



**Sea Mammal  
Research  
Unit**



# UK Bycatch Programme

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**The Scottish  
Government**  
Riaghaltas na h-Alba



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**defra**  
Department for Environment  
Food and Rural Affairs

# Structure

1. Background
2. Mitigation trials
3. Summary of catch compositions

# What is bycatch?

Some ways the term bycatch is used:

1. Size grades of target species which are discarded (<MLS, low value)
2. Retained or discarded non-target commercial species
3. Non-commercial taxonomic groups (eg seabirds, turtles, marine mammals) and restricted elasmobranchs / fish

# What is the bycatch programme?

- Monitoring programme aimed at assessing impacts on PET species
- UK wide since 2005 (ad hoc studies since mid 1990s)
- Funded by Defra and Scottish Government
- Meet obligations under Regulation 812/2004 and Habitats Directive (92/43/EEC)

COUNCIL REGULATION (EC) No 812/2004

of 26 April 2004

laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98

COUNCIL

COUNCIL DIRECTIVE 92/43/EEC

of 21 May 1992

on the conservation of natural habitats and of wild fauna and flora

- Initial focus on marine mammals (dolphins, porpoises, seals)



- Now also seabirds, elasmobranchs, turtles, protected fish



# Why is it needed?

- High political

UK Post

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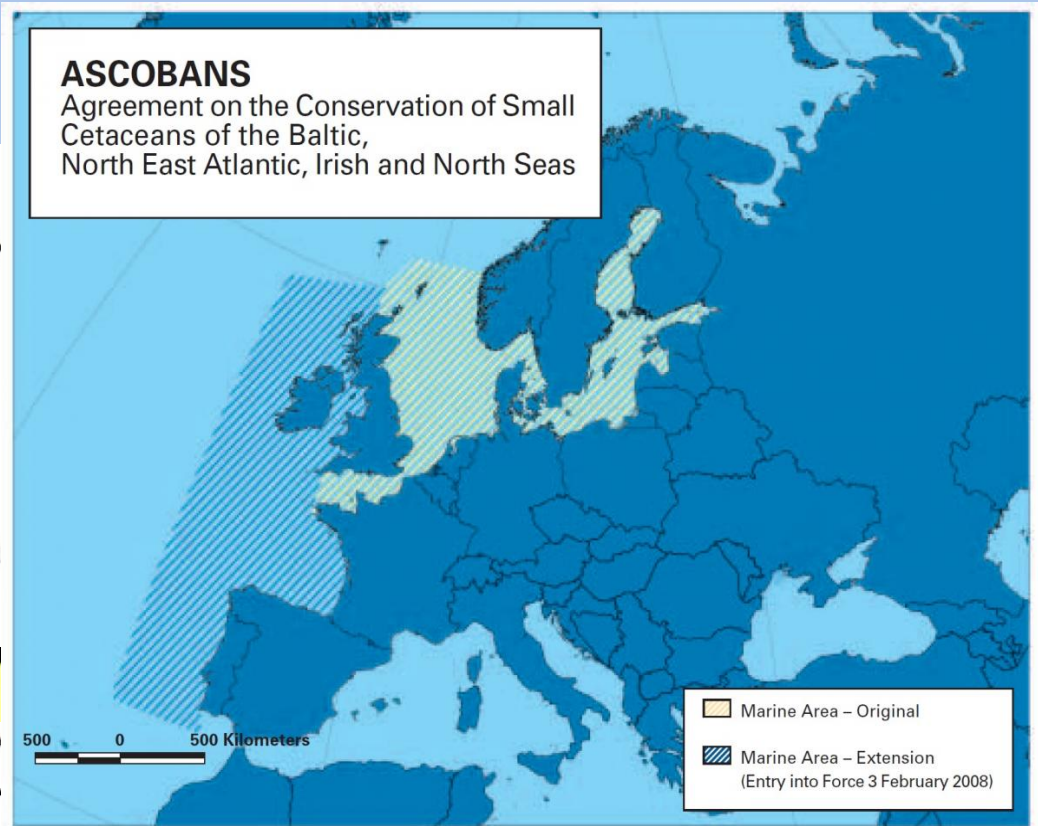
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- Improves knowledge of effects on these species and helps Government meet its obligations
- A conduit for communication between scientists, industry and regulators

# What do we do?

- Collect and analyse data
- Use experienced observers
- Operational, gear, catch and bycatch data, bio samples
- 400 – 500 sea days per year  
= 5-10% of midwater trawl effort  
= 1% of static net effort
- Collaborative approach

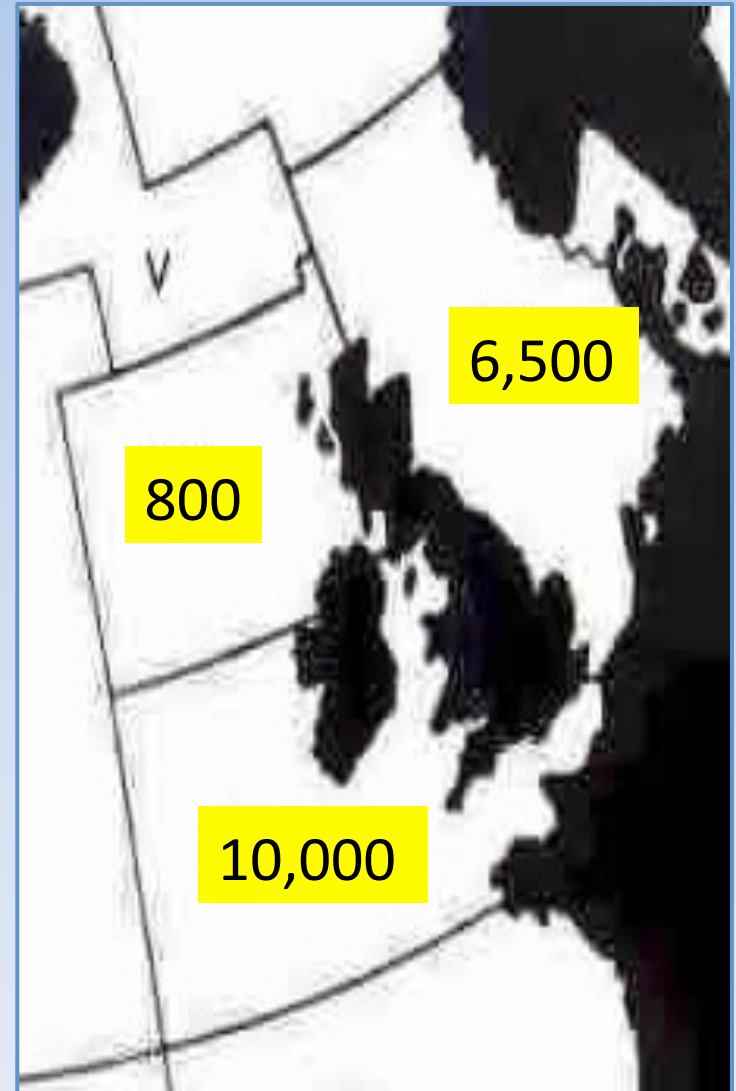


# What data do we have?

- >17,000 observed hauls  
(mainly midwater trawl & static net)
- Also access DCF data (to assess vulnerability to other gear types)

## PET species recorded

- 11 marine mammal spp  
(9 cetacean spp, 2 seal spp)
- 8+ seabird spp
- 8 restricted elasmobranch spp
- 4 protected fish spp





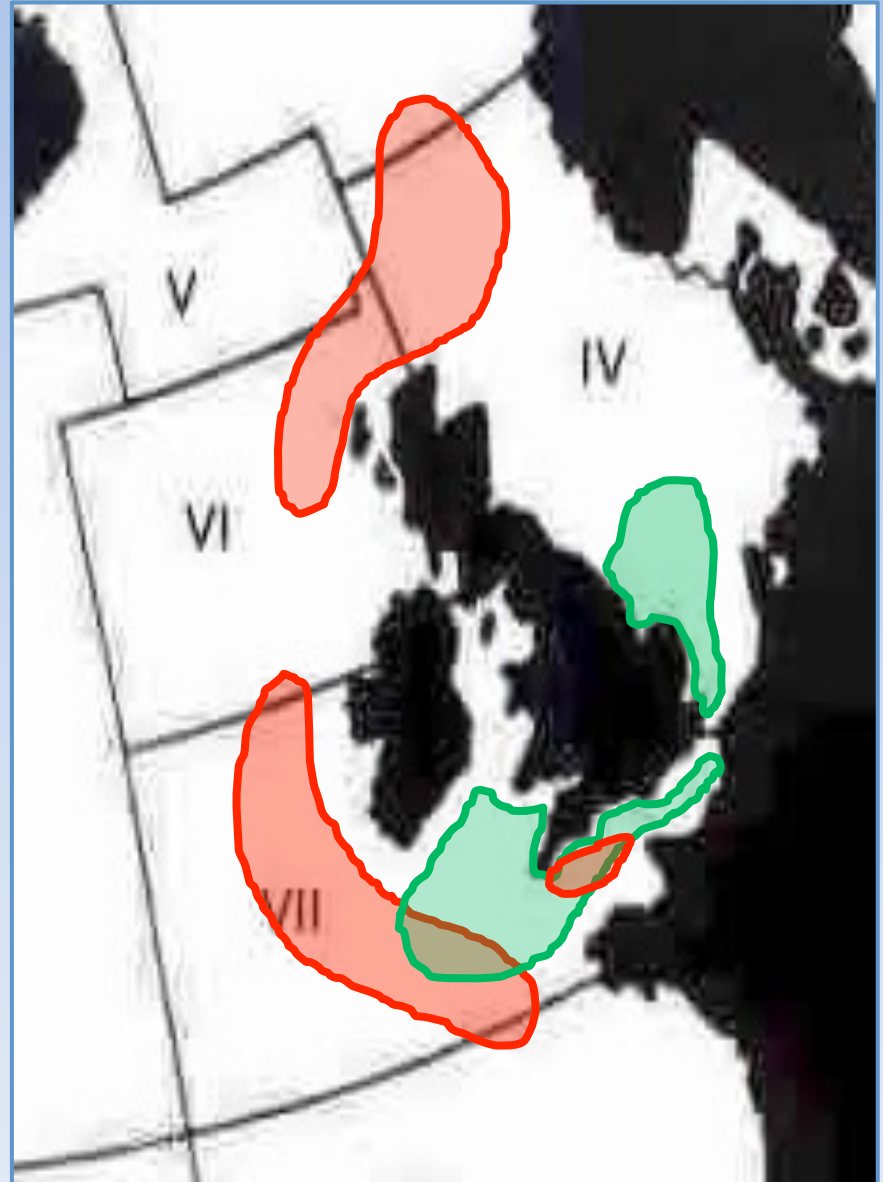
# Main Sampling Areas

## Midwater trawl:

- Herring, mackerel (IV & VI)
- Blue whiting, boarfish, bass (VII)

## Static net:

- Turbot, sole, ray, cod, bass (IV)
- Anglerfish, turbot, pollack, sole, plaice, ray, shellfish, bass, red mullet (VII)



# How is the data used?



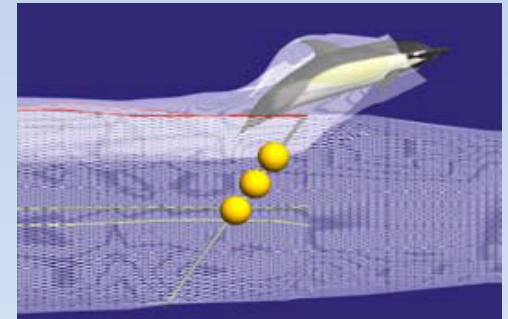
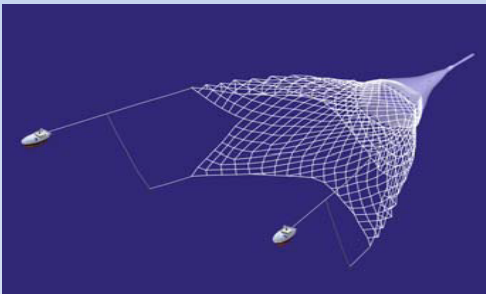
- Produce annual bycatch estimates (only marine mammals so far)
- Modelling to investigate what factors play a role in bycatch
- Mitigation measures
- Provide advice to Government / Industry / Certification bodies / ENGOs
- Collaborate with other scientists (e.g. via ICES)
- Other uses. catch compositions, patterns of effort, seal depredation, biological samples (age, diet etc)

## 2. Bycatch Mitigation

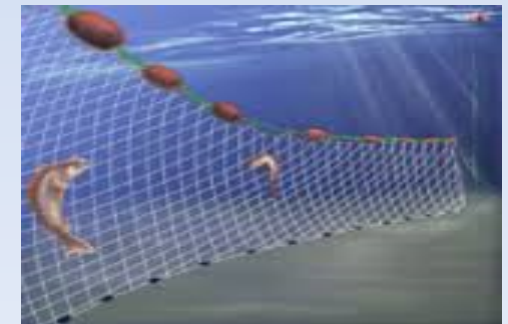
2 main areas of recent mitigation

work:

1. Bass pair trawl fishery (Vlle)- various devices:  
grids, escape hatches, pingers

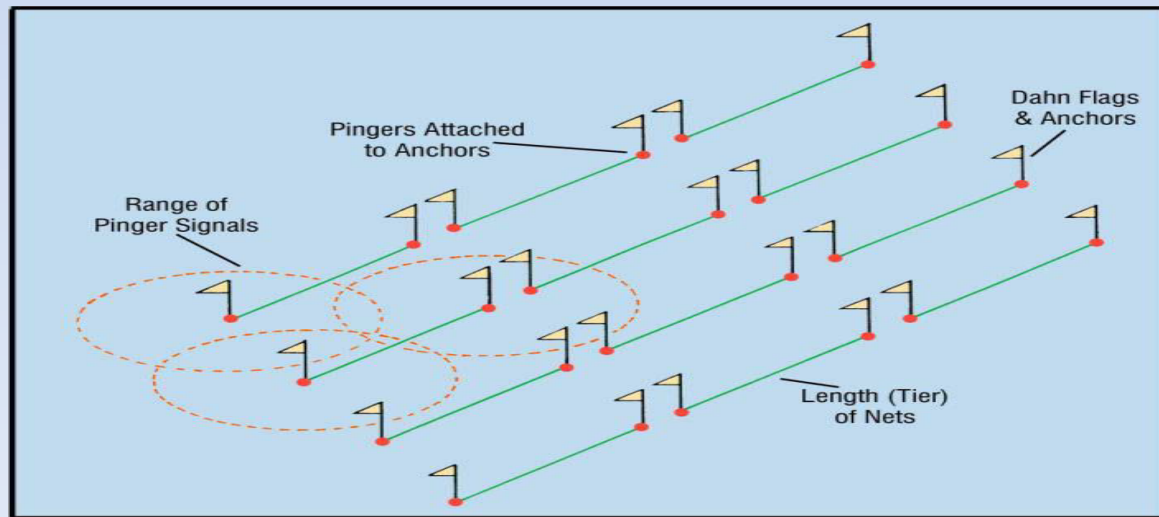


2. DDD pinger with >12 m netters



# Background

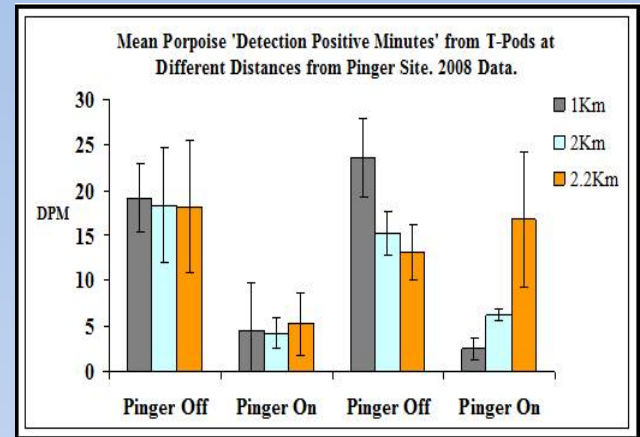
- Since 2006 pingers mandatory for >12m vessels in VIIe-j (and elsewhere)
- Trials in UK (Seafish, 2003 & 2005) - specified pinger models not suitable
- SW Industry suggested using fewer louder devices



- As a result SMRU / CFPO trialled a louder pinger

# Summary

- 2007/08 conducted experiments
- 2008 – 2011 commercial trials
- 1700 monitored fleet hauls
- Fleets with and without pingers
- Fleet lengths 400 m – 10 km
- Pingers mainly attached to end ropes
- Bycatch: 23 porpoises  
5 dolphins





Charisma BA45  
Pudlowe harbour  
10/09/09

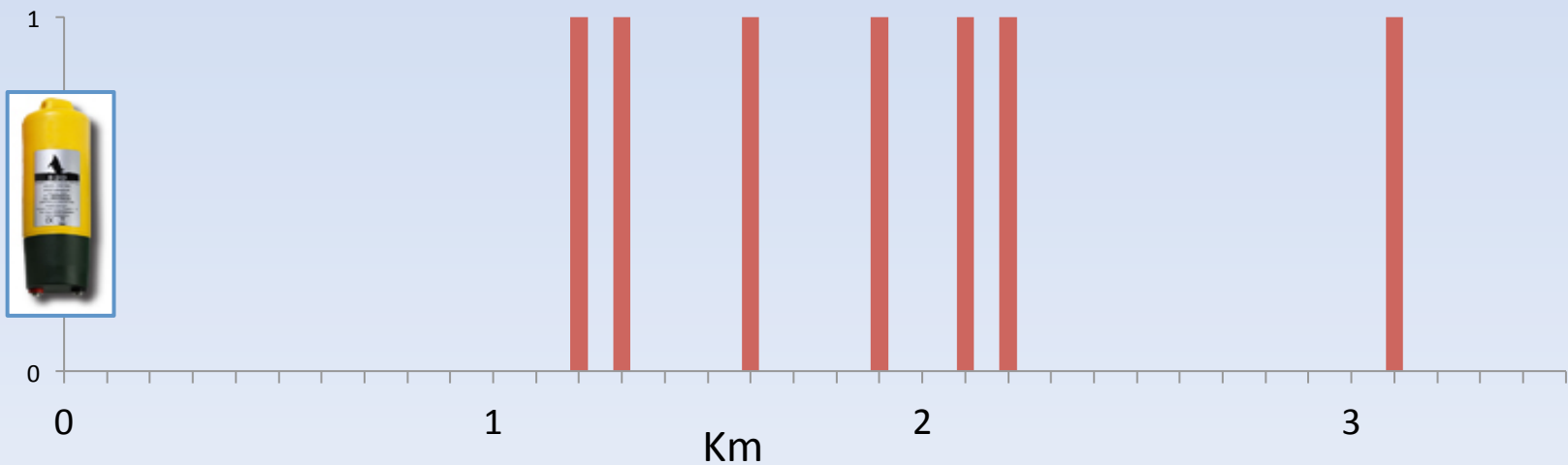


# Data

## 1. Bycatch numbers

Hauls	Pingers used	Porpoise
780	No	16
929	Yes	7

## 2. Distances



# Results

## 2 analytical approaches:

### 1. Bycatch rates pingered / unpingered nets:

- all fleet lengths = **63%** reduction ( $\chi^2$ : **p= 0.02**)
- only fleets <4km = **95%** reduction ( $\chi^2$ : **p= 0.0001**)

### 2. Probability of bycatch occurring at recorded distances:

- 20% of net >2km from pinger, but 3 of 7 porpoise caught  
(bootstrap: **p= 0.04**)

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- Trials & experiment suggest  $\approx 2$ km effective range

(full details see Northridge *et al*, 2011 and Kingston & Northridge, 2011)

- A more elaborate analysis in 2013 supports this.



# Associated effects

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## 1. Displacement:

- Effect of displacement not necessarily negative

Size	Quiet (200m)	Loud (2km)
UK >12 m	0.07 %	0.74 %
UK <12 m	0.09 %	2.22 %
All	0.16 %	2.96 %

Adapted from Northridge *et al*, 2011

## 2. Habituation:

- No evidence yet from UK but regular assessment necessary
- If occurs pingers become less effective

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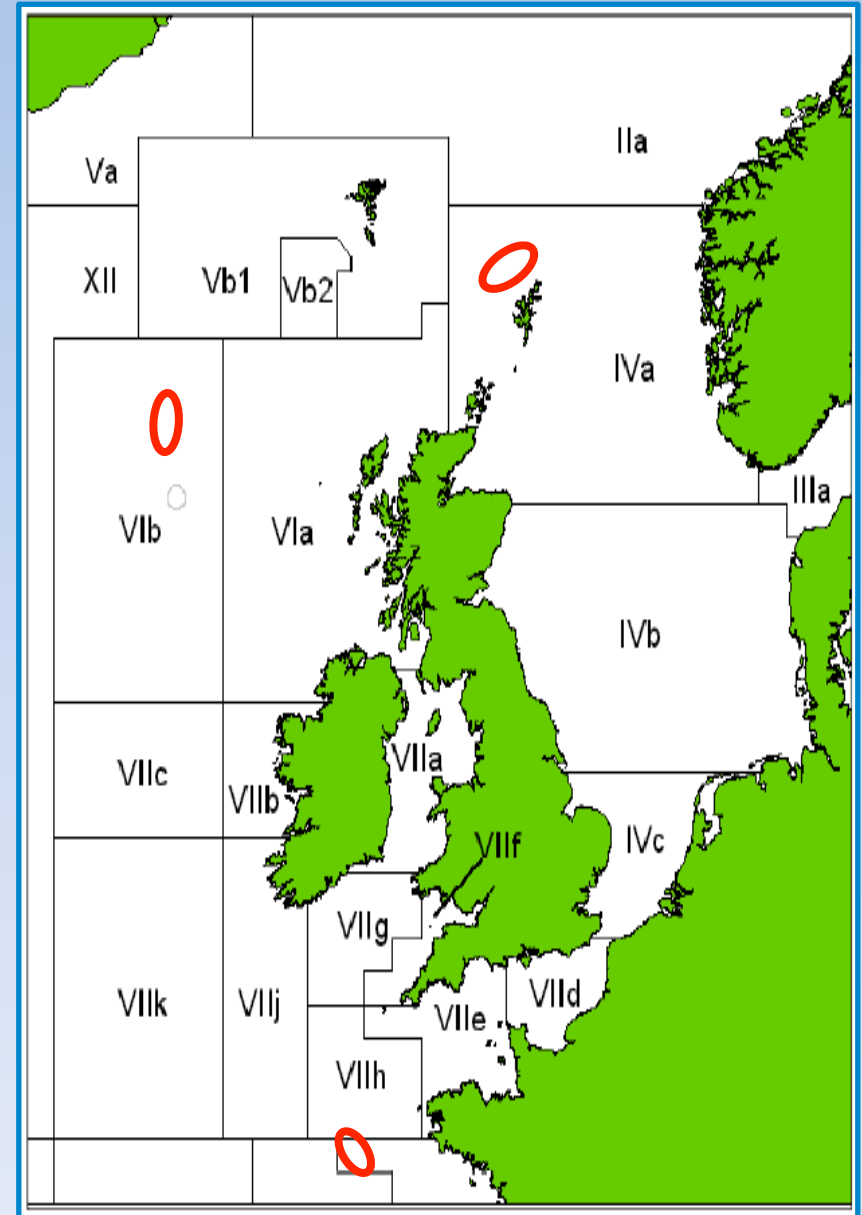
## 3. Seal damage:

- Initial analysis showed no obvious effect
  - New analysis currently being conducted
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### 3. Catch compositions

- 3 trips with UK “deepwater” netting fleet
- 2009 – 2013
- Wide distribution
- Only provides a snapshot
- More data would allow a more robust assessment



# Subarea IV

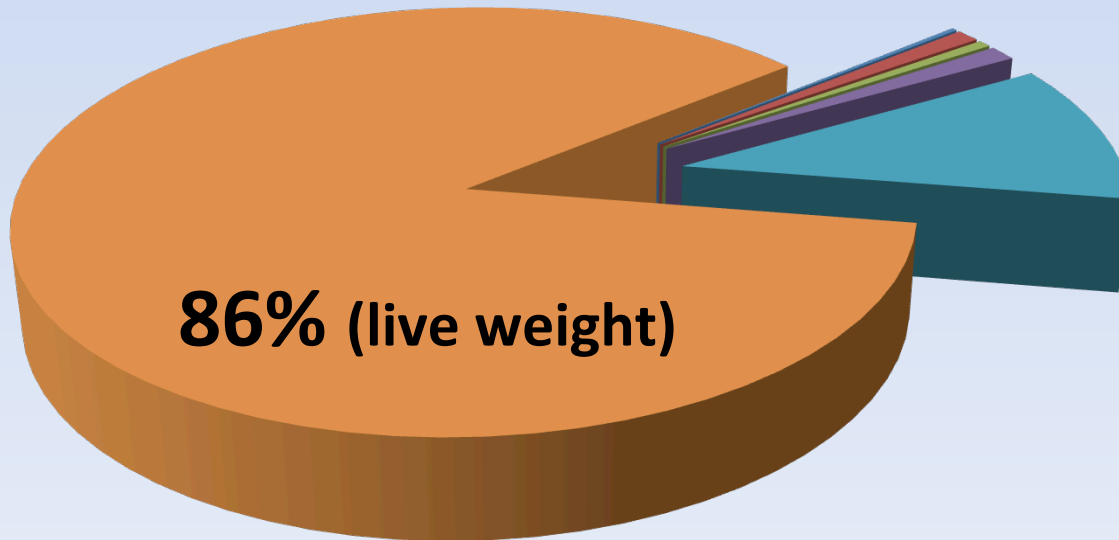
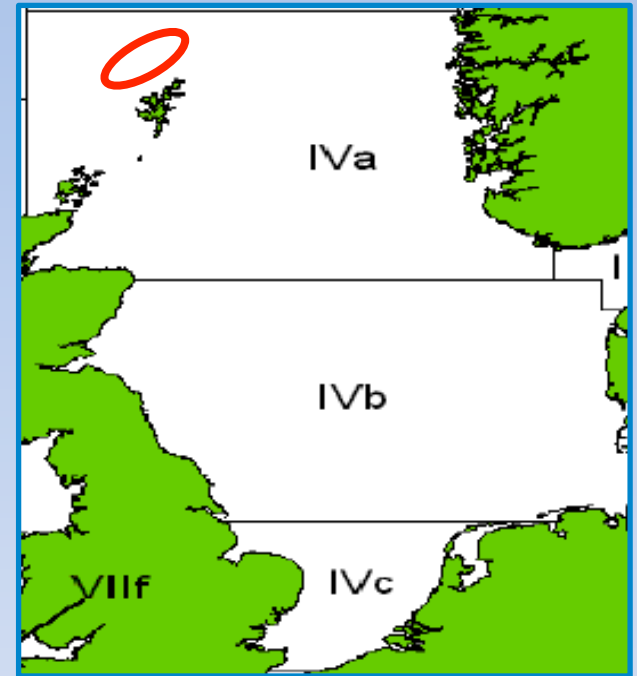
49 days, 130 hauls (2013 fleet effort  $\approx$  920 days)

Depth range: 130 – 450 m

Mesh Size: 280 mm

Soak times: 2-3 days

PET: 2 dolphins, 3 seals, 10 seabirds



- Benthos
- Crustacean
- Deepwater fish
- Elasmobranch
- U slope / shelf fish
- Anglerfish

# Subarea VI

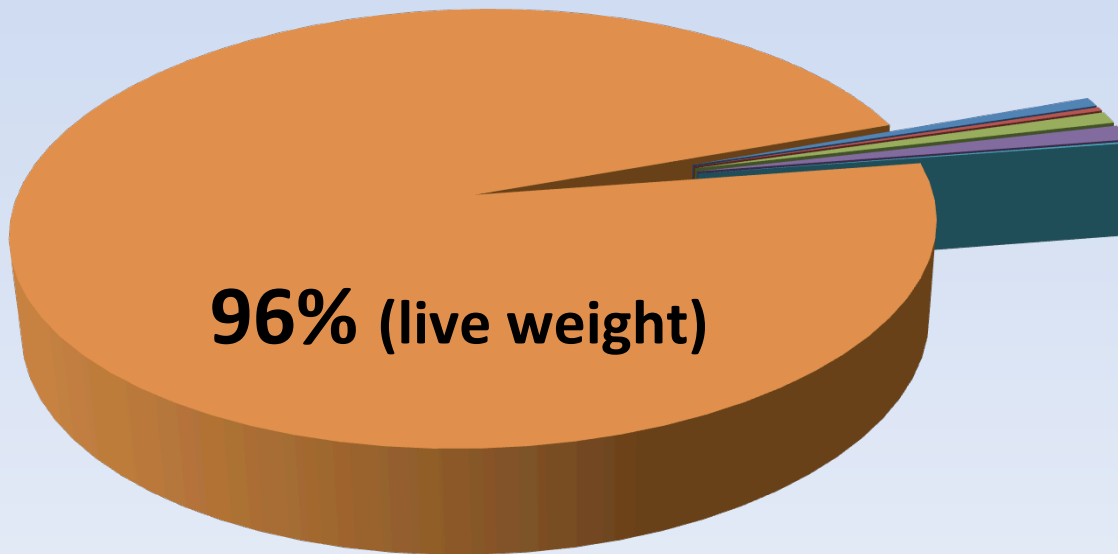
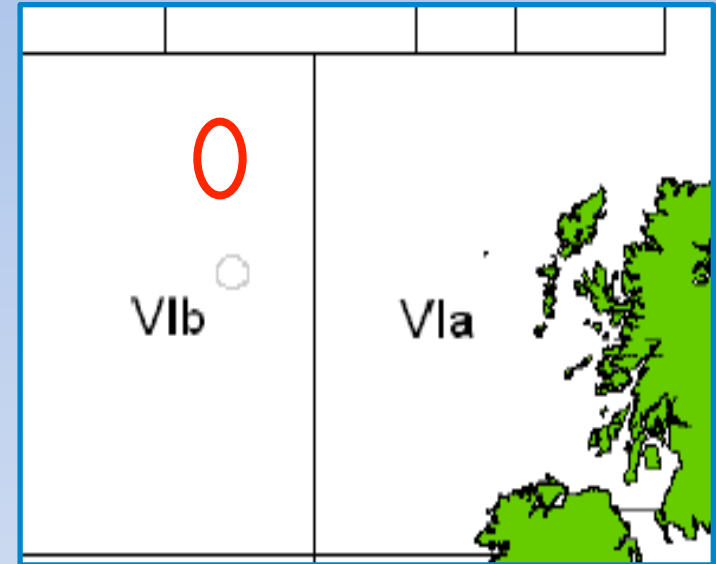
45 days, 100 hauls (2013 fleet effort  $\approx$  225 days)

Depth range: 500 – 1000 m

Mesh Size: 280 mm

Soak times: mainly 2-3 days (max 6)

PET: 1 skate (spp ind)



■ Benthos

■ Crustacean

■ Deep fish

■ Elasmobranch

■ U slope / shelf fish

■ Anglerfish

# Subarea VIII

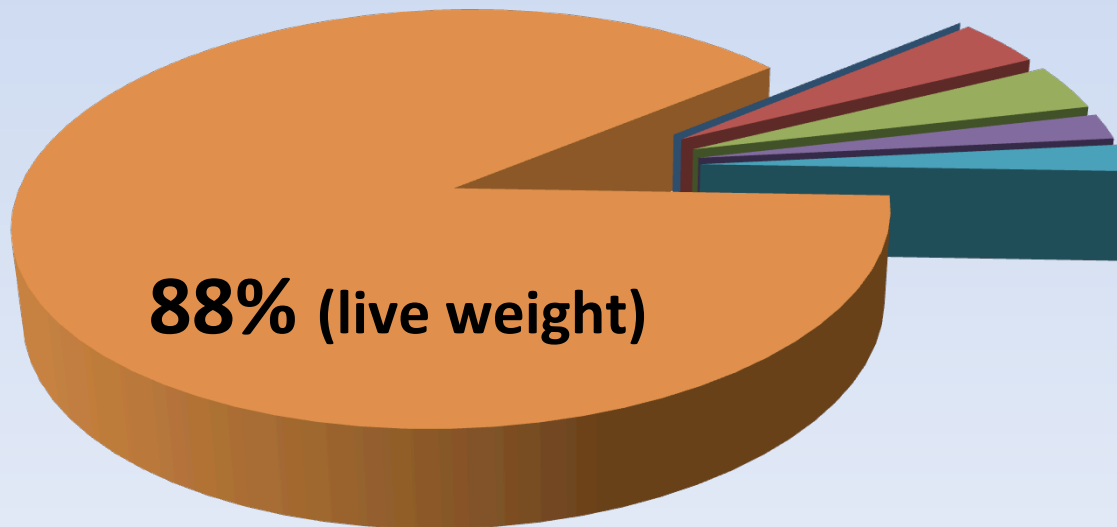
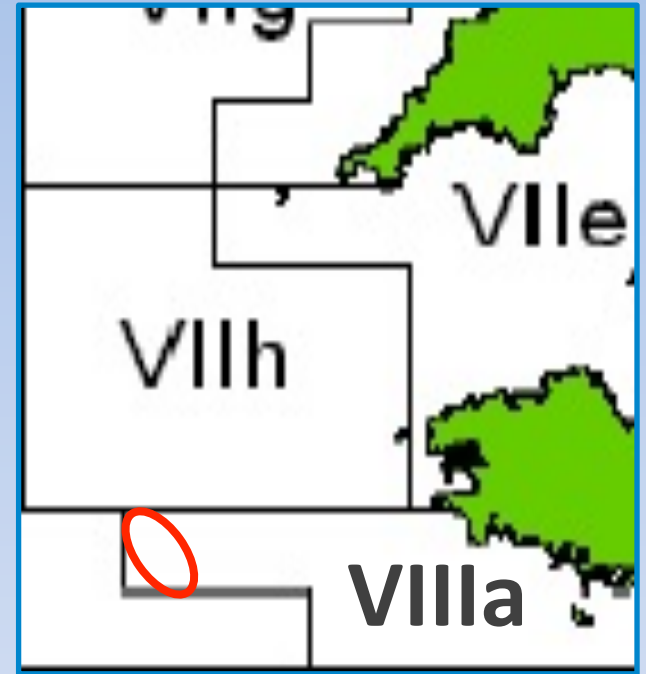
12 days, 24 hauls (2013 fleet effort  $\approx$  180 days)

Depth range: 340 – 770 m

Mesh Size: 280 mm

Soak times: 2-3 days

PET: 1 shark (spp ind)



- Benthos
- Crustacean
- Deep fish
- Elasmobranch
- U slope / shelf fish
- Anglerfish

# Thank you.

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