

Phase 1- Extent of trawling and interaction with habitats

Questions

- What is footprint of trawling by strata/ fisheries?
- What is the frequency distribution of activity?
- What are impacts of different strategies/ fisheries?

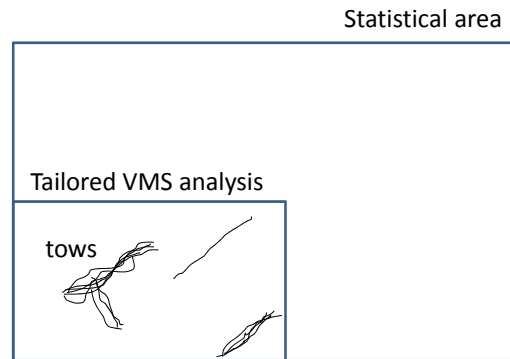
Trawling Best Practice, UW Seattle, 17 June 2013
Simon Jennings

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Some issues to address when answering these questions:

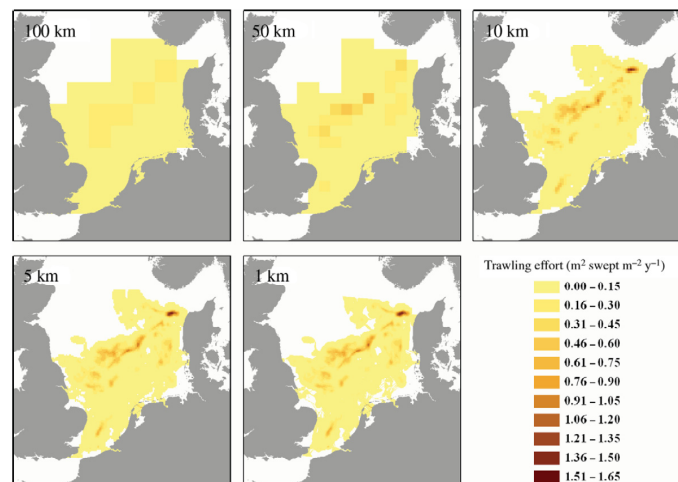
- **Variation in existence of effort data**
(risk: inadequate coverage in time and space)
- **Variation in scales of reporting/ dominance of gridded data**
(risks: incompatible data, inappropriate resolution for analysis)
- **Resolution of fisheries and gears**
(risks: inappropriate levels of abstraction, no link to systematic review 'gears')
- **Few resolved habitat data**
(risks: low coverage, incompatible with habitats in systematic review)
- **Adding a 'benefit' component to our analysis**
(risk: otherwise tradeoffs are ignored)

Addressing variation in scales of reporting and dominance of gridded data



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Data aggregated at larger scales will overestimate footprint



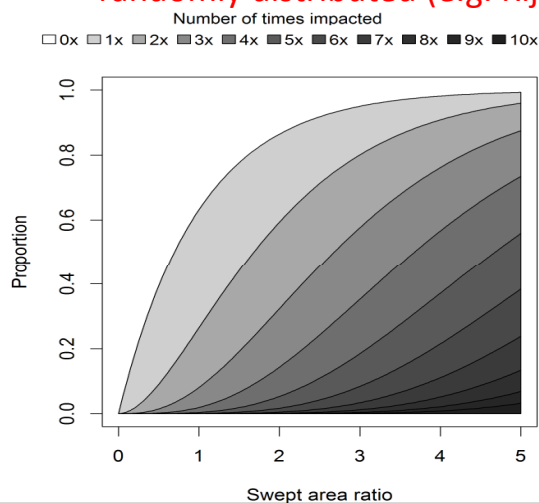
Addressing variation in scales of reporting and dominance of gridded data

Data aggregated at larger scales will overestimate footprint

To assess footprints and frequency distributions of activity we will often have to downscale gridded data products

Addressing variation in scales of reporting and dominance of gridded data

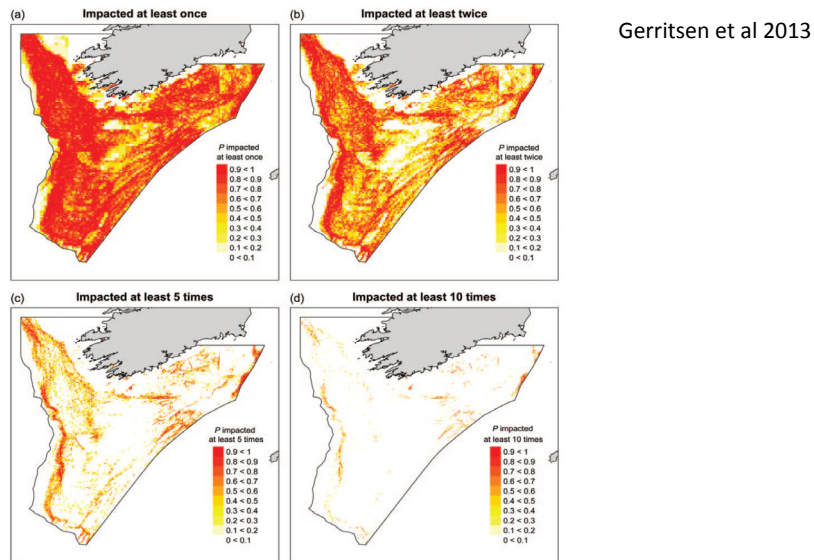
History of work identifying scales at which impacts are randomly distributed (e.g. Rijnsdorp et al., 1 nm)



Gerritsen et al 2013

Ratio of the swept area to the surface area of a cell is related to the proportion of the seabed that was impacted by the gear a given number of times (at scales where effort is random)

Addressing variation in scales of reporting and dominance of gridded data

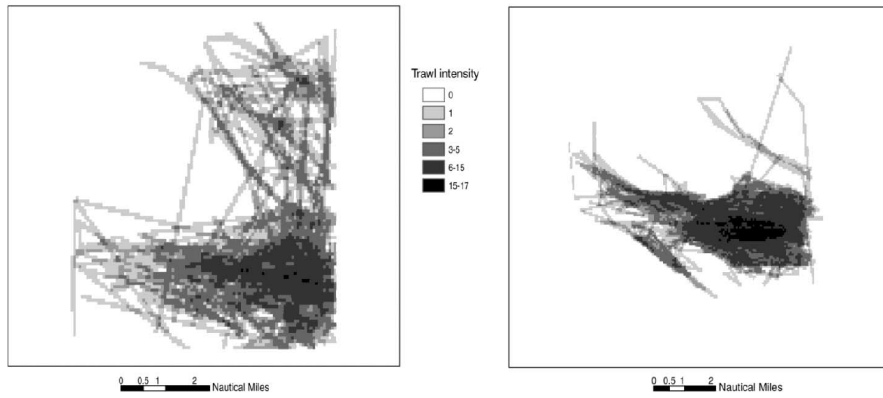


Addressing variation in scales of reporting and dominance of gridded data

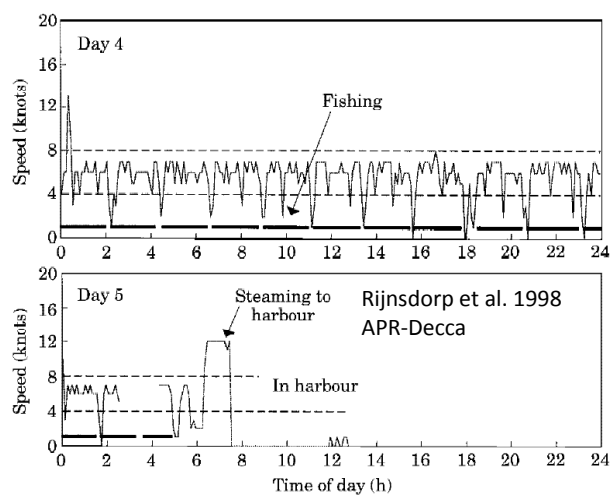
- Scales at which fishing activity is random ?
- What are distributions at larger scales ?

Questions will need to be answered by studying movements of individual vessels
 But require higher frequency position fixes than standard VMS

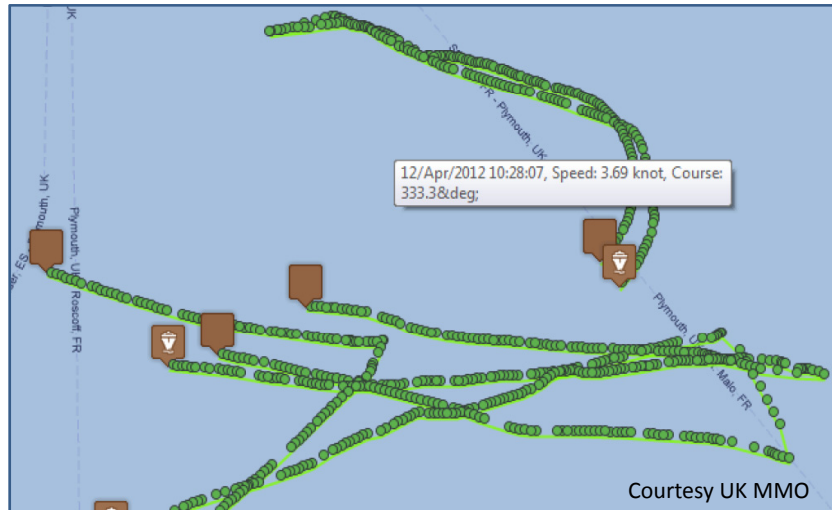
Track information for individual vessels (Deng et al., 2005; 1998 and 1999 data Northern Prawn fishery)



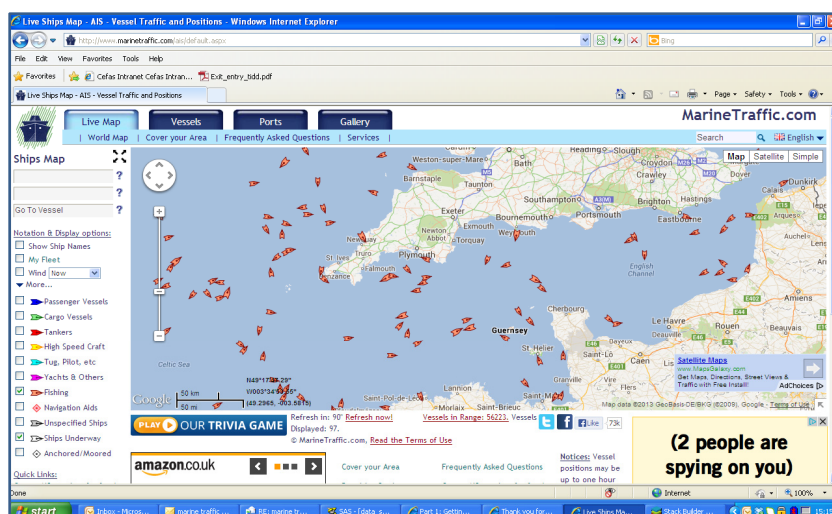
Track information for individual vessels (experimental tracking, Decca/ recorder)



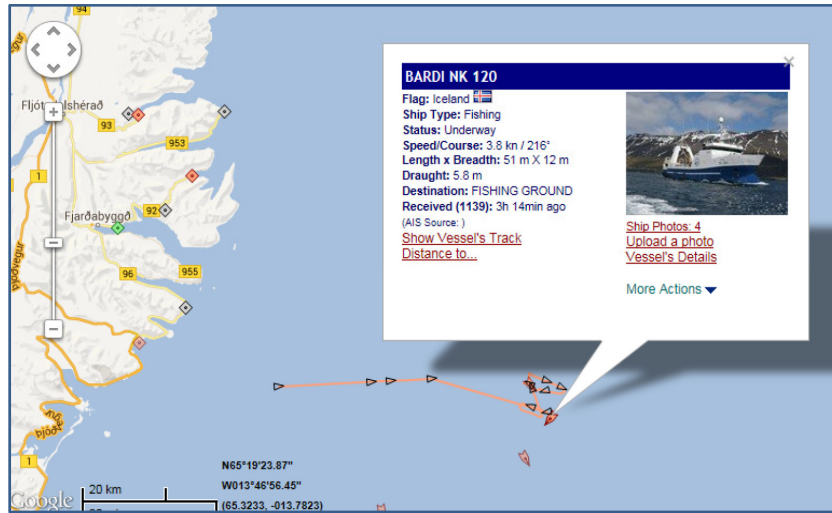
Track information for individual vessels (experimental tracking: GPS/ mobile phone network)



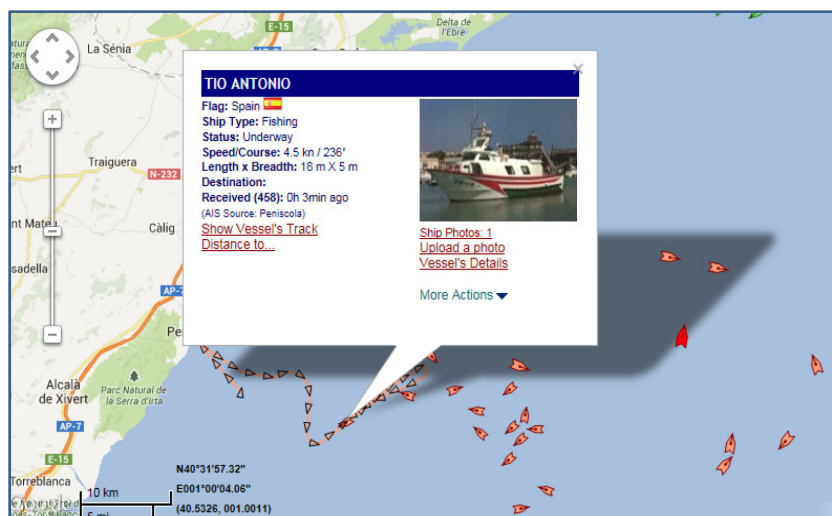
Track information for individual vessels (alternatives)



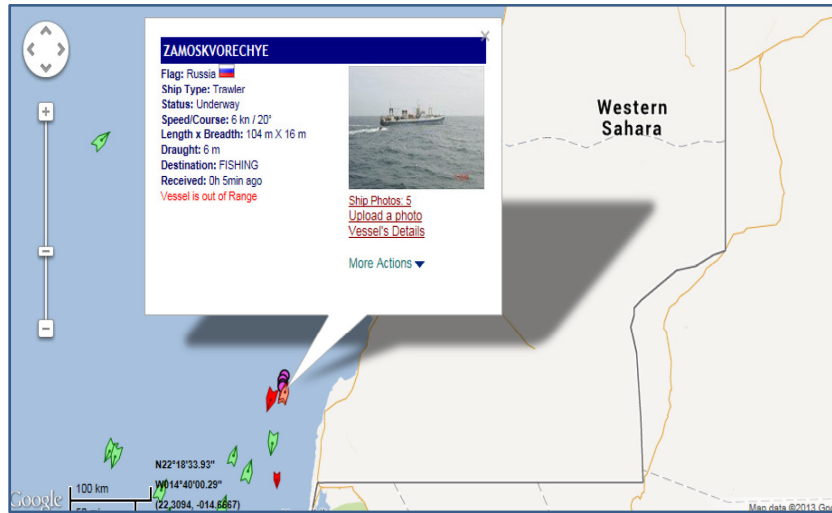
Track information for individual vessels (AIS)



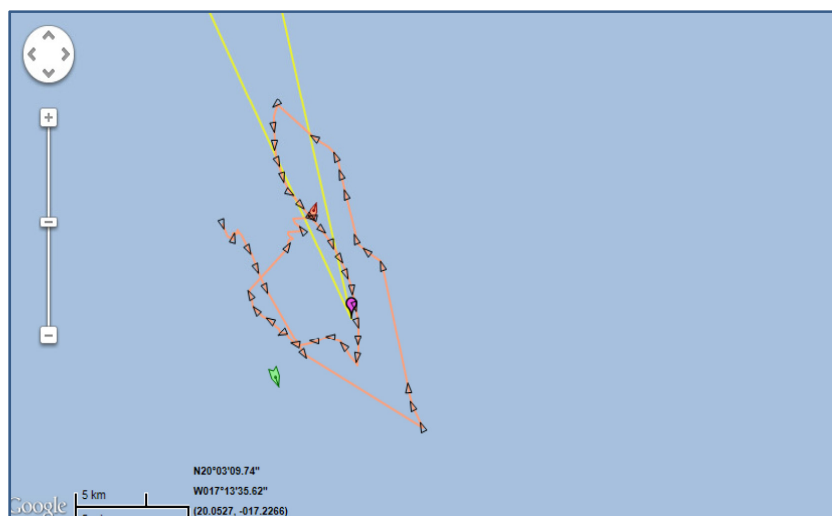
Track information for individual vessels (AIS)

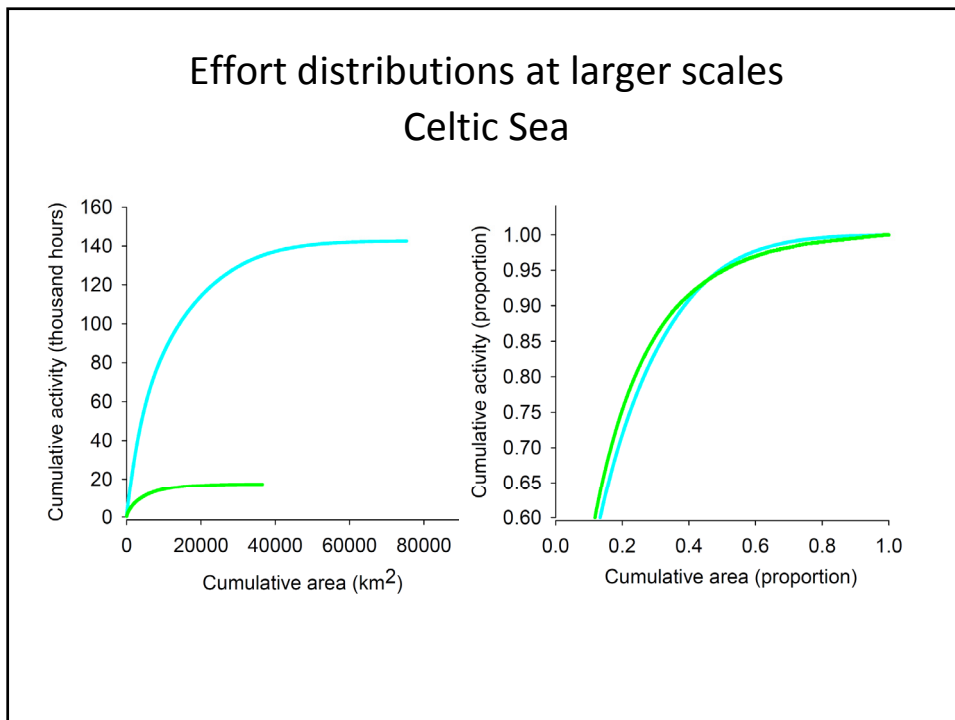
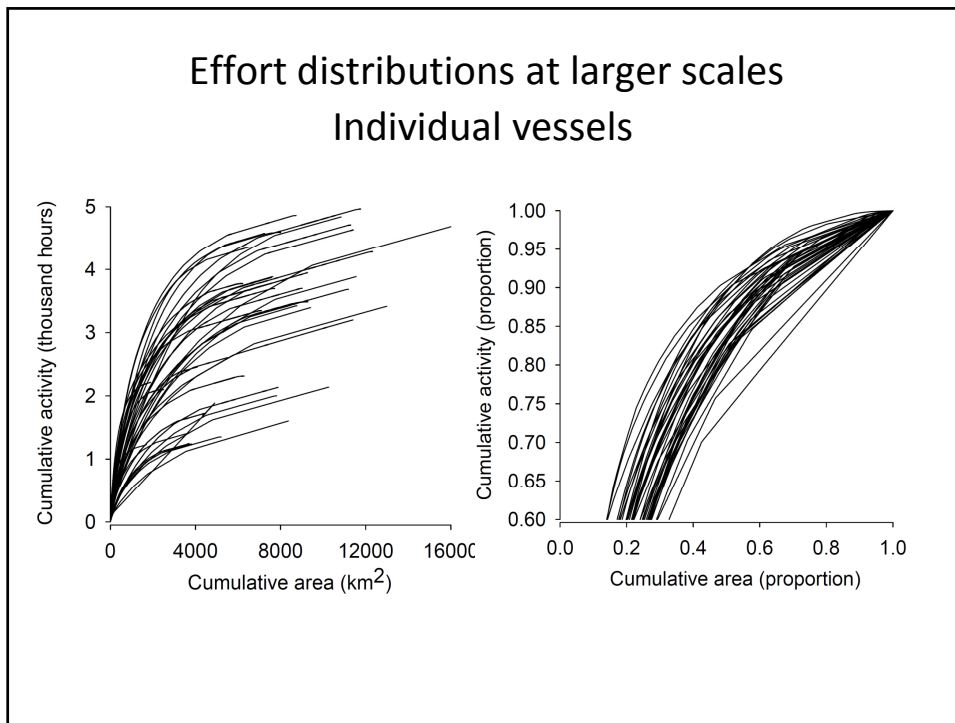


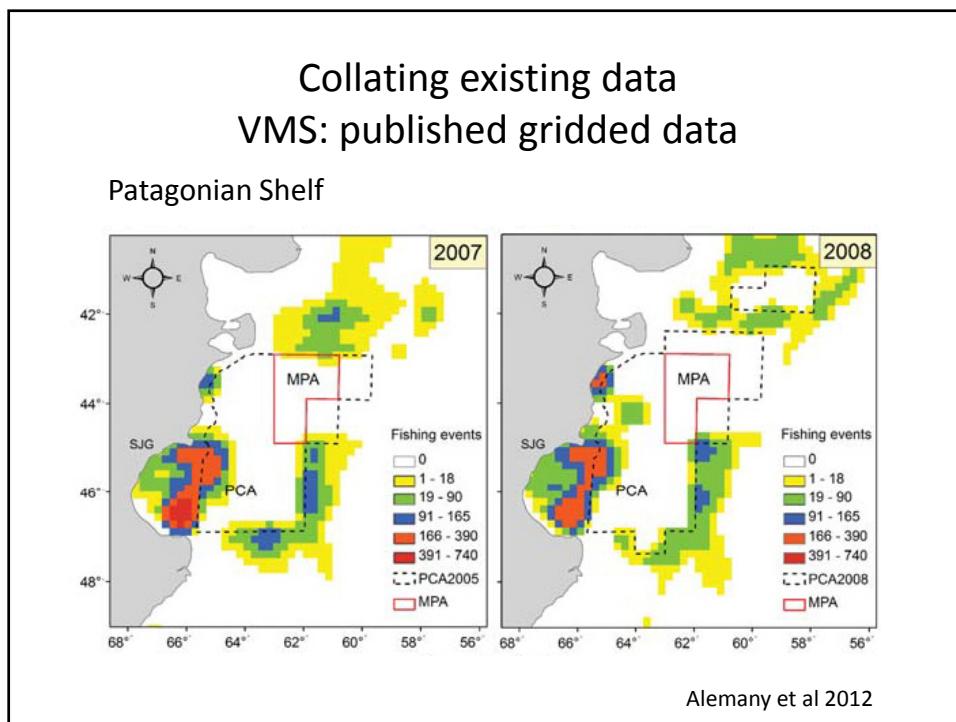
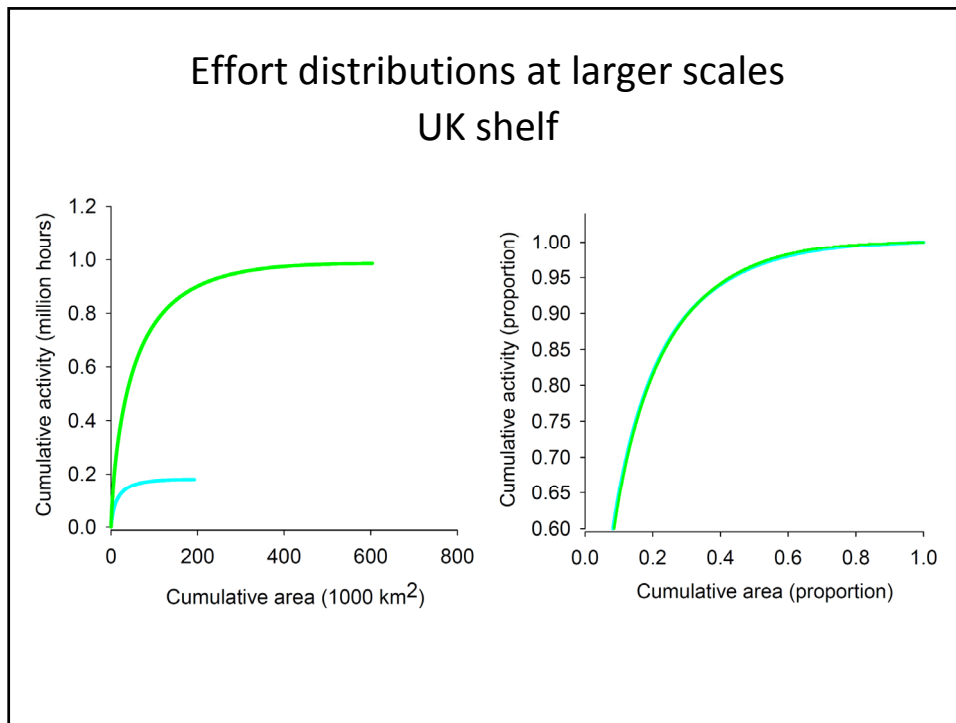
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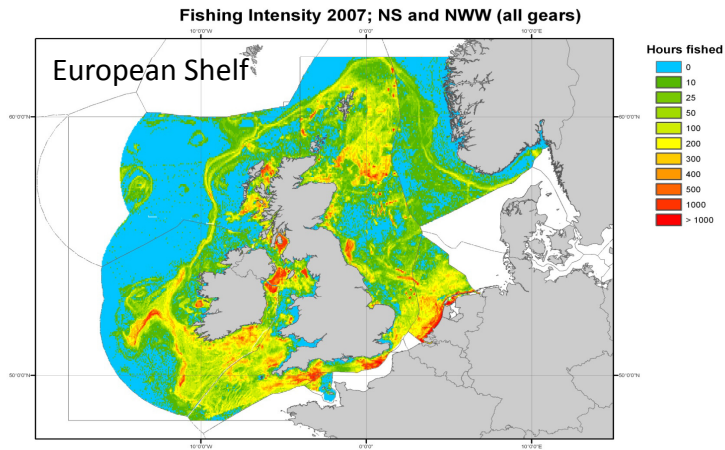
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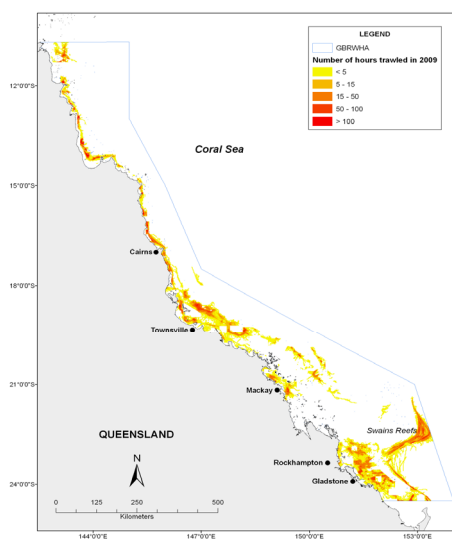


Collating existing data
VMS: published gridded data



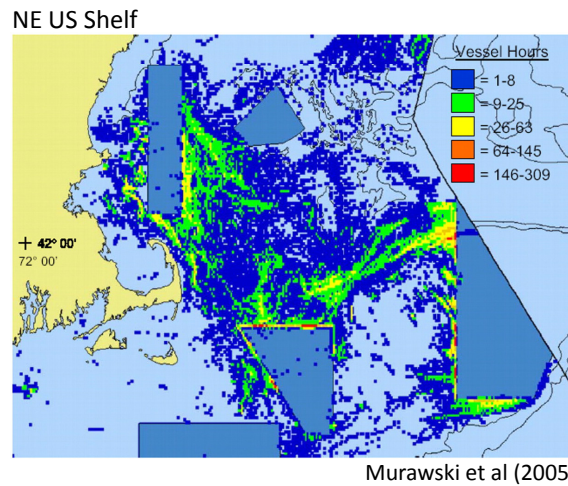
Compilation by Will Le Quesne

Collating existing data
VMS: published gridded data



Grech and Coles (2011)
after Deng (2005)

Collating existing data VMS: published gridded data



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Initial steps for discussion:

1. Compile trawling effort information for some shelf areas and/ or EEZ using reported/ logbook/ VMS data – by statistical areas or smaller units (footprint analysis)
2. Develop methods to downscale pre-aggregated data to provide estimates of frequency of impact per unit area (i.e. probability that defined area is swept) (methods and comparative analysis across scales, fisheries)

High seas, dredging ?

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Future steps:

1. Bring in some form benefit analysis to link to the footprints analysis- other data to draw on
2. Express footprints in relation to habitat or habitat-proxy strata to provide stronger measures of impact and risk

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Recap of issues:

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