Cetacean bycatch

Improving understanding of why it happens and what it means.

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www.smru.st-andrews.ac.uk
- Cetacean bycatch documented in numerous gears
- UK most cetacean bycatch in static nets
- No one fully understands why bycatch occurs
- Little knowledge of cetacean behaviour close to fishing gear.

Develop a **practical** method to assess **fine scale movements/behaviour** of harbour porpoises around actively fishing static nets.
Passive Acoustic Monitoring. Two Approaches

1) Single channel recorders to detect cetaceans in vicinity of nets

2) More complex recorders + sensor package to monitor fine scale movement around the nets.
4 Channel SoundTrap

- Constructed at SMRU.
- Calculates a 3D bearing to detected clicks and whistles.
- **Two** devices for 3D tracking.
- Orientation, pressure, depth, light sensors

**Hydrophones**
4 x high frequency for dolphins and harbour porpoises.

**Instrument Package**
Records high accuracy pressure and orientation synced with acoustic recordings.

**Housing**
Graphite cut using precision laser.
Lots of dolphins

Porpoise Buzzes

Time (30s)

Depth and Temperature

Orientation

Light

Time (120s)

Time (120s)

Depth and Temperature

Orientation

Light
Results: 4
Channel System

- Dozens of test deployments
- Several full system deployments.
- Harbour porpoises detected and localised near nets.
Next steps

- 2 papers in preparation
- Make the system more user friendly
- Further deployments on different net types
- Use a bigger dataset to investigate fine scale behaviour under different circumstances (net, depth, time etc)
Improving bycatch estimates
(from monitoring data)

Bycatch estimates have 2 main components:
1. Bycatch rate
2. Total fishing effort

1 x 2 = estimate

Simple......... but there are problems in 1 & 2
• 2005 several MS Ded programmes
• Dedicated programmes gradually absorbed into DCF
• Concern bycatch rates may differ between programmes
• UK - some net fisheries sampled using different protocols
• Suggests mortality estimates using DCF derived rates could be significantly under-estimated
• Not a criticism of DCF – will help make it multi-purpose

• Now accepted that DCF protocols not optimal for many PETs
• Efforts to improve PETs sampling
• 2017 PETs formally included under DCF
• RDBES data fields: true/false 0’s

Situation improving but still work to do
• 2017 - WGBYC begin transition from 812/2004 reports to other sources of effort

• Compared several effort datasets (VMS, Logbooks, WGBYC data call, RDB)

• WGBYC and RDB “most complete” but not the same
• Similar pattern across other metiers – OTM, OTB
• 2020 WGBYC develop questionnaire
• Circulated prior to WGCATCH
• Multiple reasons for discrepancies

• Ideally bycatch estimates based on robust rates and realistic effort data