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## Managing the risk of vulnerable species exposure to deepwater trawl fisheries

### The case of orange roughy to the west of Ireland and Britain

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#### Orange Roughy A highly vulnerable deep-water species:

With slow growth rates, late maturity and a high maximum age (> 130 years) Orange Roughy can be classified as a vulnerable deepwater fish species that can only sustain low rates of exploitation.

The species has been subjected to direct fisheries targeting spawning aggregation on seamounts and mixed trawl fisheries fishing for deepwater species along the continental slope.

Several local aggregations to the west of Britain and Ireland are believed to be depleted.

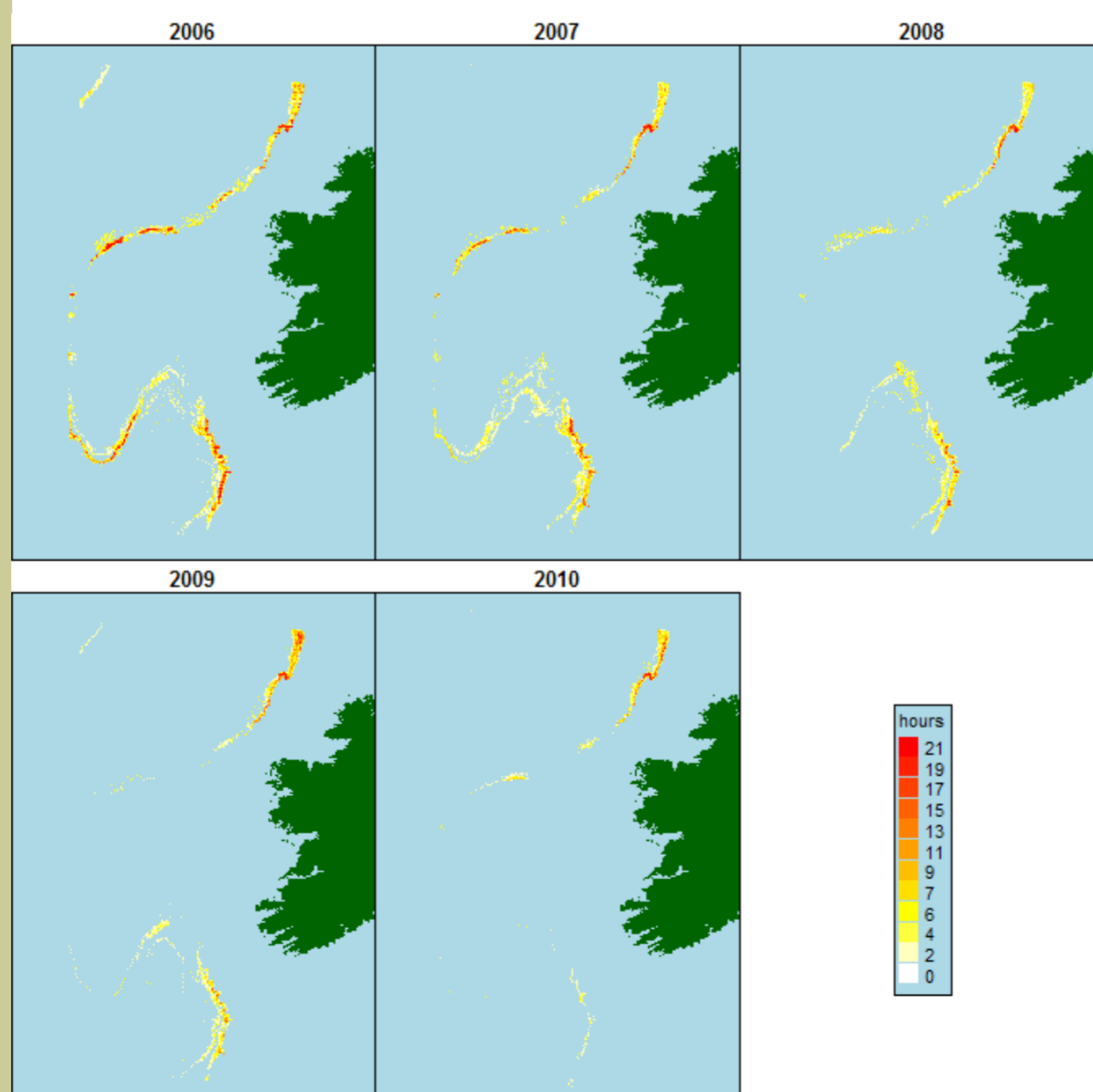
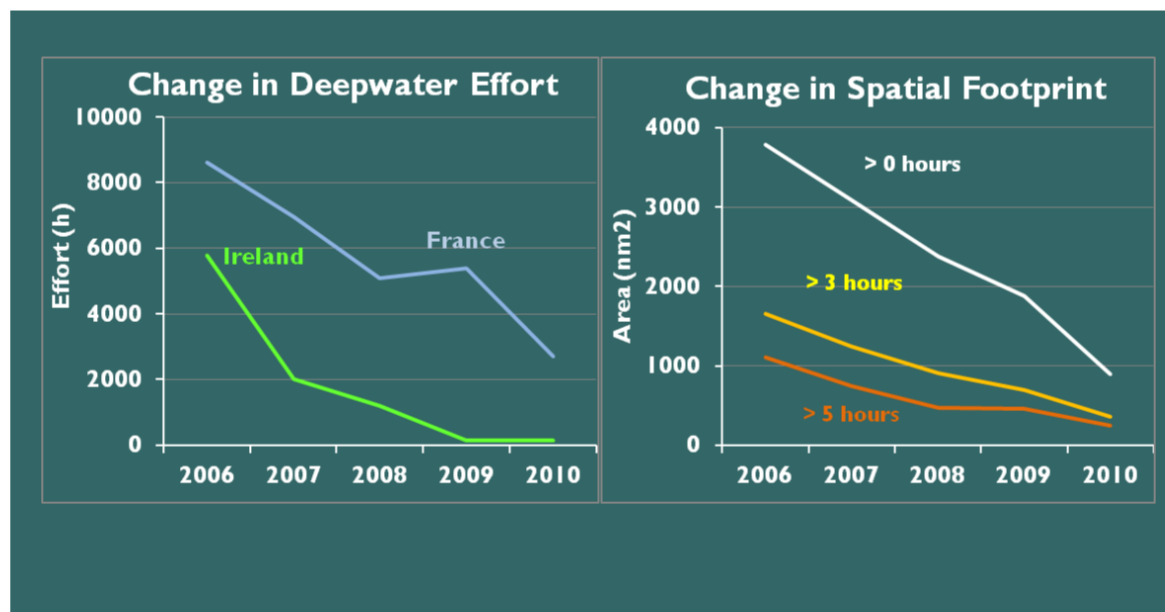
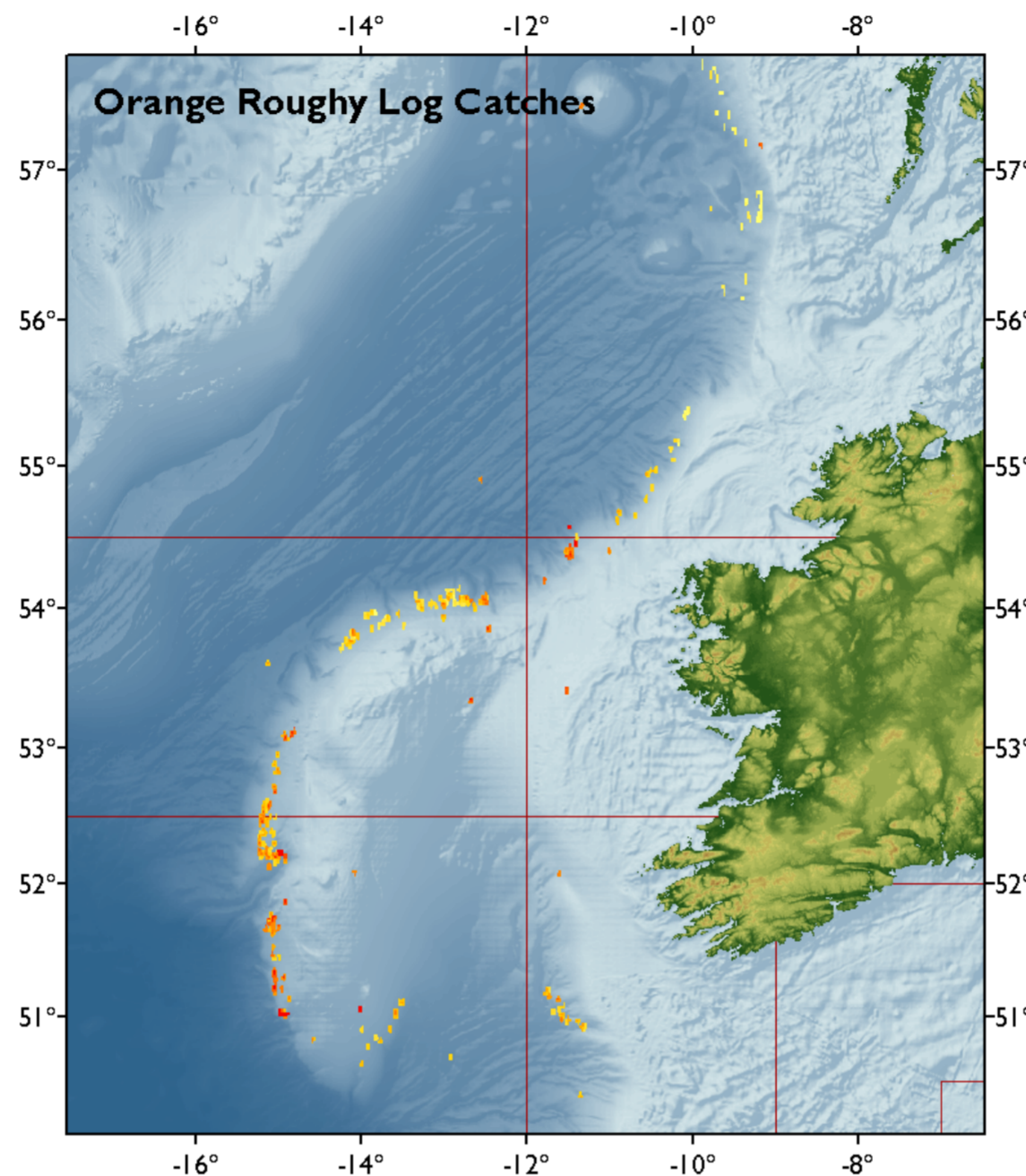
#### Closed Fishery: The total allowable catch for Orange Roughy has been set to zero in EU waters since 2010.

As the catch for orange roughy is zero, the species cannot be landed. As a consequence, the risk of current fisheries to the conservation of this species is limited.

#### Approach

Productivity susceptibility analysis (PSA) is a semi quantitative approach that can be used in data poor situations, to evaluate the risk that fisheries pose to a fish population. "Here, it is applied to evaluate to what extent local orange roughy aggregations to the west of Britain and Ireland are vulnerable to historic and current fisheries."

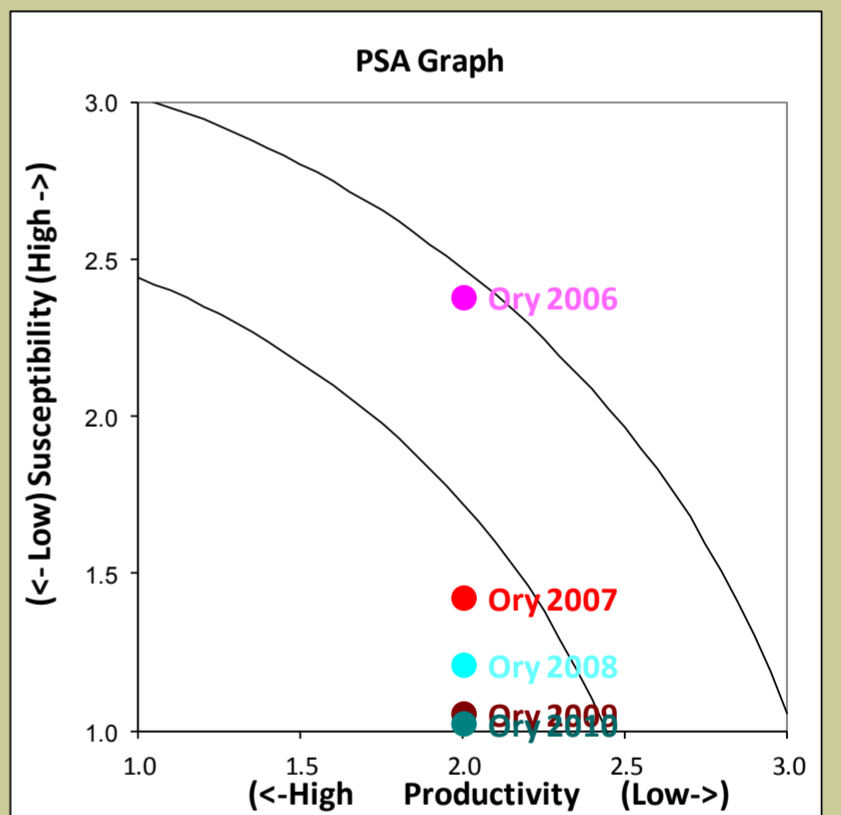
The productivity of the species is not changing over time, but the susceptibility to existing fisheries can be monitored and managed.



#### Data used

Productivity scores were based on biological data derived from published literature. Time dependant susceptibility analysis was performed by evaluating the exposure of Orange Roughy to the main deepwater fisheries in the area.

Spatial catch information of Orange Roughy was compiled from a variety sources including observer programmes, personal log books and scientific surveys. Spatial and temporal data of the French and Irish Deepwater fisheries in VI/VII (Irish EEZ) were obtained from VMS data between 2006 and 2010.



The spatial overlap between Orange Roughy distribution and relevant deepwater fisheries is evaluated and incorporated into a time dependant PSA to monitor susceptibility.

#### What does it tell us?

The risk of exposure has decreased in the last years, as directed fisheries have ceased and the spatial footprint of deepwater mixed fisheries have declined in recent years. Key distribution areas of the species to the west of Ireland are currently not exposed to deepwater fisheries. There is limited spatial overlap to the north west of Ireland.

