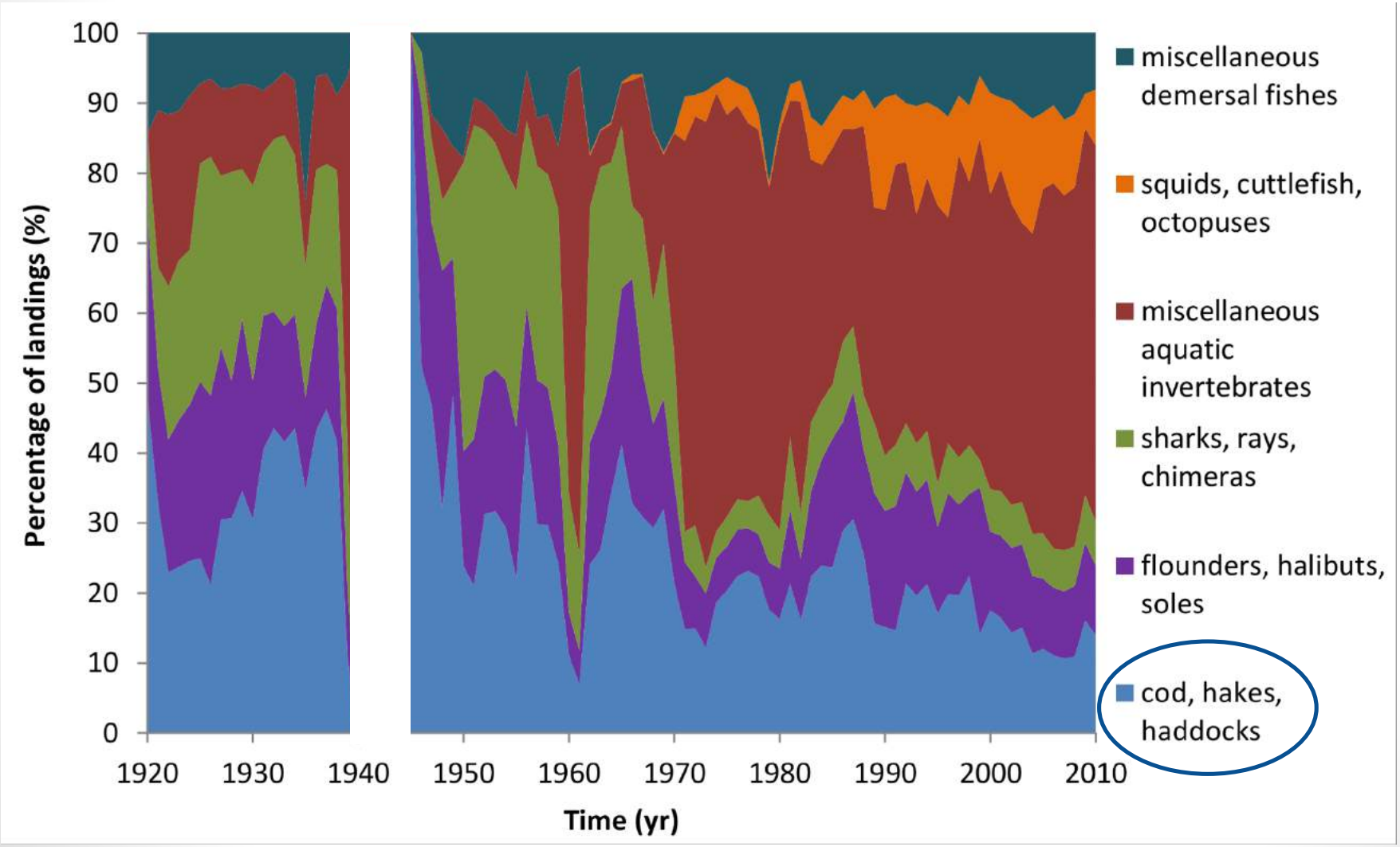
- mean Trophic Level of global fisheries landings declining
- NW Atlantic cod → shrimps, crabs, lobsters
- Firth of Clyde finfish → *Nephrops* and scallops



Current study

- 90-year English Channel landings dataset
- Is there a ‘Fishing down’ trend in the English Channel?
- Have there been major changes in species landed?

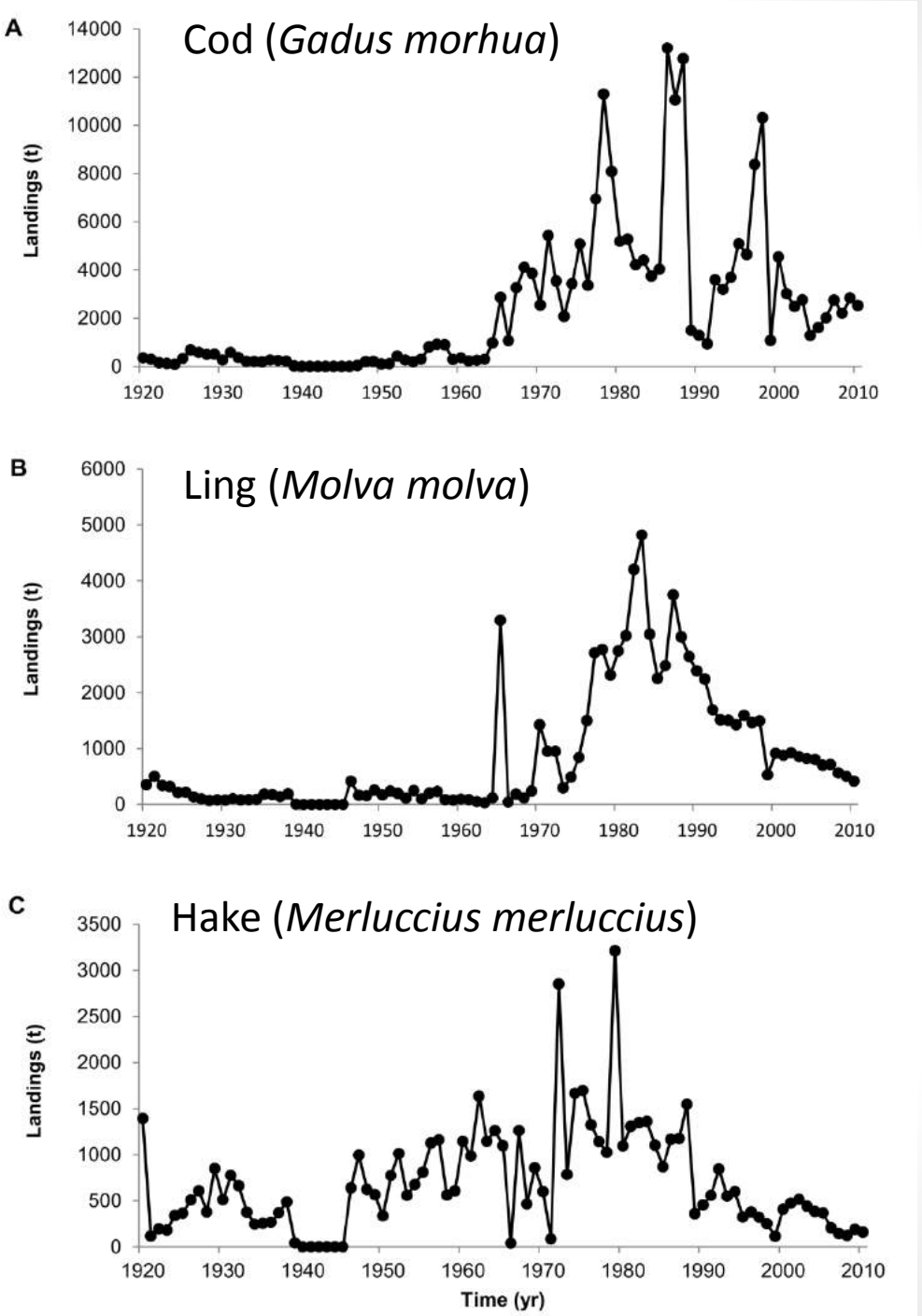
Catch composition



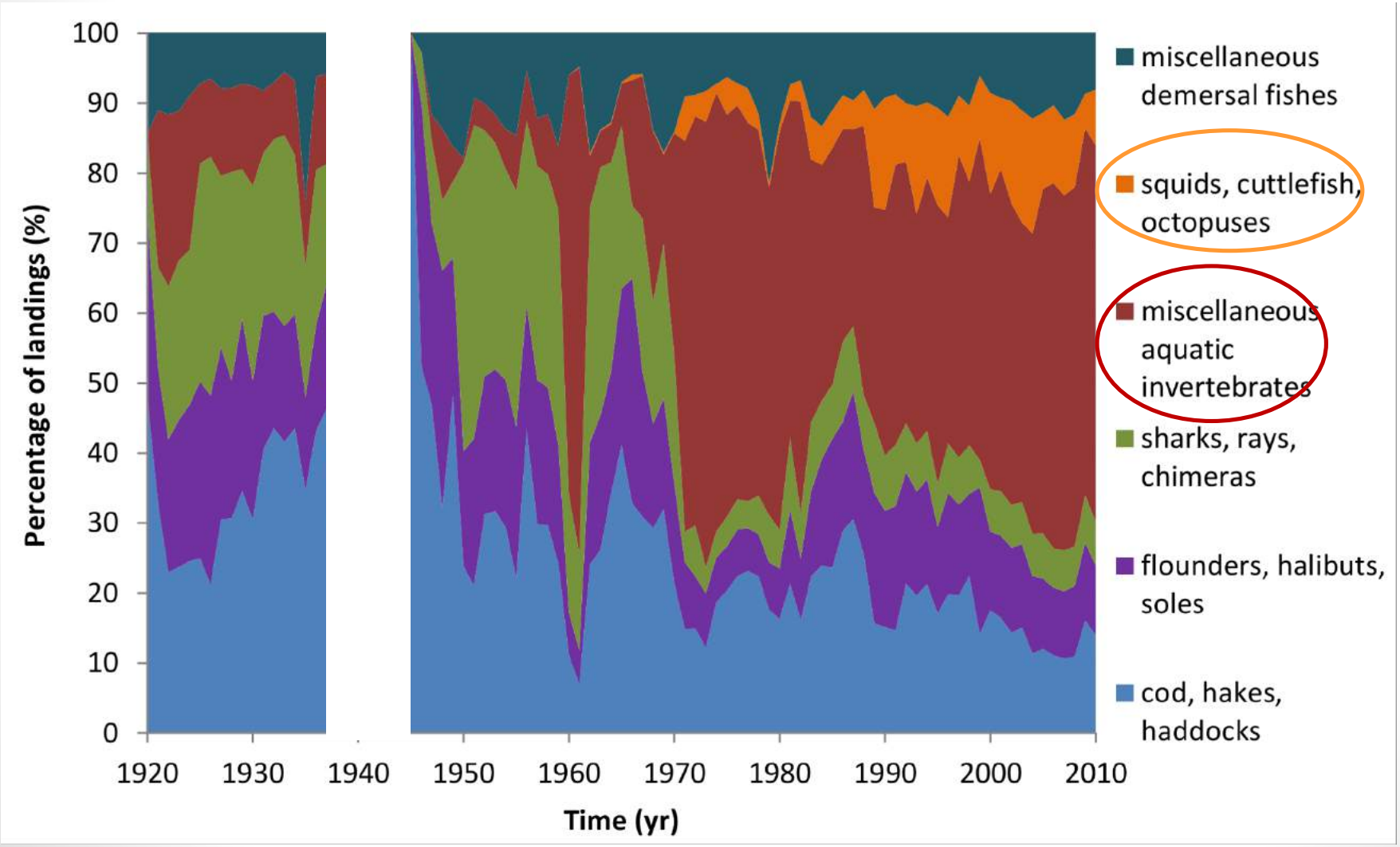
Gadoids

Landings now low

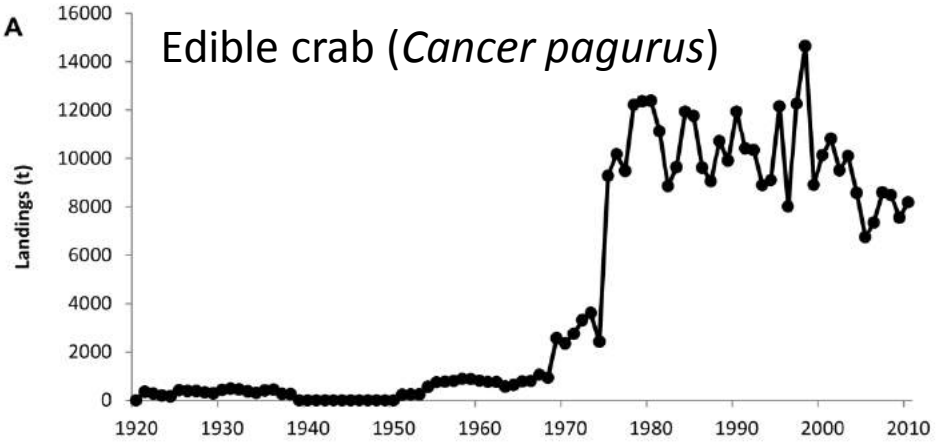
We import them to meet demand

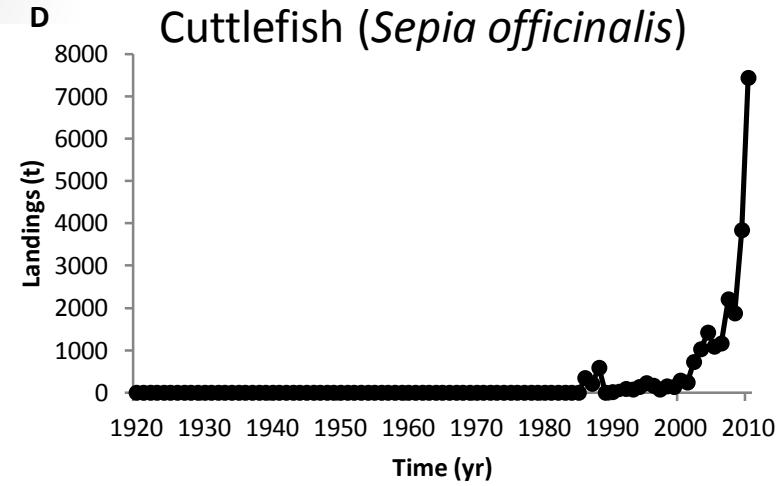


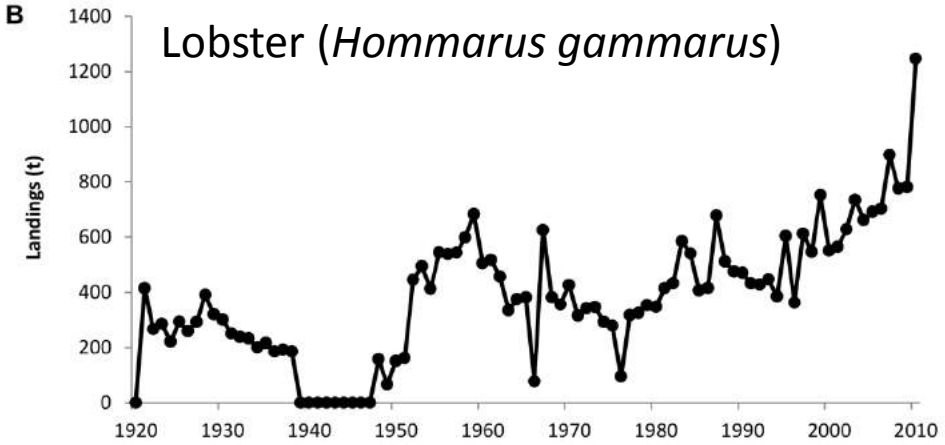
Catch composition

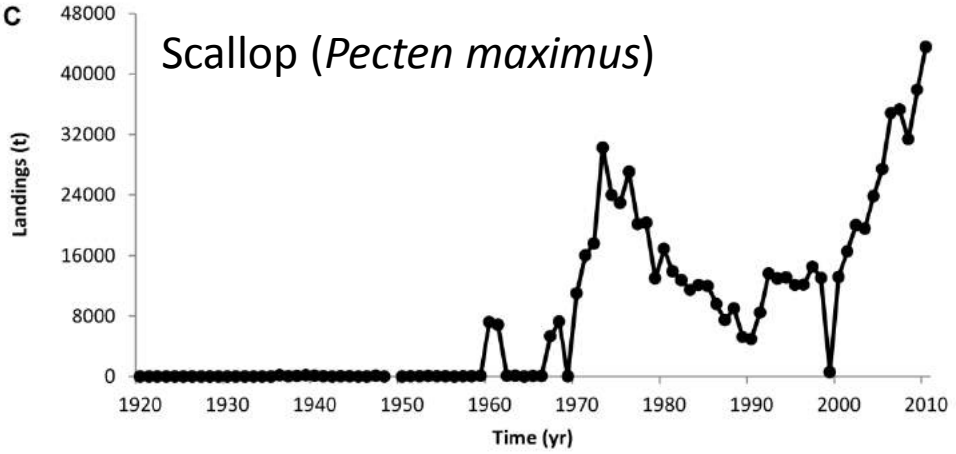


Invertebrates

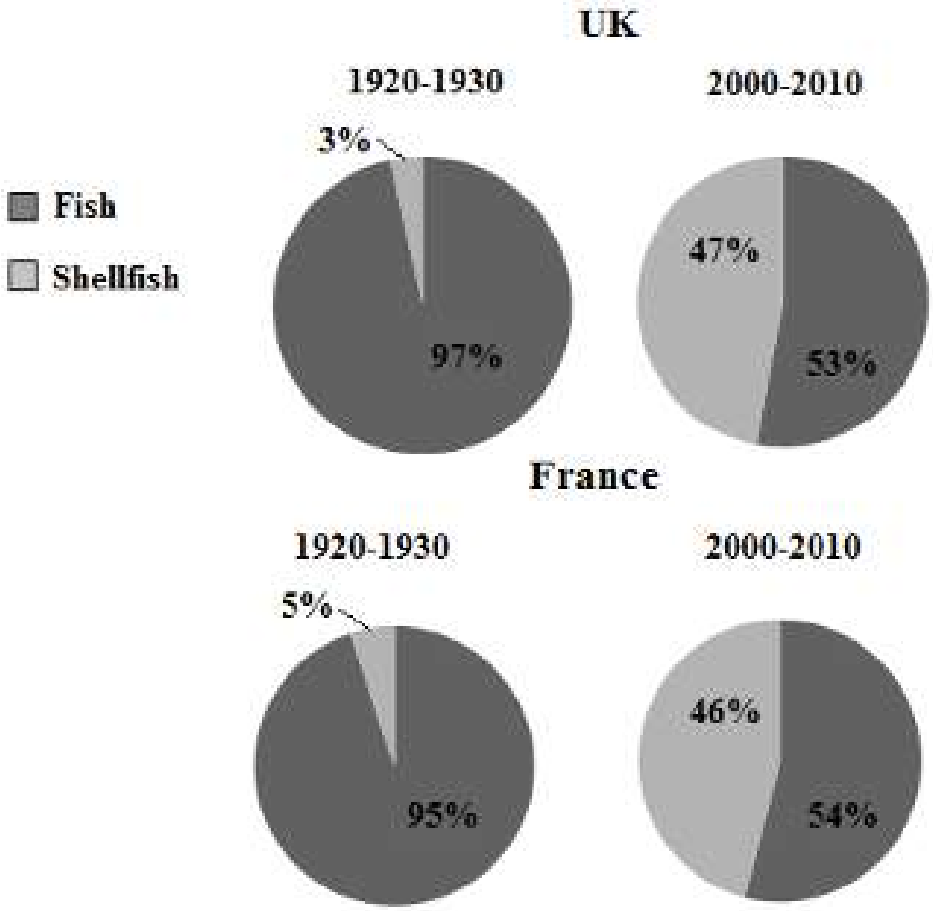




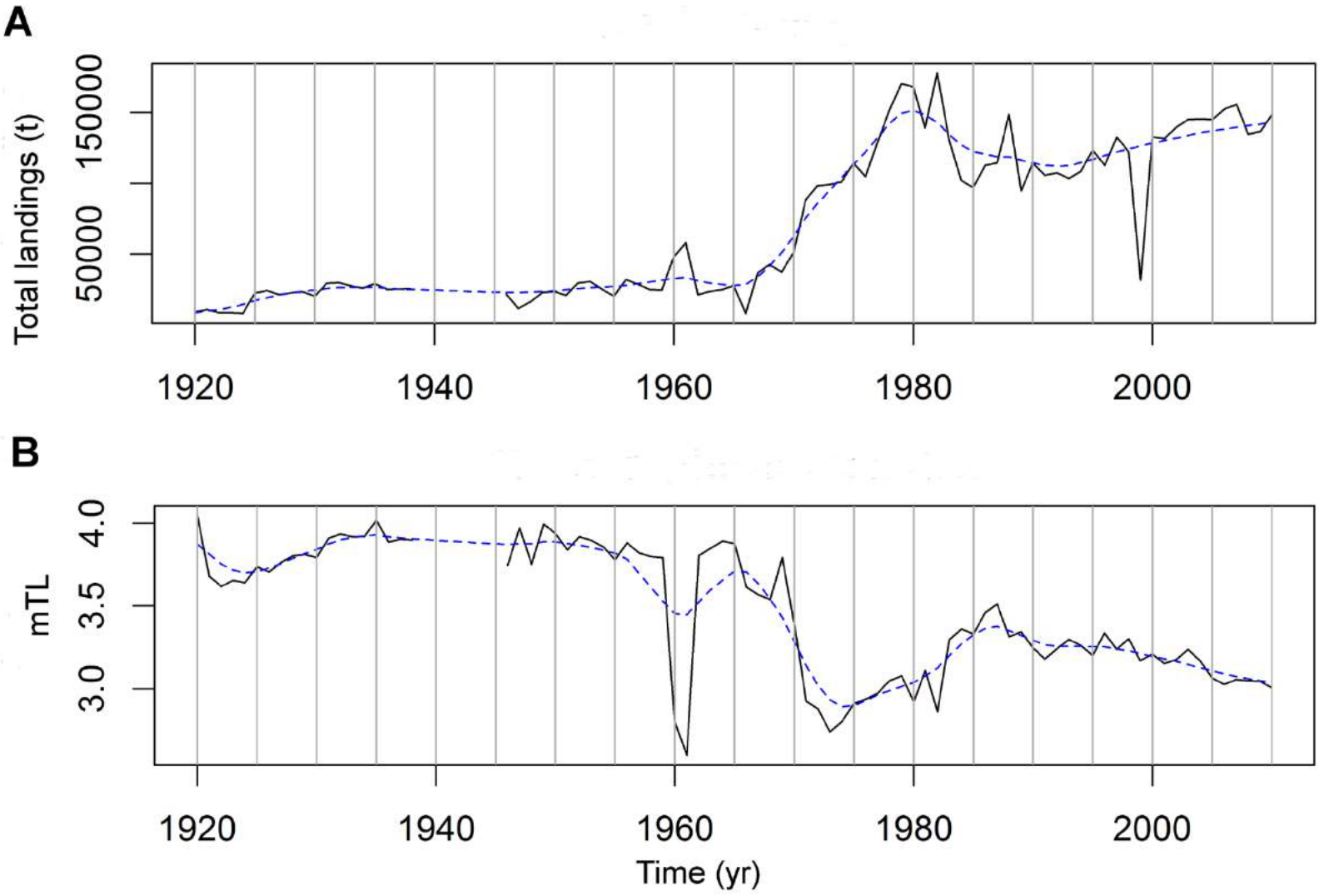




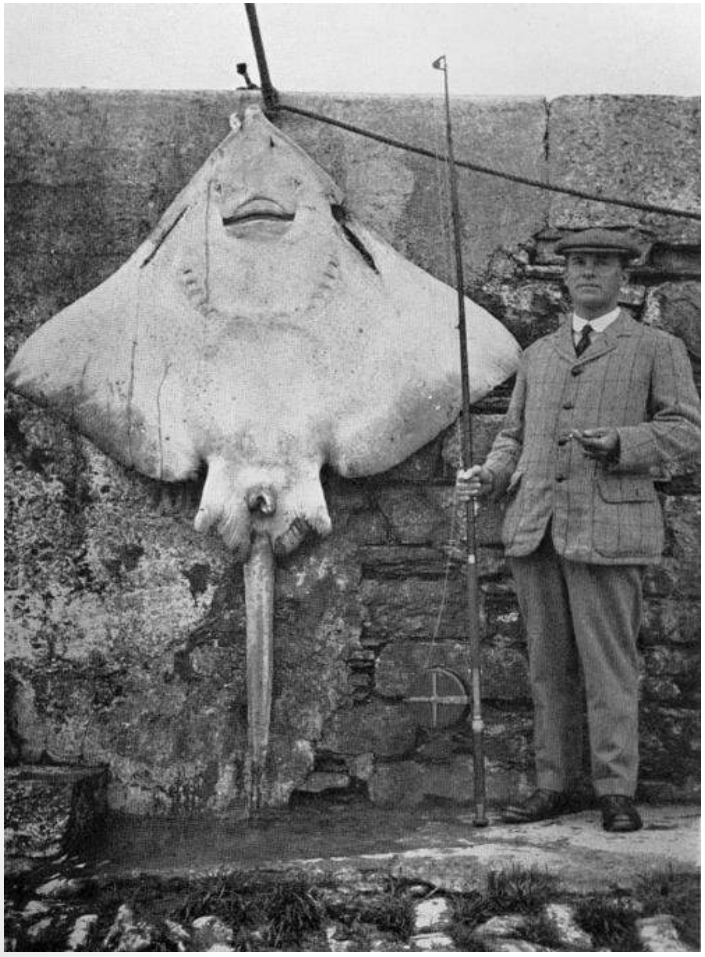
Shellfish (e.g. scallops) now more prevalent in Channel landings.



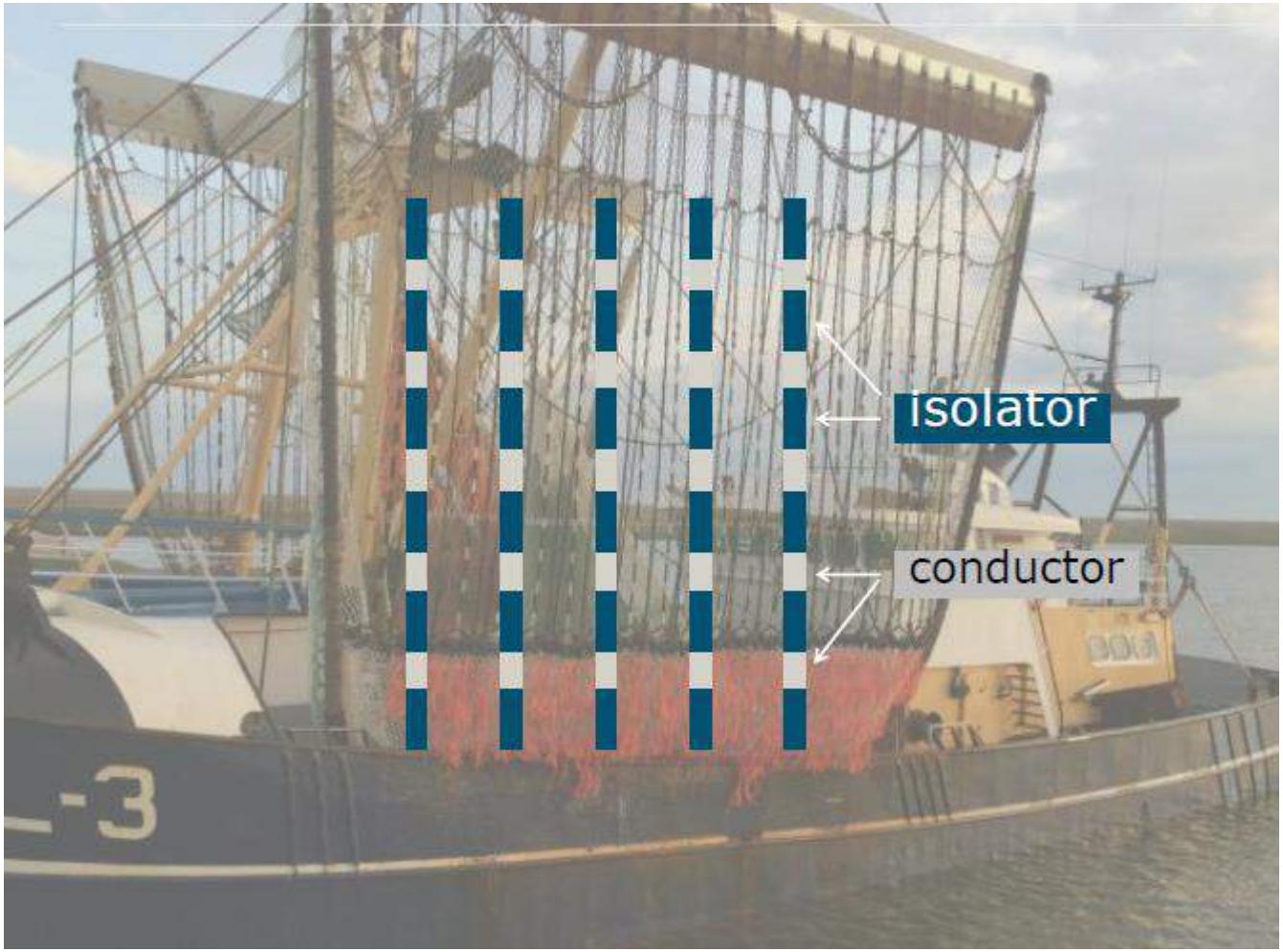
Landings and trophic level



There were more big fish before widespread use of heavy towed gear

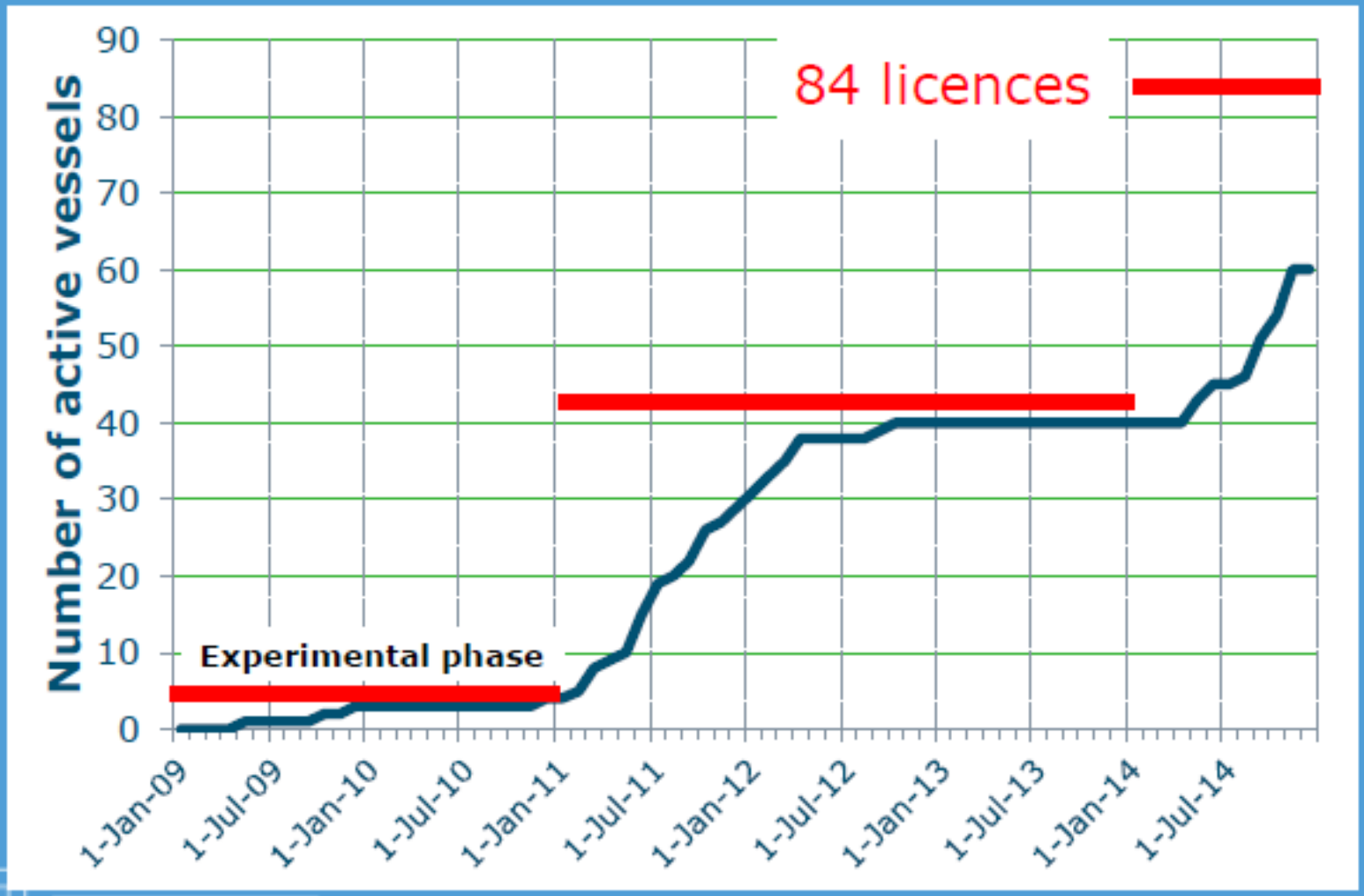


We need to ensure that measures we put in place are not maladaptive

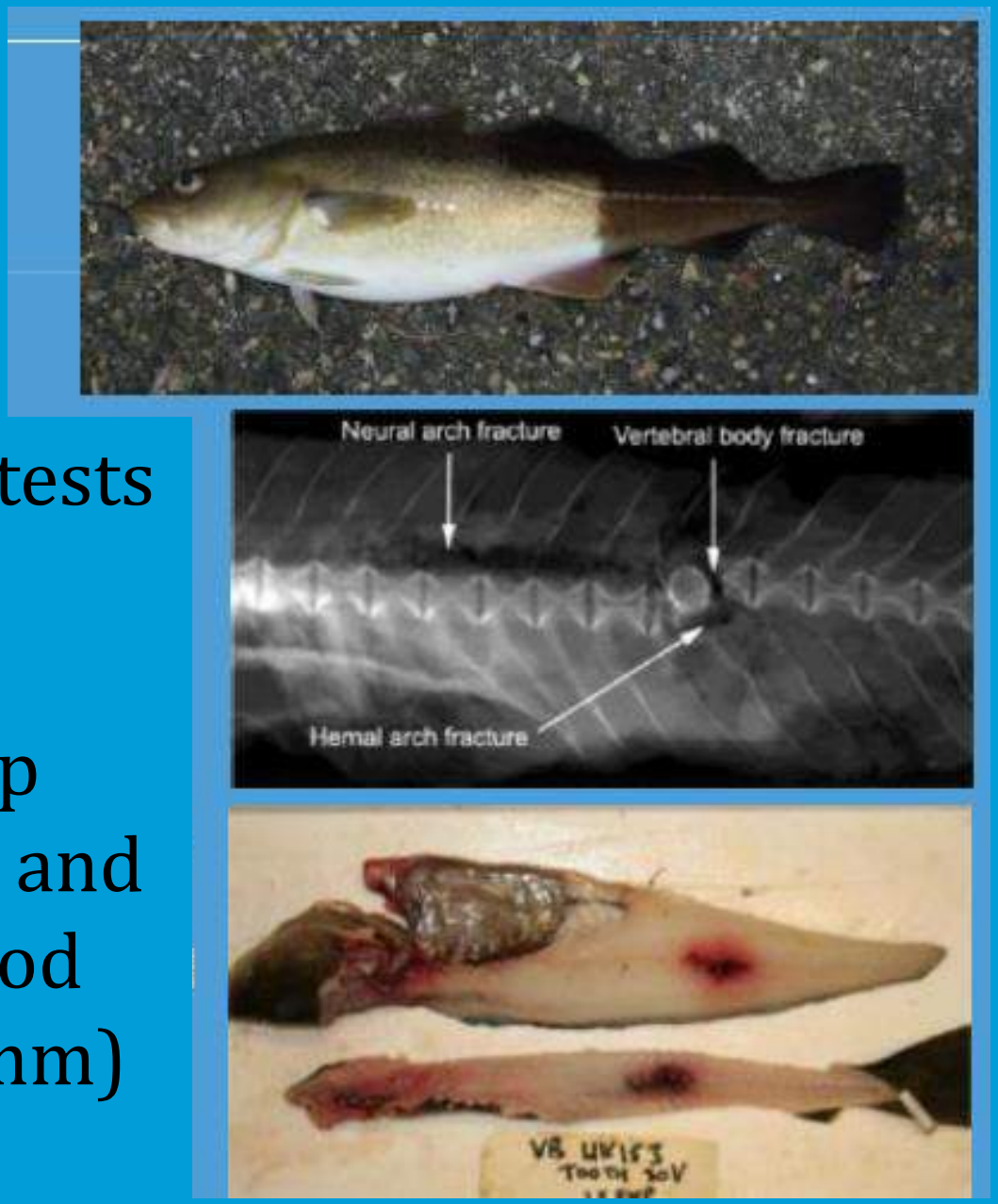


Electric pulse fishing by the Dutch fleet

Number of pulse trawlers in North Sea

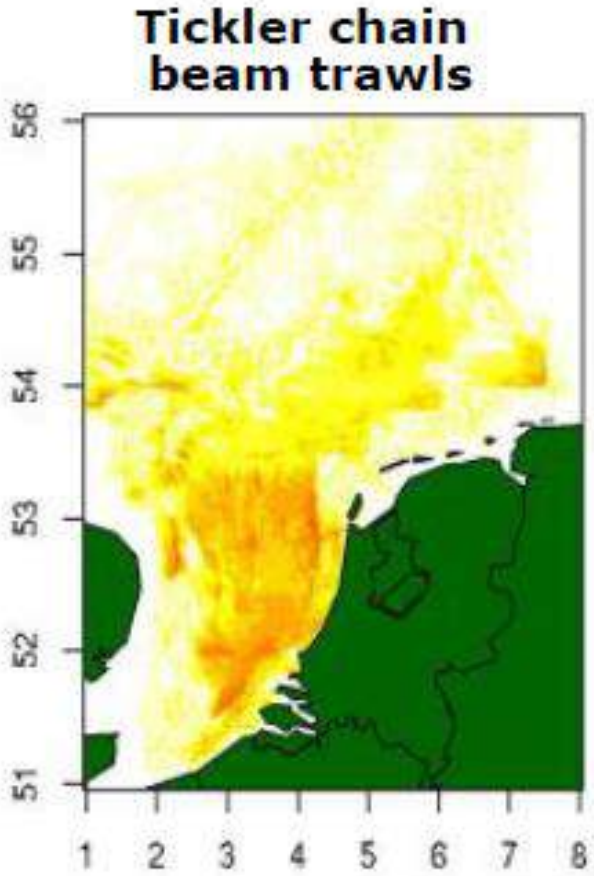


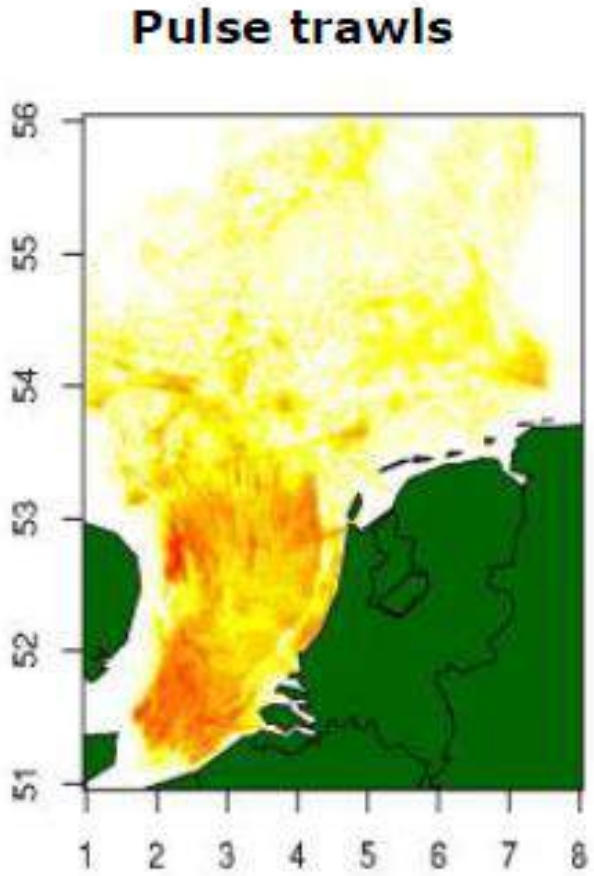
Electric pulse lab. tests cause significant increases in viral infections in shrimp (*Crangon crangon*) and severe injuries in cod (Rinsjorp pers. comm)



Change distribution pulse trawlers: consequences for ecosystem effects

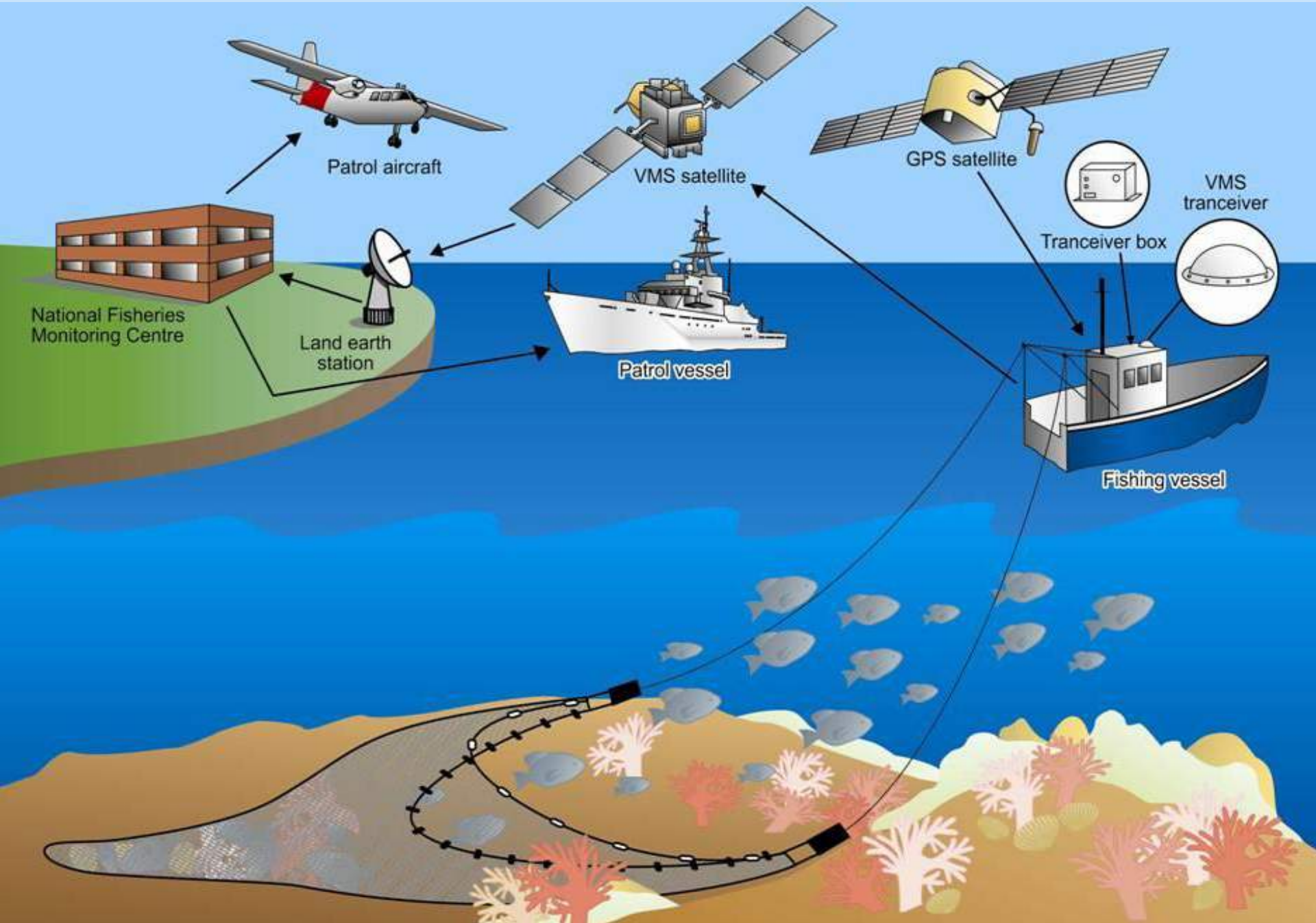
BENTHIS

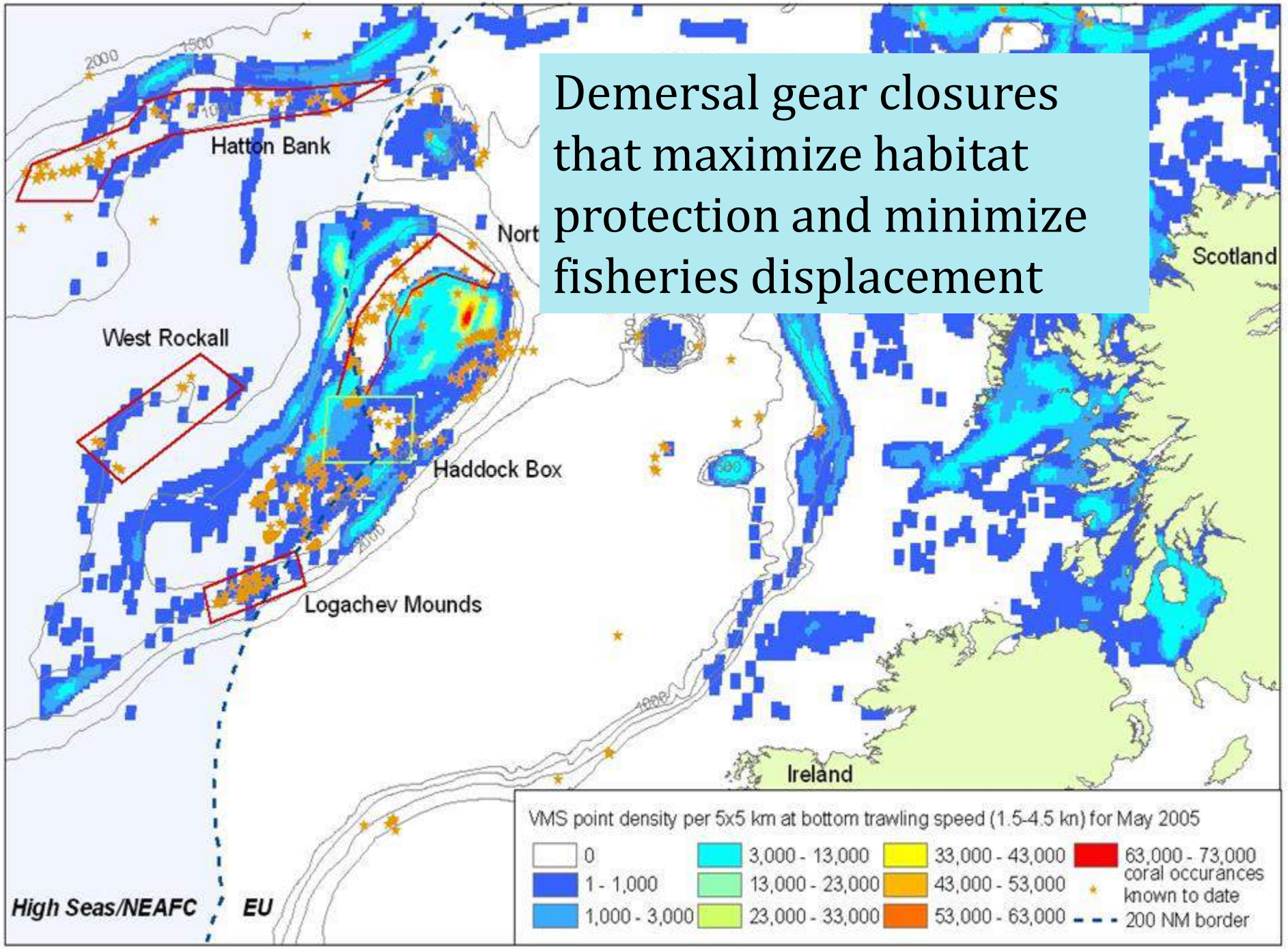




Its not too late to turn things around

Technology that puts marine life at risk can be used to protect it




Demersal gear closures that maximize habitat protection and minimize fisheries displacement
Hatton Bank
West Rockall
Haddock Box
Logachev Mounds
Scotland
Ireland
High Seas/NEAFC
EU
VMS point density per 5x5 km at bottom trawling speed (1.5-4.5 kn) for May 2005
0
1 - 1,000
1,000 - 3,000
3,000 - 13,000
13,000 - 23,000
23,000 - 33,000
33,000 - 43,000
43,000 - 53,000
53,000 - 63,000
63,000 - 73,000
coral occurances known to date
200 NM border

We know we are causing the current planetary mass extinction – what survives will depend on how sensible we are in protecting the resources we still have.

Because there have been far fewer extinctions in the oceans, we still have the raw ingredients needed for recovery.

Remove damaging practices to allow nature to rebound under an economic model that values environmental quality as well as continued ocean use.