Hotspot Ecosystem Research and Man's Impact on European Seas

41 partners
Euro 8M
Duration 2009-2012
Continued from HERMES project

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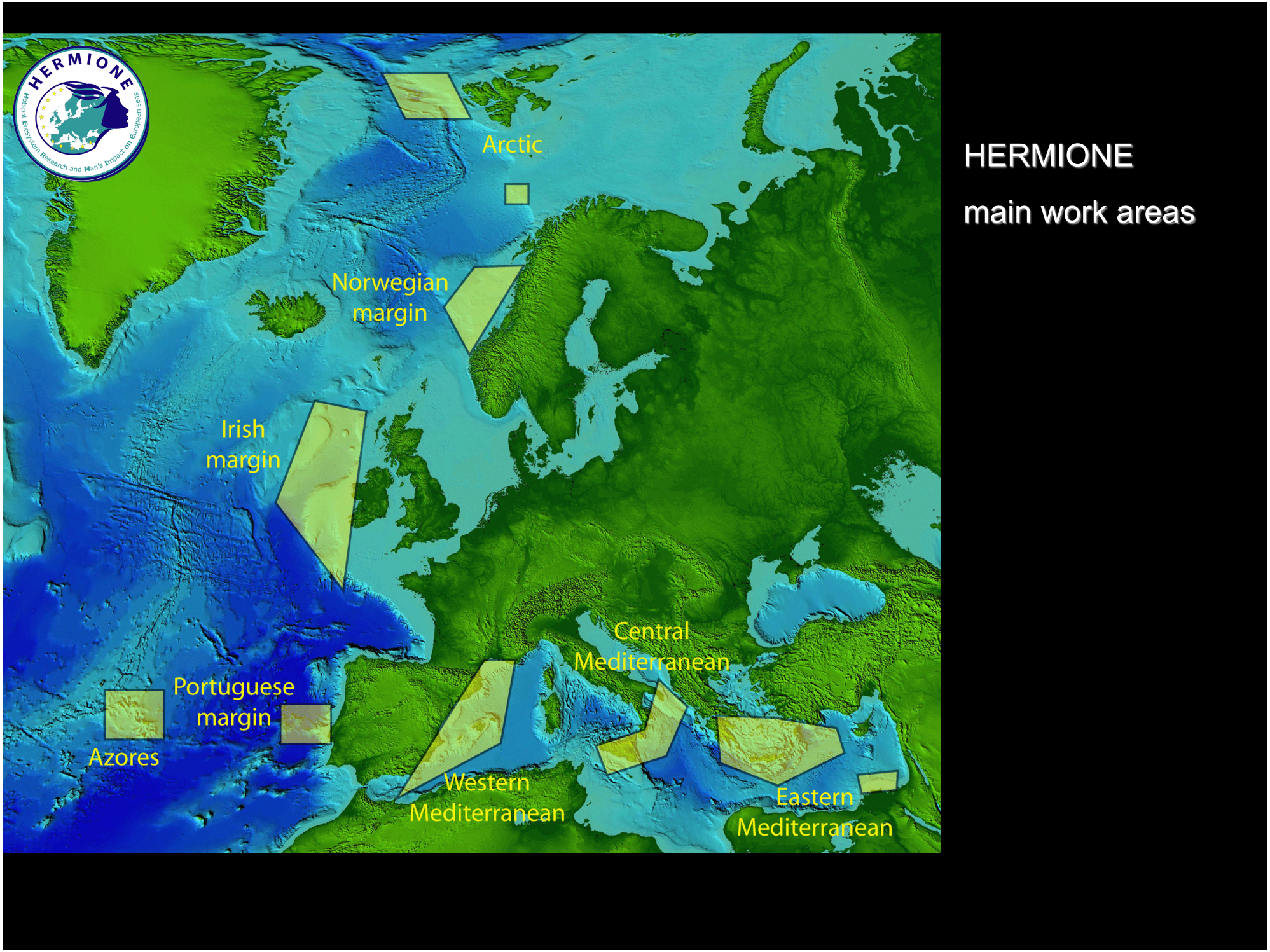
National Oceanography Centre, Southampton

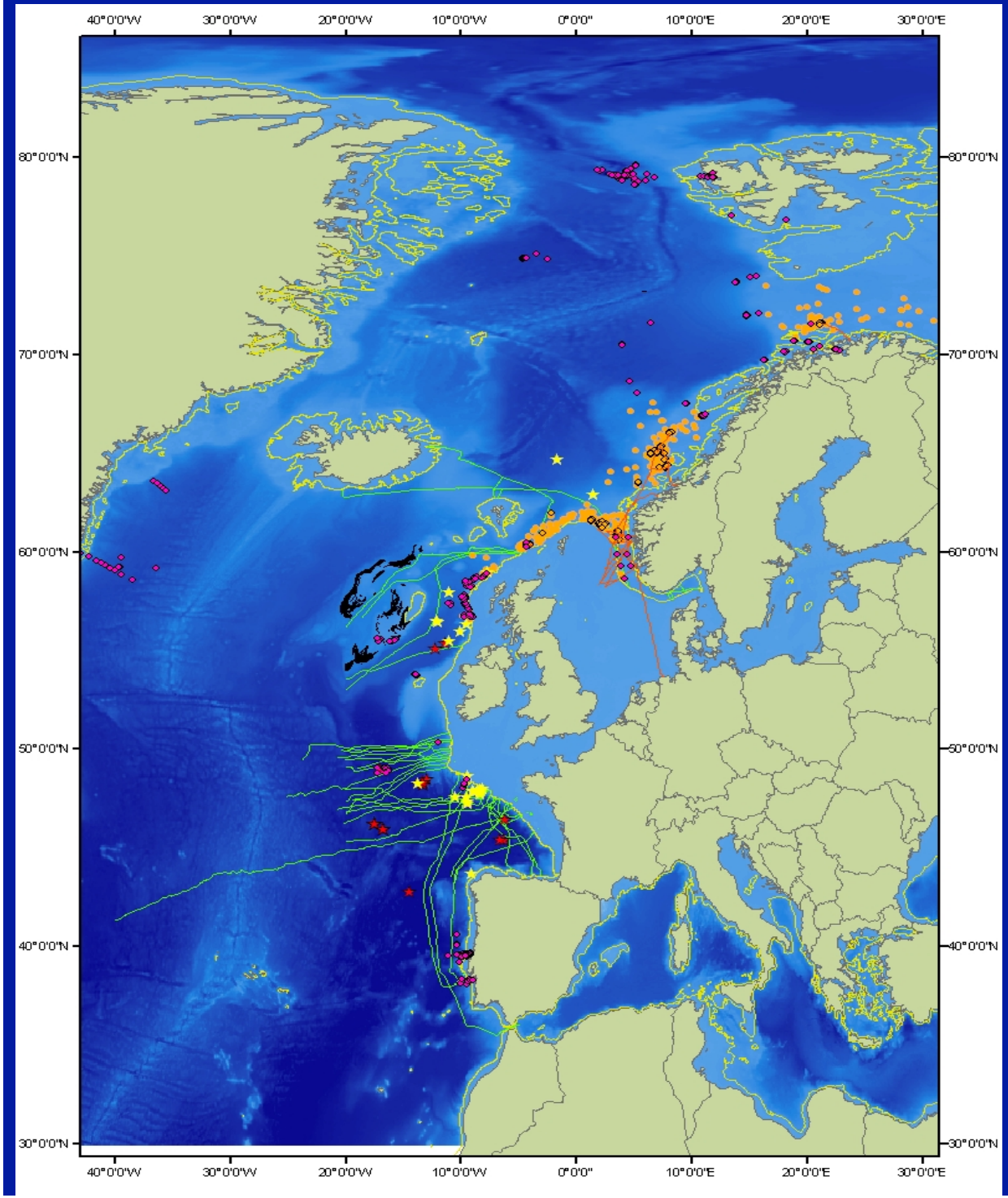
and Seascape Consultants Ltd

RAC meeting, Paris, November 21st 2012



HERMIONE

main work areas



Human activities on the deep seafloor > 200 m of the OSPAR area in 2005

Marine Scientific Research

Oil and gas installations

Oil and gas pipelines

Exploration and development wells to end 2005

Tracks of bottom trawlers (1.5 - 5.0 knots)

Radioactive waste dumpsites

Munitions and chemical weapons dumpsites

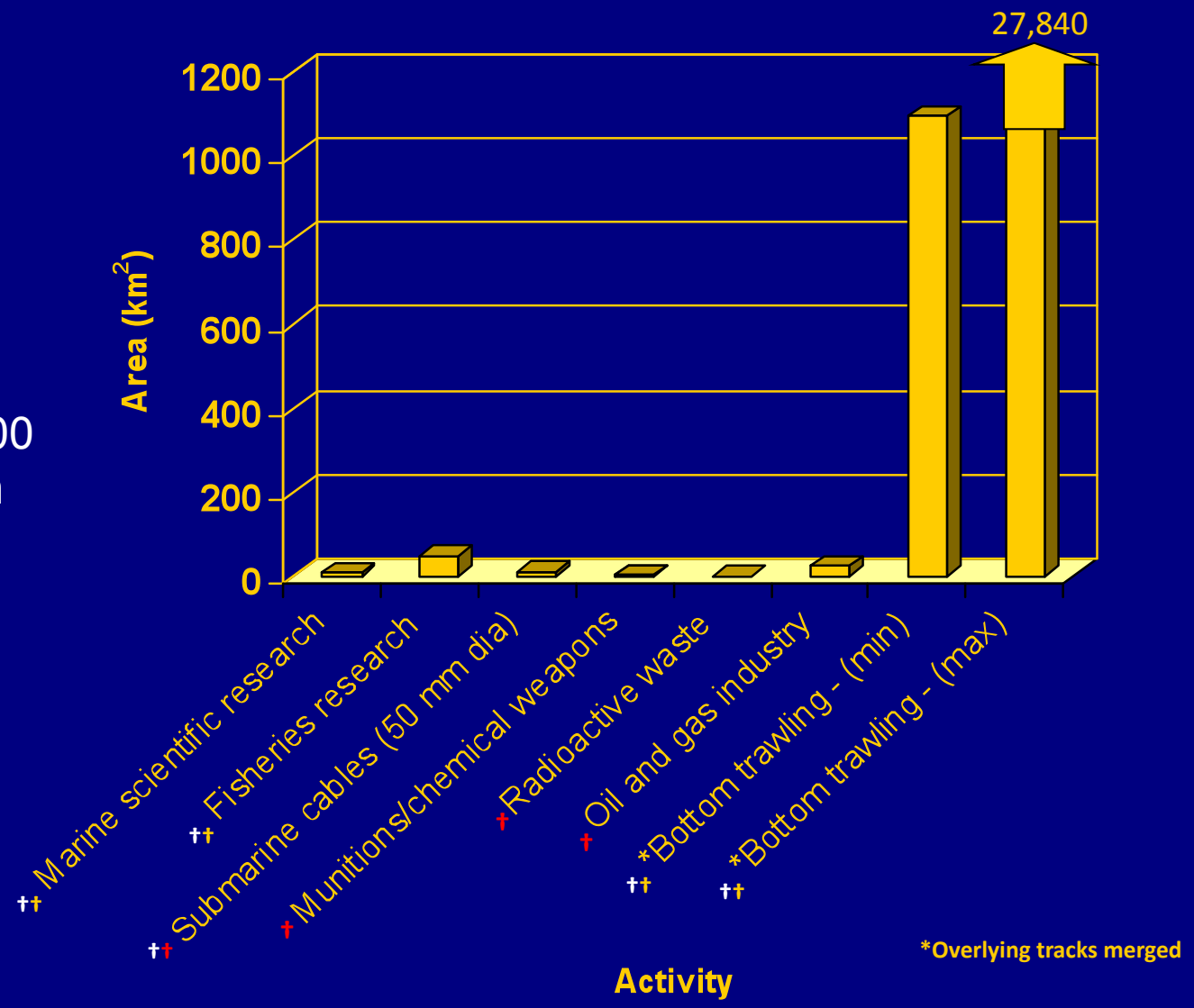
Submarine telecommunications cables

200 m depth contour

Benn, Weaver, Billett, van den Hove PLoS1, 2010

Area of activities extrapolated to whole NE Atlantic

Area of human activities in 2005. Data from OSPAR area of NE Atlantic and deeper than 200 metres water depth



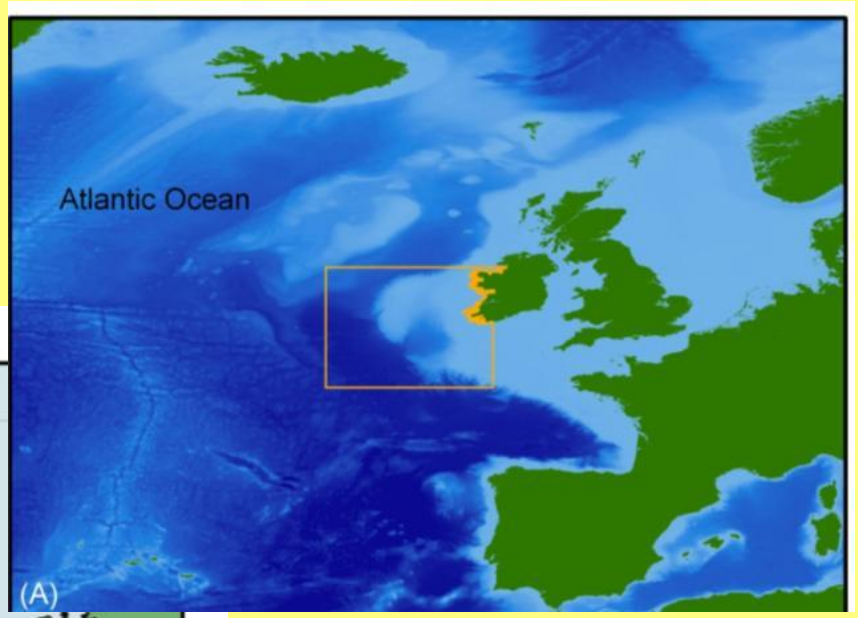
† Spatial extent extrapolated from available data

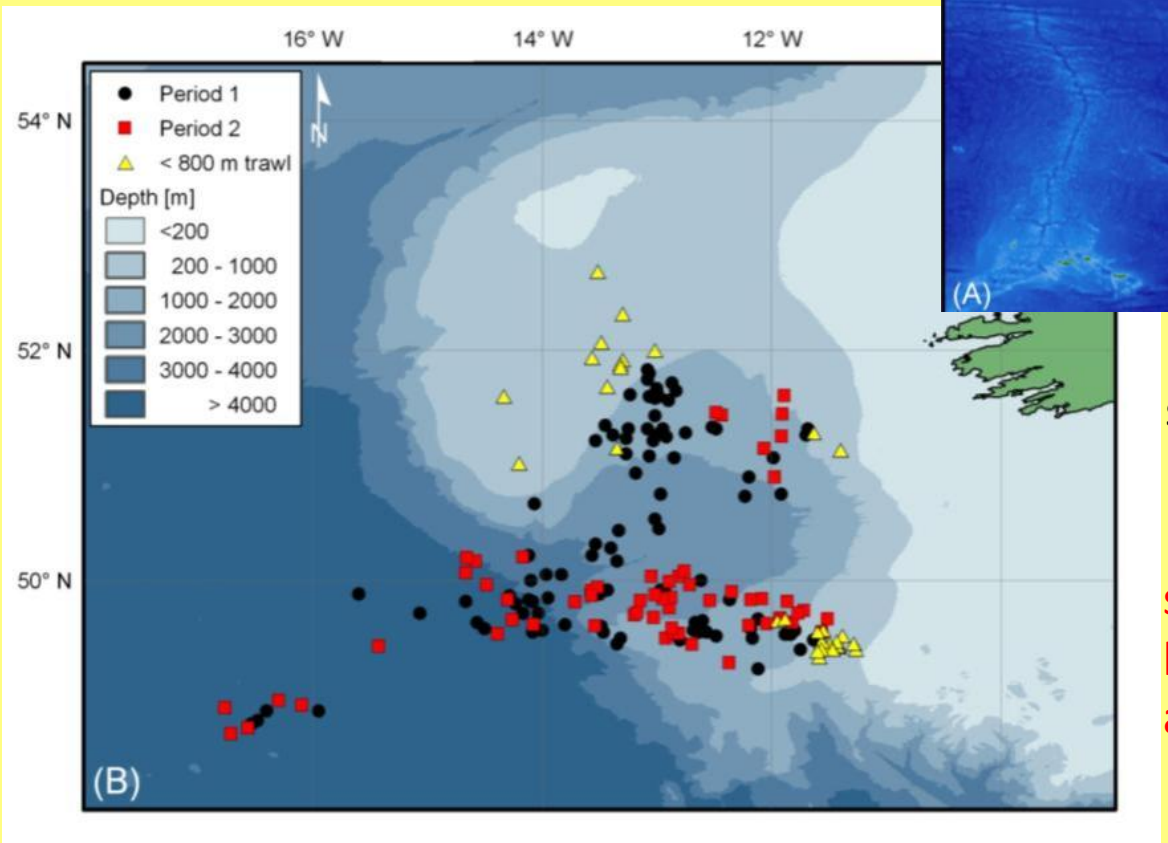
† Spatial extent of activities during 2005 only

† Spatial extent of activities during 2005 (if applicable) and past activities

Benn, Weaver, Billett, van den Hove PLoS1, 2010

An example of deep-sea fishing impacts in the ICES Sub Area VII Divisions b, c, j and k





scientific trawls carried out between 1977-1989 (95 trawls)

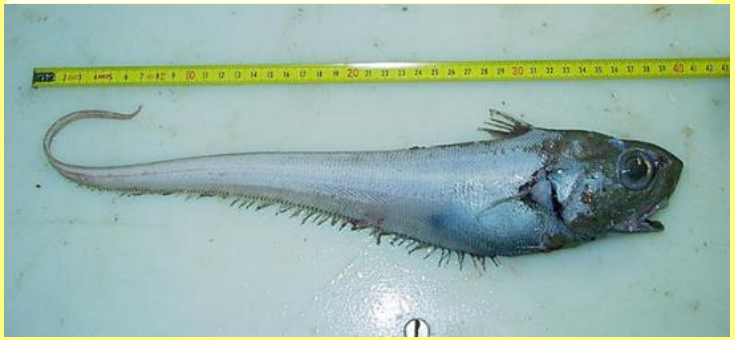
scientific trawls carried out between 1997-2002 (59 trawls) after fishing began in the area

Priede I.G. *et al.* (2011) *ICES Journal of Marine Science*; **68**: 281–289. doi:10.1093/icesjms/fsq045

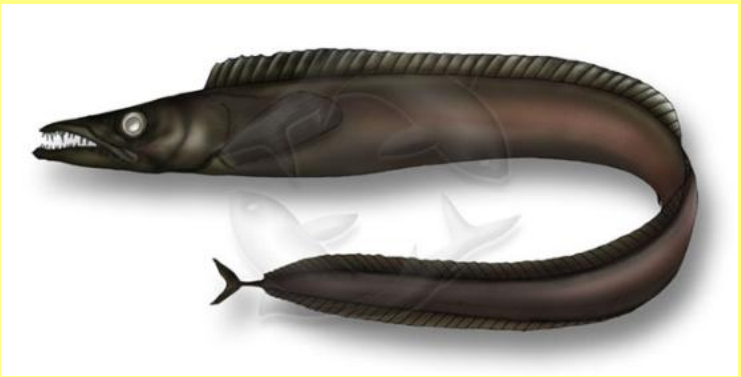
Commercial Target Species

Orange Roughy –
Hoplostethus atlanticus
1438 tonnes/annum

Roundnose grenadier
Corpyphaenoides rupestris
973 tonnes/annum



Black Scabbard
Aphanopus carbo
423 tonnes/annum



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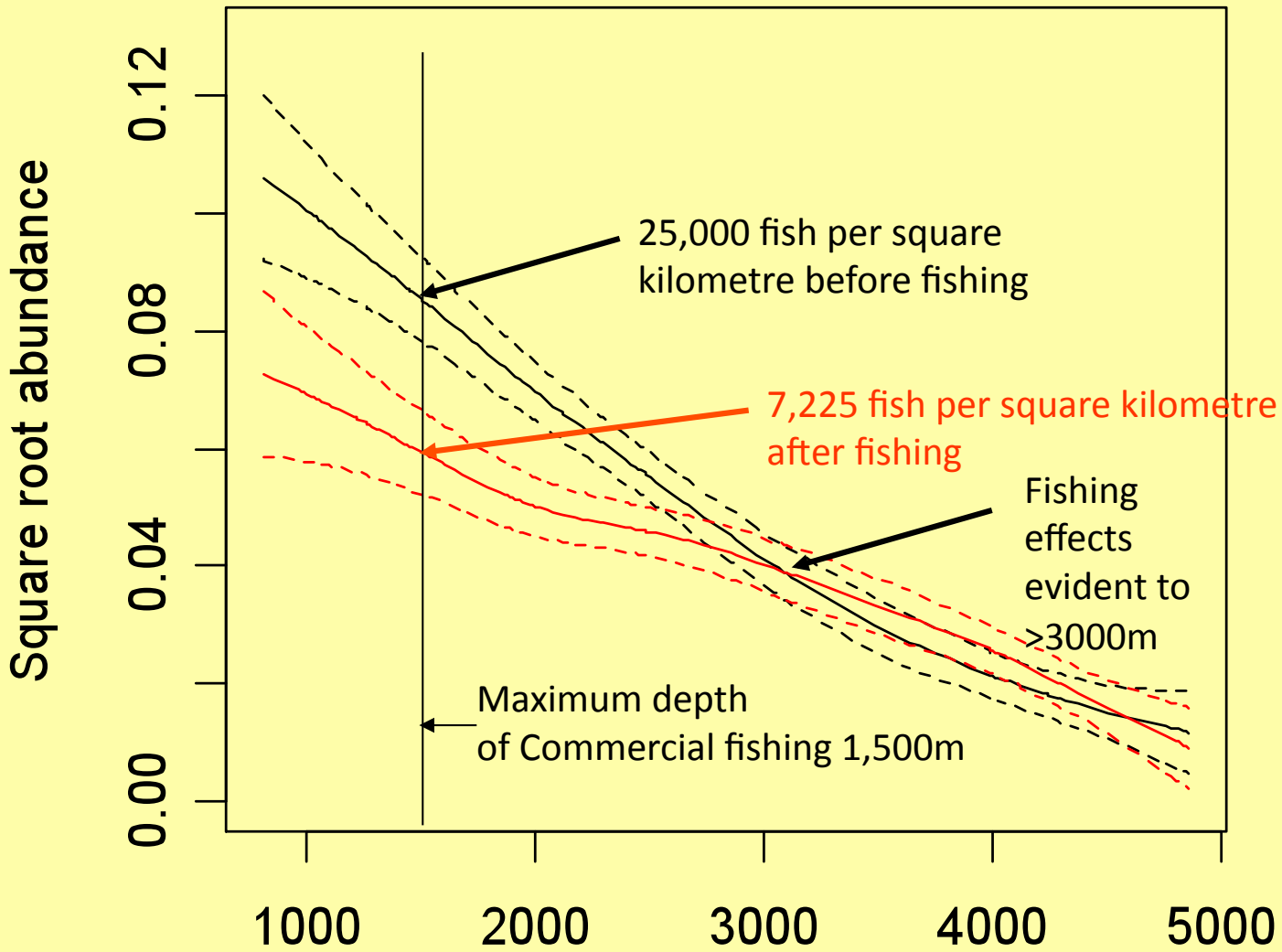
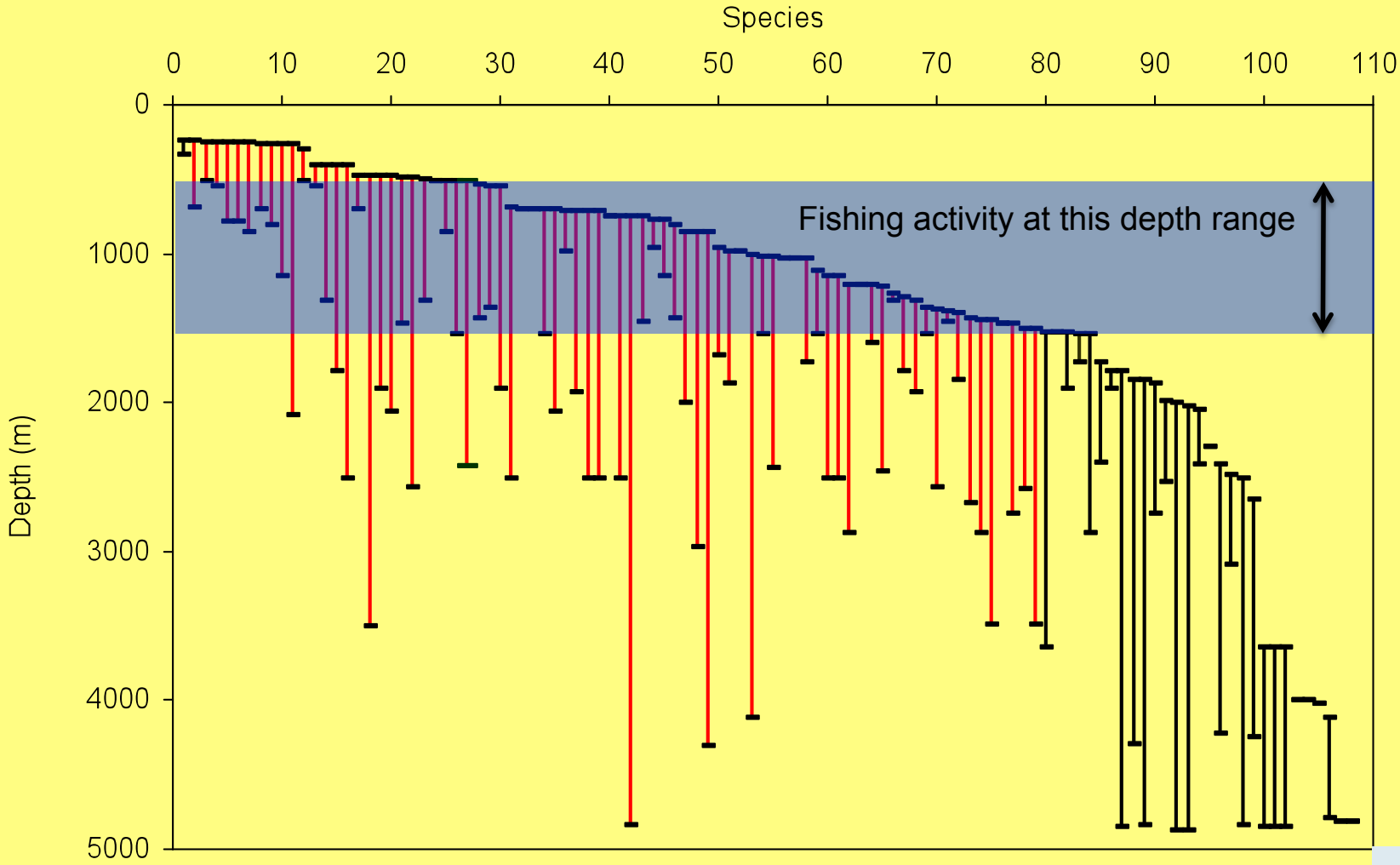


Bailey *et al*. (2009)
Proc. Royal Society of London B. **275:** 1965-1969

Each vertical line represents the water depth range of a single fish species
Fishery at 500 – 1500 m
By-catch includes all 78 species intersecting the fishery



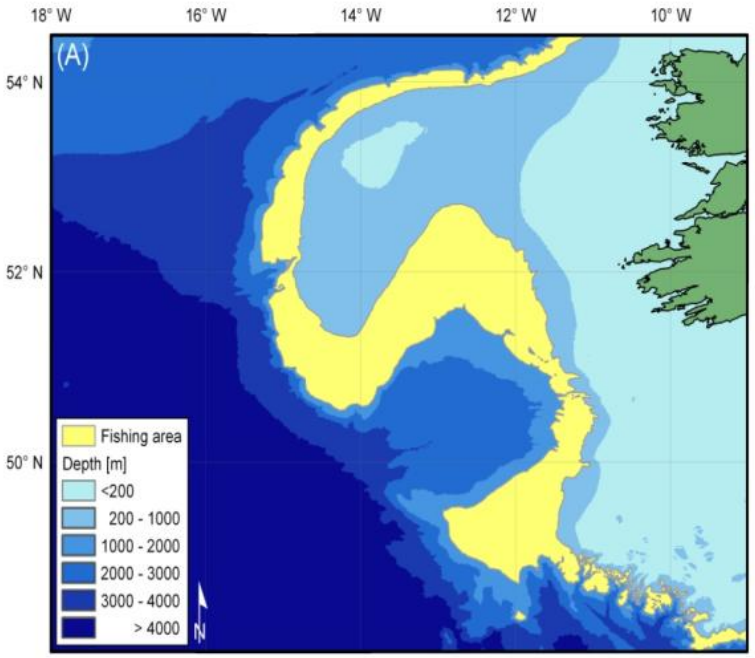
Priede *et al.*(2010) *Marine Ecology* **31:**247-260.
10.1111/j.1439-0485.2009.00330.x

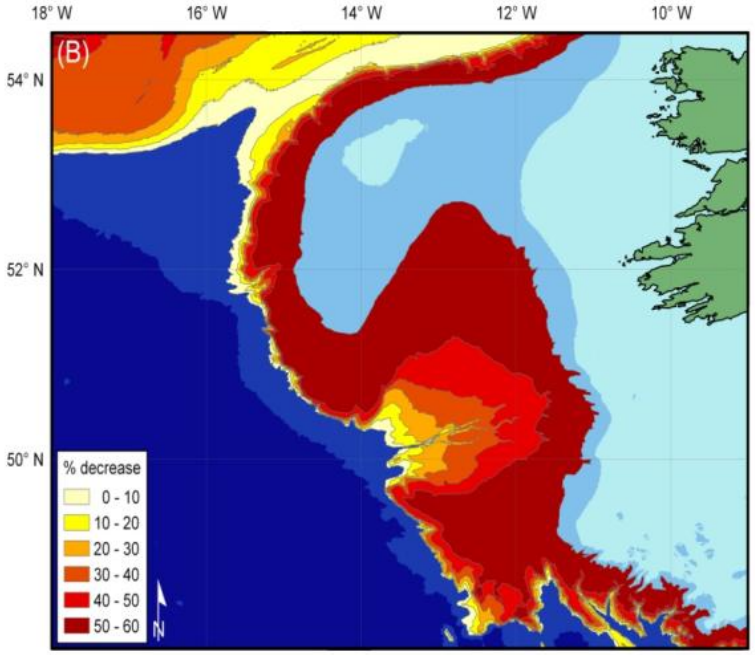
Fishing Area in yellow
52,000 km^2

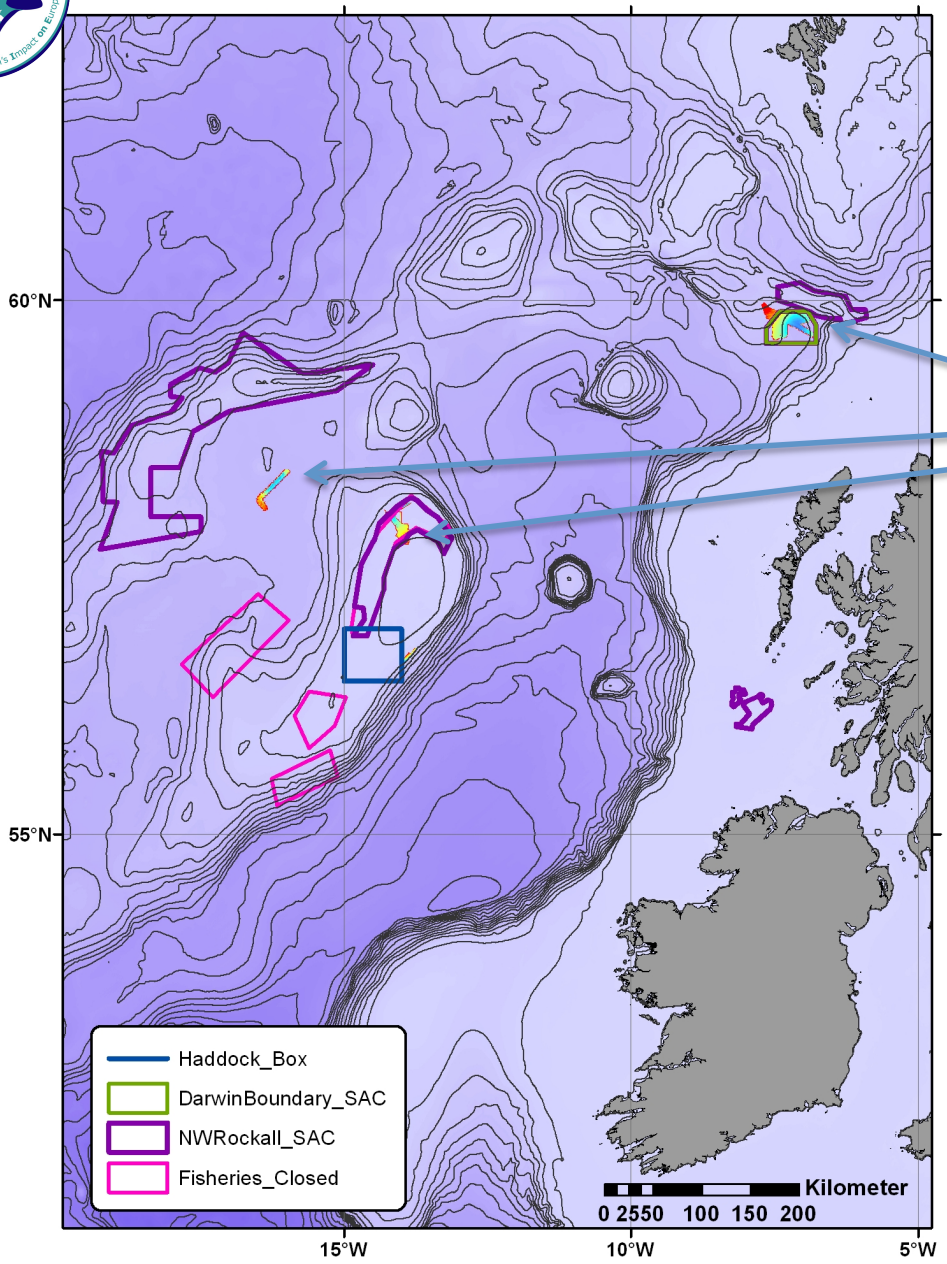
Reduction in Fish Abundance

Area of Impact – fish removed from all yellow to red areas
142,000 km^2
2.74 × fishing area

Priede I.G. *et al.* (2011) *ICES Journal of Marine Science*; **68**: 281–289. doi:10.1093/icesjms/fsq045





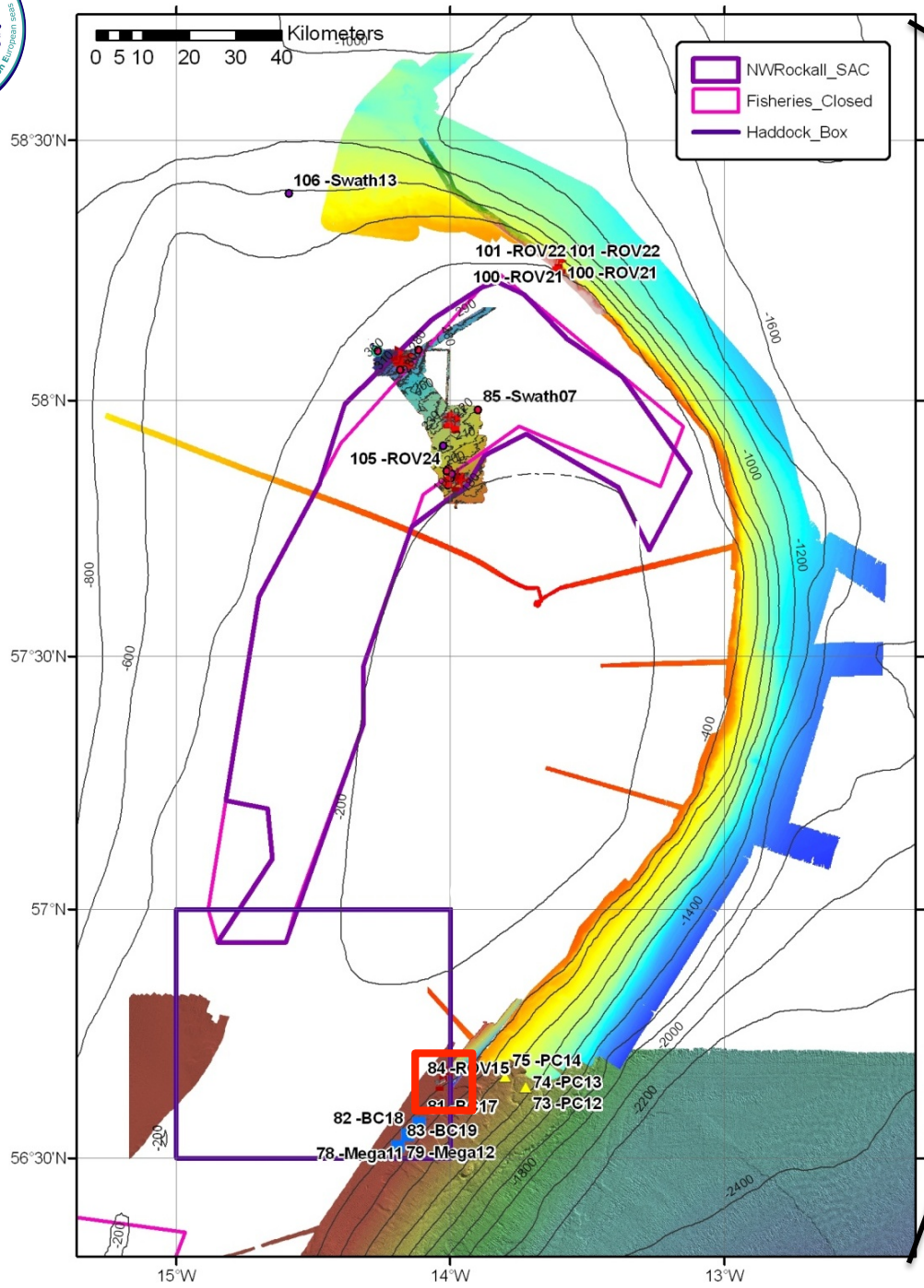


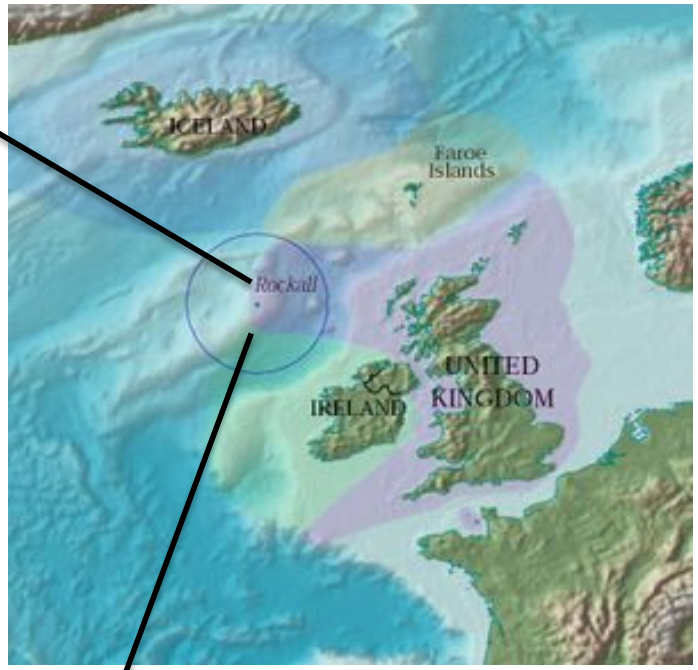
Results from a single 35 day long science cruise JC060 run by the NOC, Southampton

Some cruise facts

- Areas swath mapped by the ship in 5 days.
- The rest of the time was spent doing high resolution mapping surveys and collecting samples
- Cost of cruise – about €1.2M

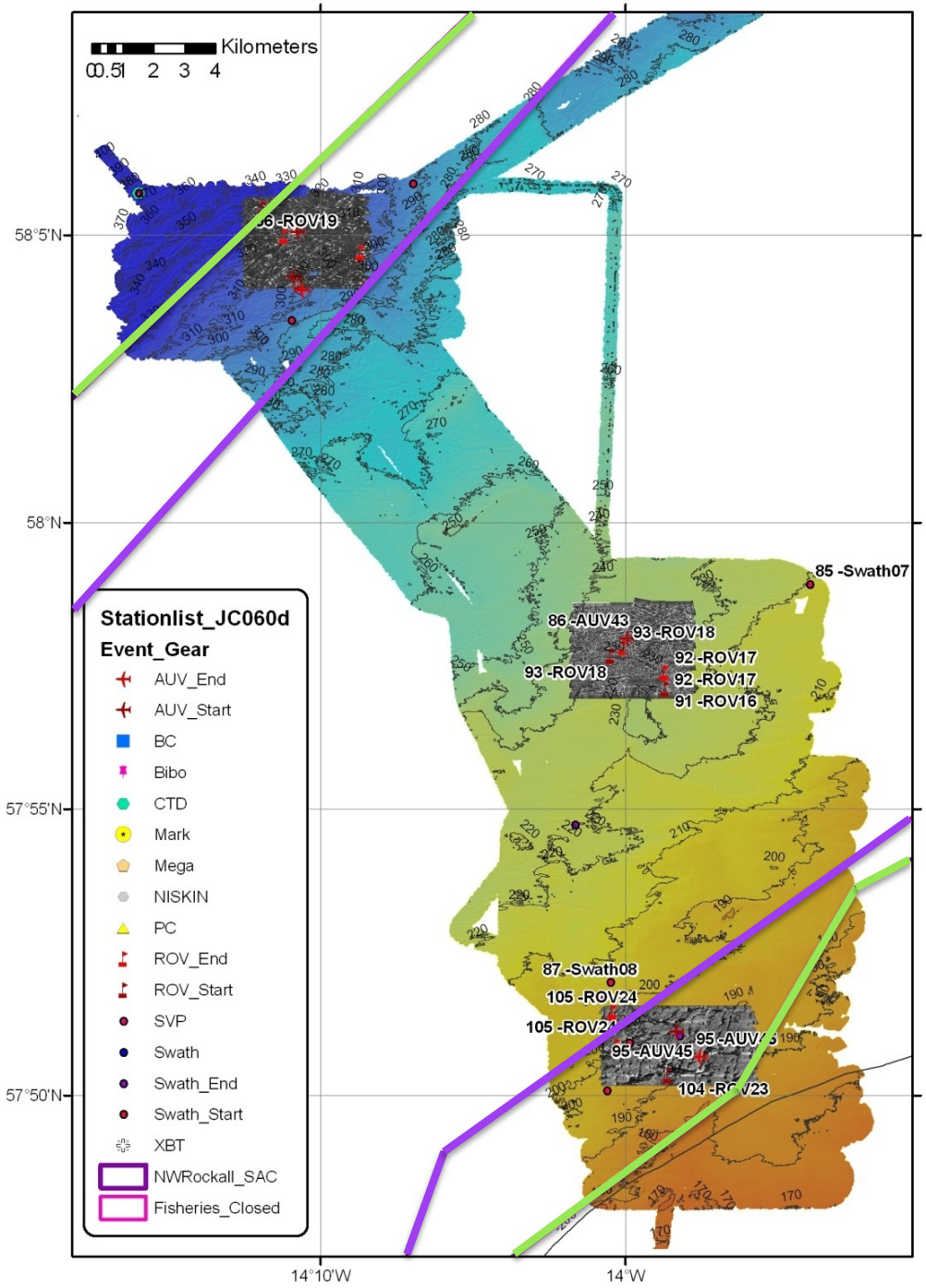
Veerle Huvenne NOC, Southampton





Recent results from the RRS *James Cook* cruise 060, 9 May – 12 June 2011; © NOC, NERC, UK, 2011

Veerle Huvenne NOC, Southampton



The inner purple box represents a fisheries closed area. It has been suggested to extend this to the outer purple box. Data was collected in the areas of proposed extension.

Recent results from the RRS *James Cook* cruise 060, 9 May – 12 June 2011; © NOC, NERC, UK, 2011

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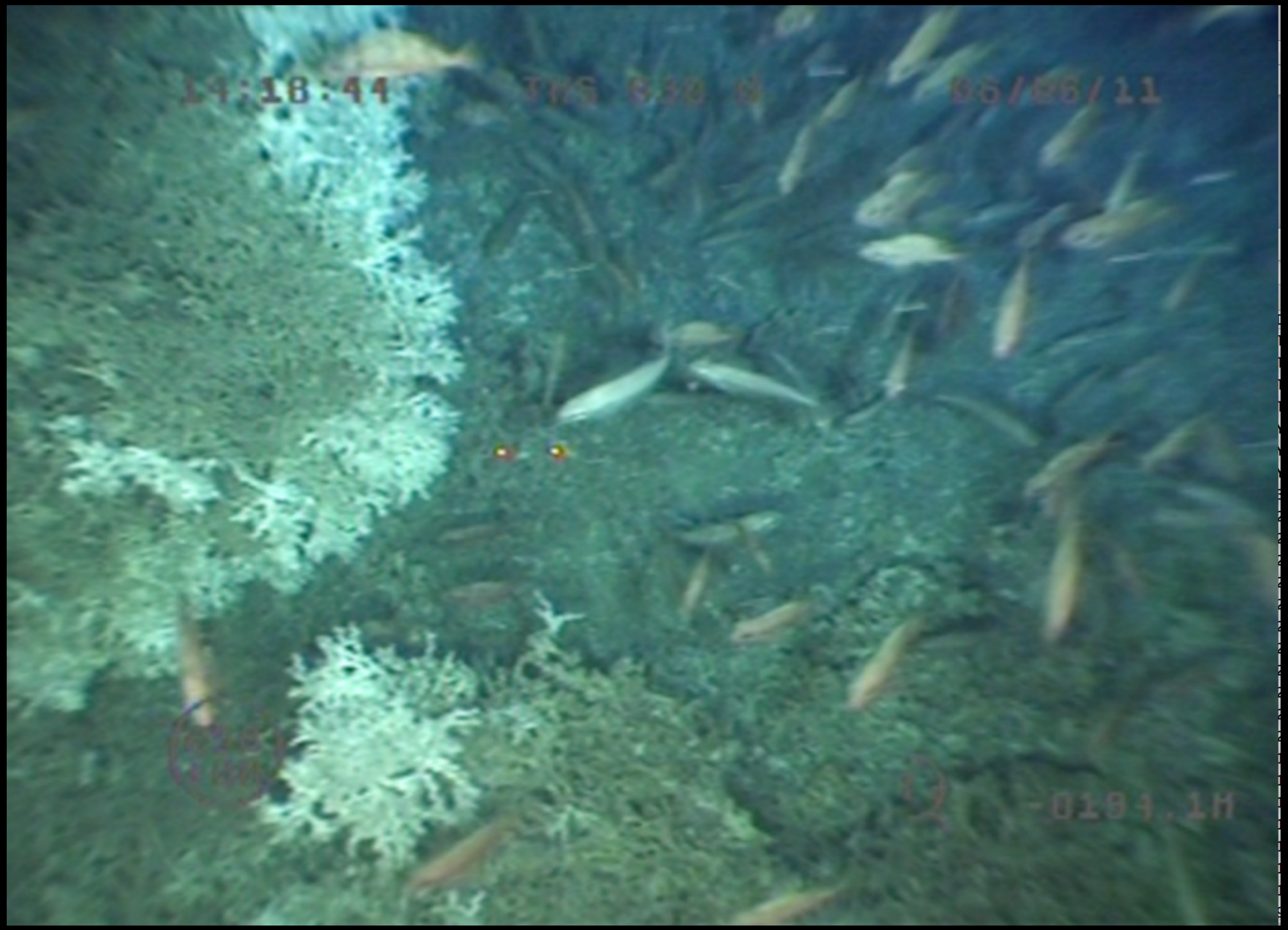

Intact habitat inside the fisheries closed area and in the southern proposed SAC with living coral, lots of fish and many other organisms

Veerle Huvenne NOC, Southampton

Coral communities destroyed by bottom trawling in northern proposed SAC area, no fish, no living coral and few other organisms

Veerle Huvenne NOC, Southampton

Key points

1. At present deep-sea bottom trawling has a greater impact on ecosystems than all other activities combined

2. Deep-sea fisheries have a disproportionate impact on non-target species and affect areas outside of the fished area

3. The deep-sea is poorly known but new scientific data consistently shows it is very complex and often slow to recover from human impact

4. Scientific research is very expensive and until recently has not focussed on fisheries issues, but can provide critical information