

What's going on in Sweden?

Reducing bycatch of marine mammals and birds

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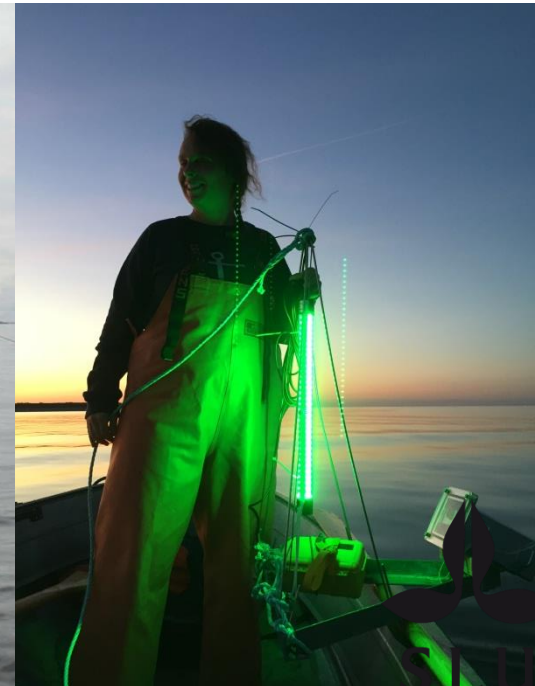
What's going on in Sweden?

- Development of alternative fishing gear
 - Seal and Fisheries Programme
 - Secretariat of selective fishing gear
- Commercial fisheries with pingers and harbour porpoise presence
- Harbour porpoise bycatch risk maps
- Pinger programs
- Development of a seal safe pinger

Development of alternative fishing gear

Time consuming, High risk projects, Fishermens' and researchers' commitment,
Open mind to crazy ideas, Persistence

- Comparable catches in alternative fishing gear as to traditional fishing gear
- Environmental impact
- Seal-safe; protect the catch and minimize the seals reward
- Practical handling



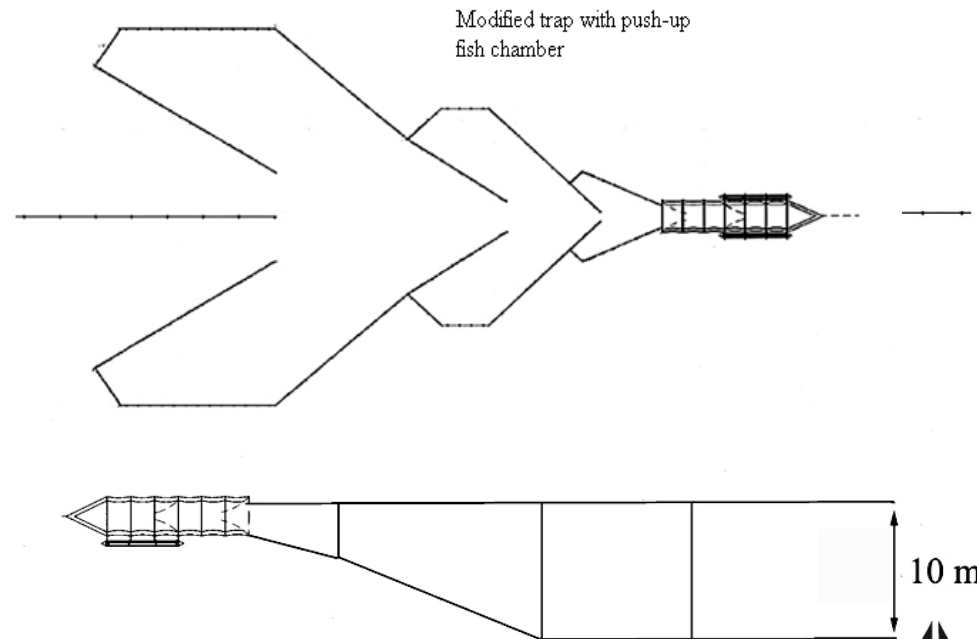
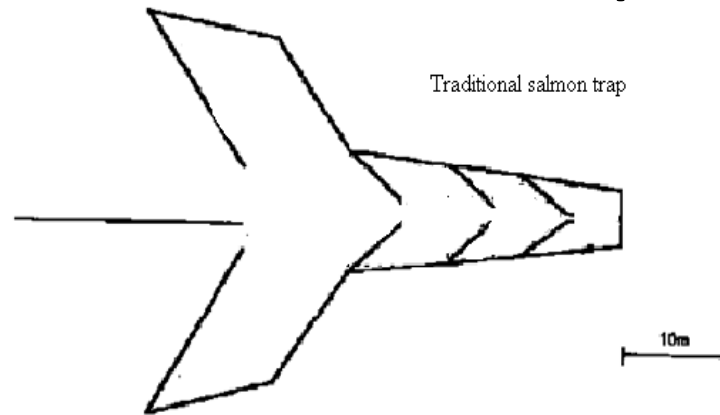
Development of alternative fishing gear

- Pontoon traps
- Seine nets
- Pots for cod
- Multifunctional pots
- Shrimp pots



The Pontoon trap for migratory species

Salmon trap



Pontoon trap for Schooling pelagic species

Herring/vendace trap

- Catching very large quantities
- Need of selection devices



Pontoon trap for Demersal species

Cod trap

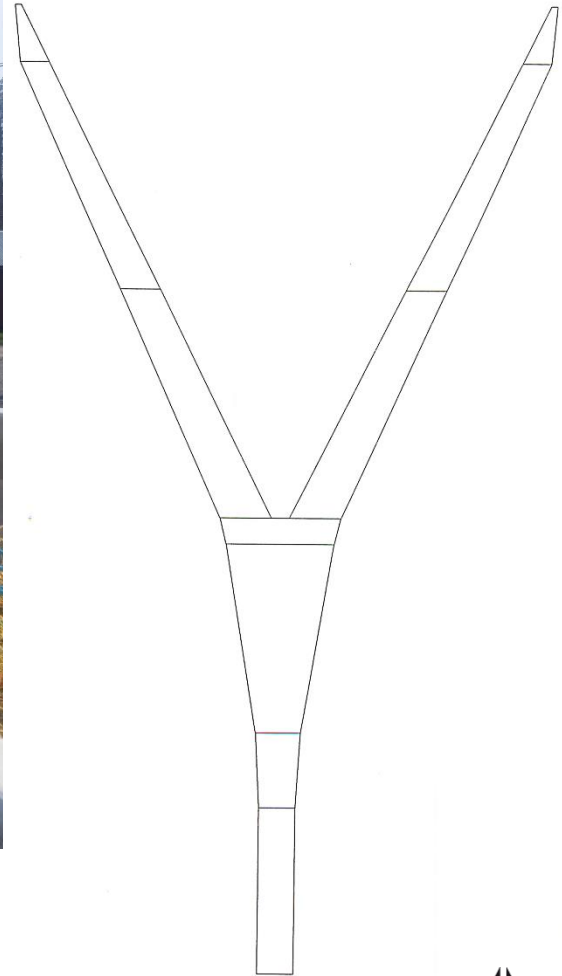
- Location dependent
- Exposed fishing gear



Seine nets

- Vendace
- Herring
- Flatfish





- Potential alternative to vendace, perch and flatfish
- Less environmental impact than bottom trawling
- Short fishing time i.e seal safe
- No bycatch of marine mammals
- Need of traditional and local knowledge

Cod pots

Implementation program

Fishermen's design

Fishermen's commitment and involvement

The pots are only a loan

Obligated to fish for a month

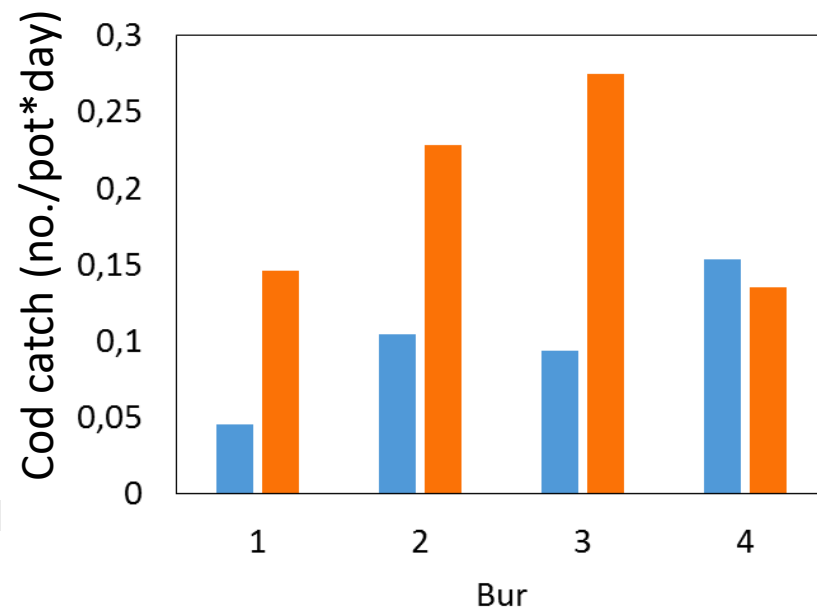
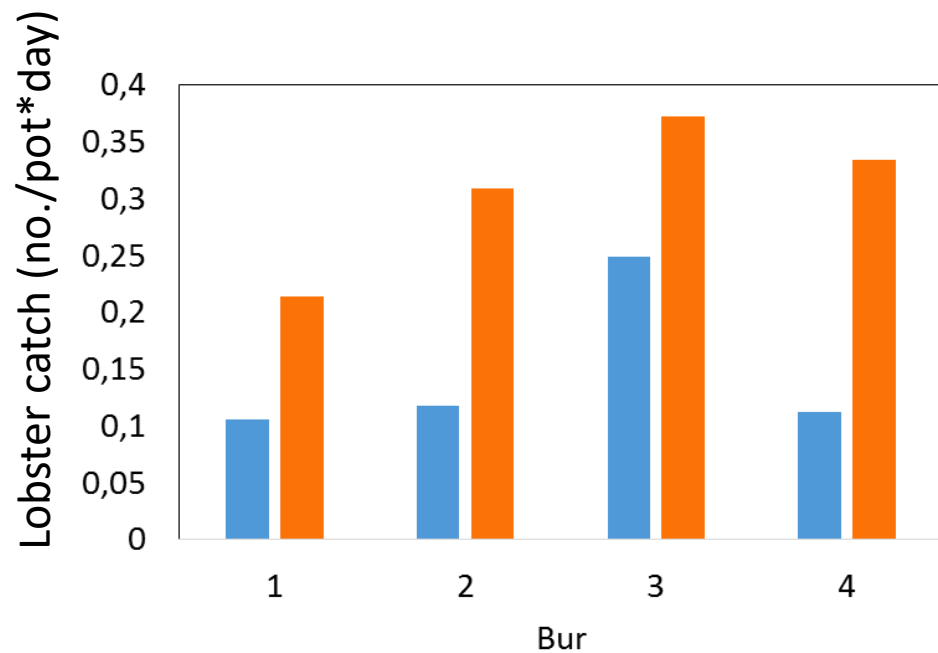




Multifunctional pots

- Multiple target species (cod and lobster)
- Same pot, several seasons, swap entrances and/or selection panel
- Small scale fishing, reduce number of gear



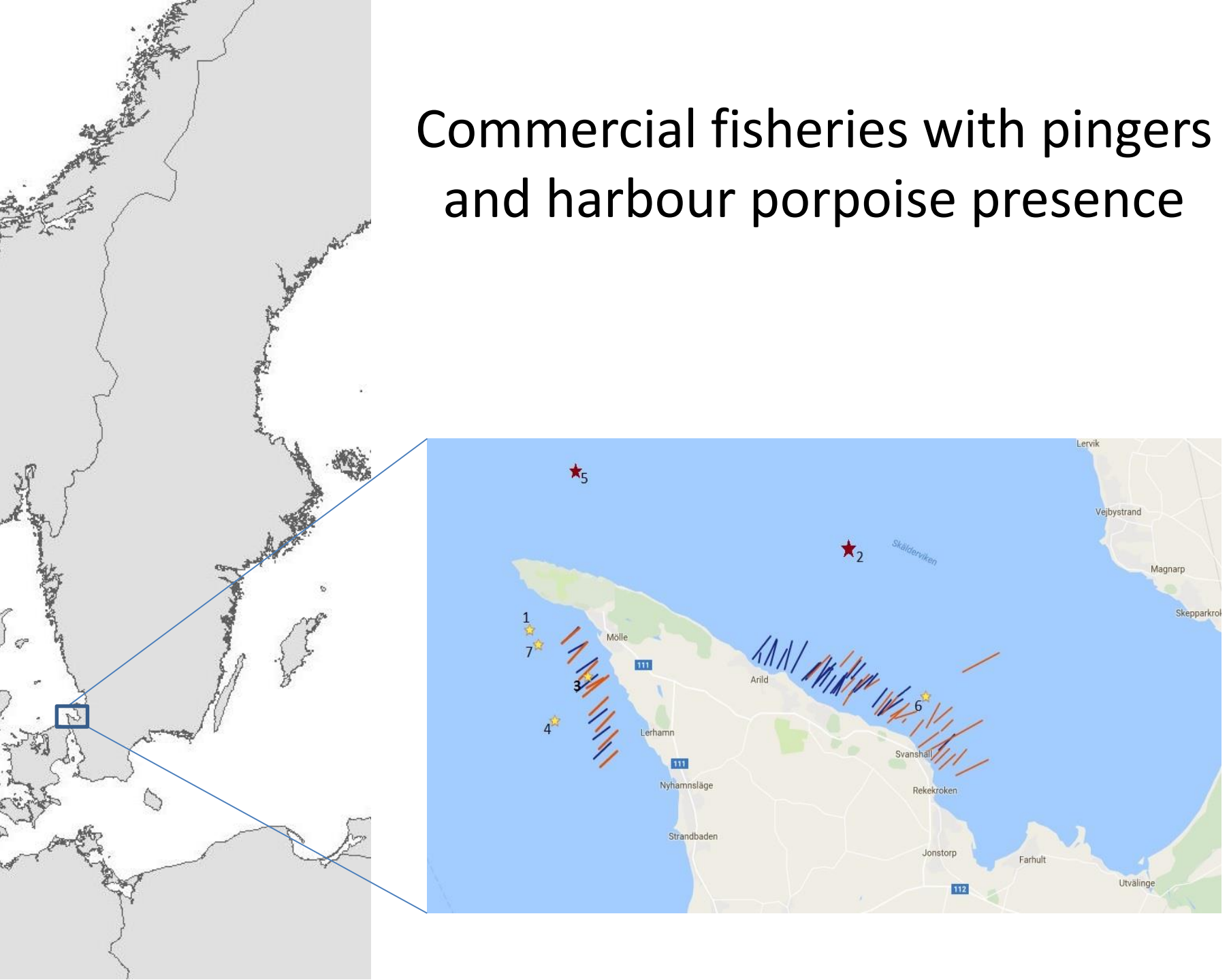


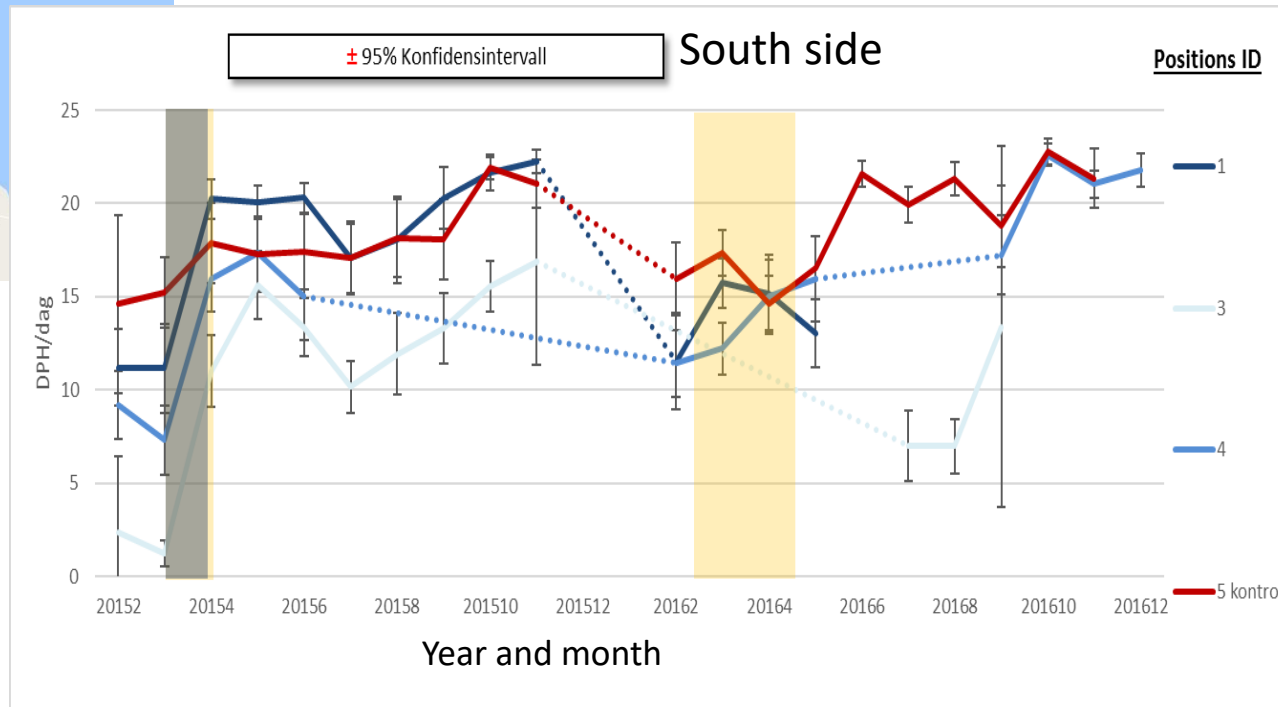
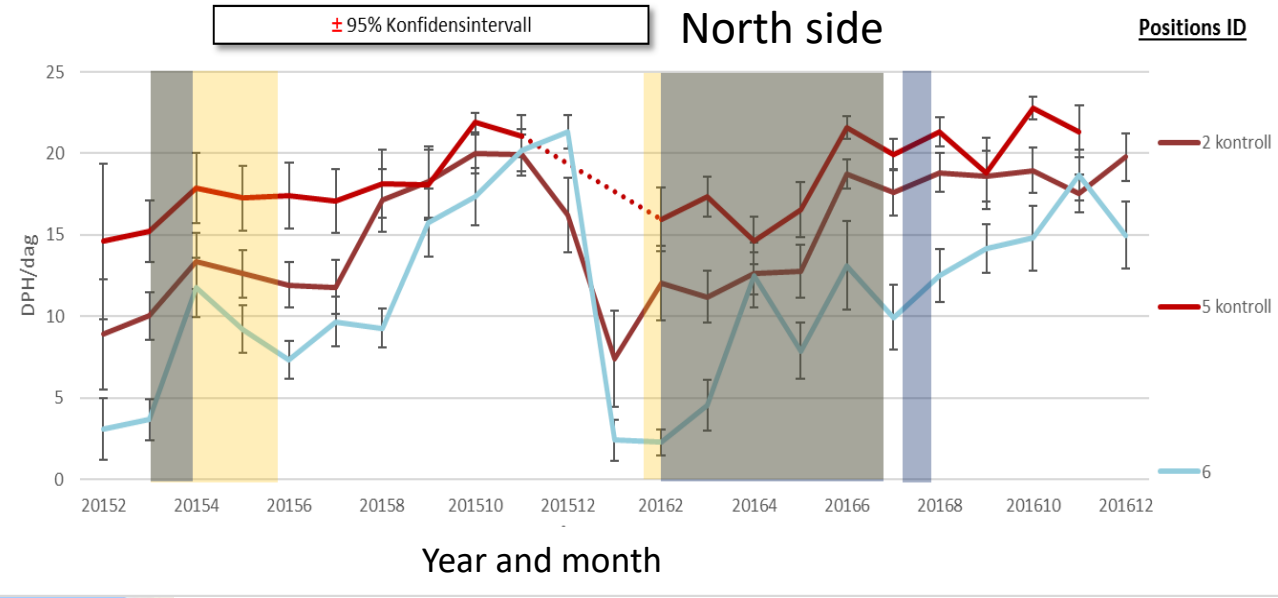
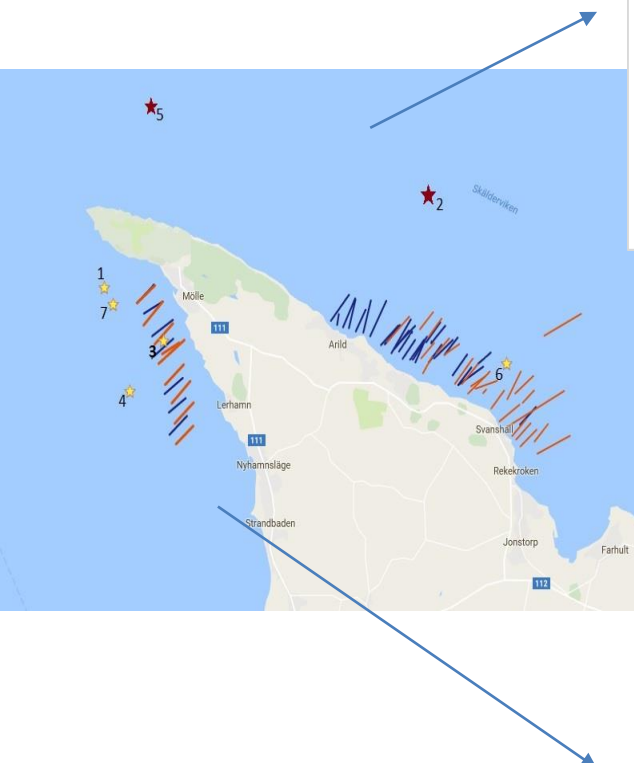
Shrimp pots trials

- Top or side mounted entrances
- Strains of 10 pots
- Herring bait
- 50-80m depth
- 1-7 days soak time

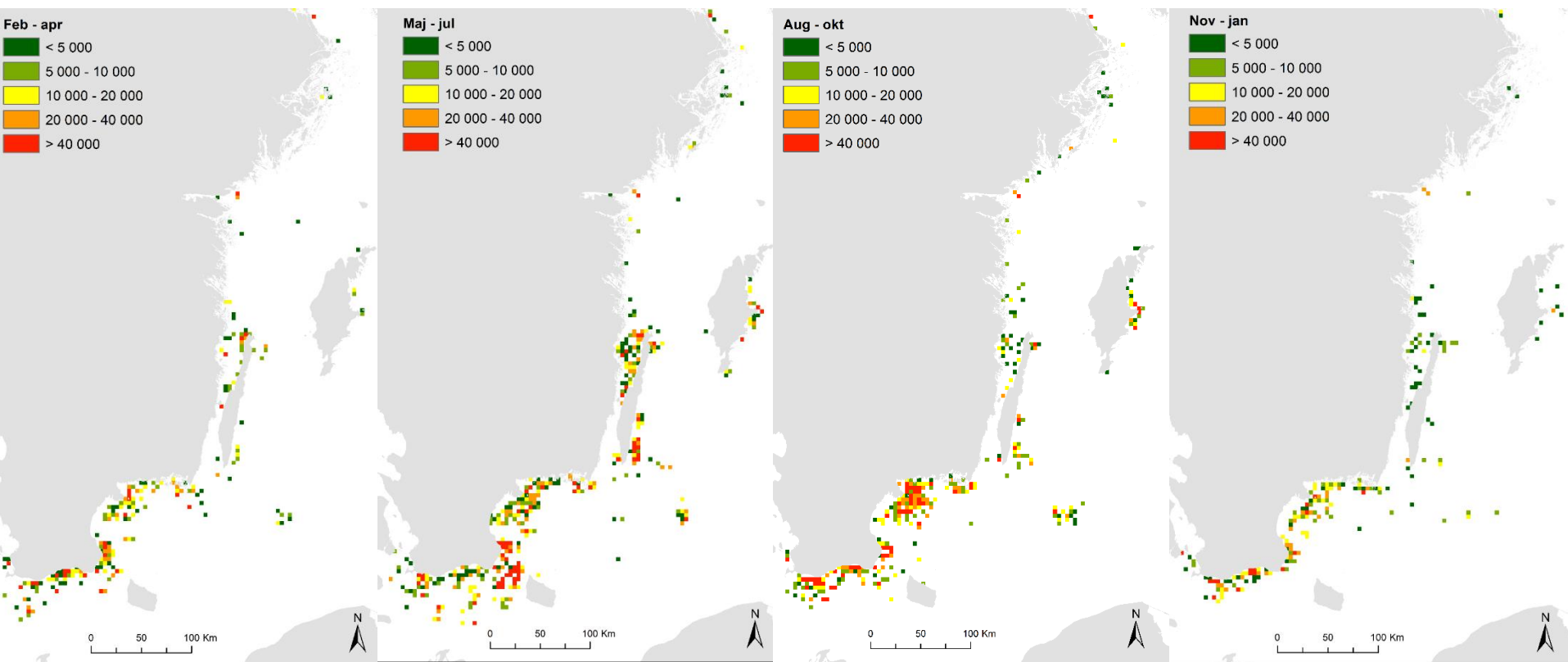


Commercial fisheries with pingers and harbour porpoise presence





Harbour porpoise bycatch risk areas



Fishing effort * likelihood of porpoise presence

After model by Lotte Kindt-Larsen et al. 2017 using SAMBAH data and logbook fisheries data

Pinger implementation programs

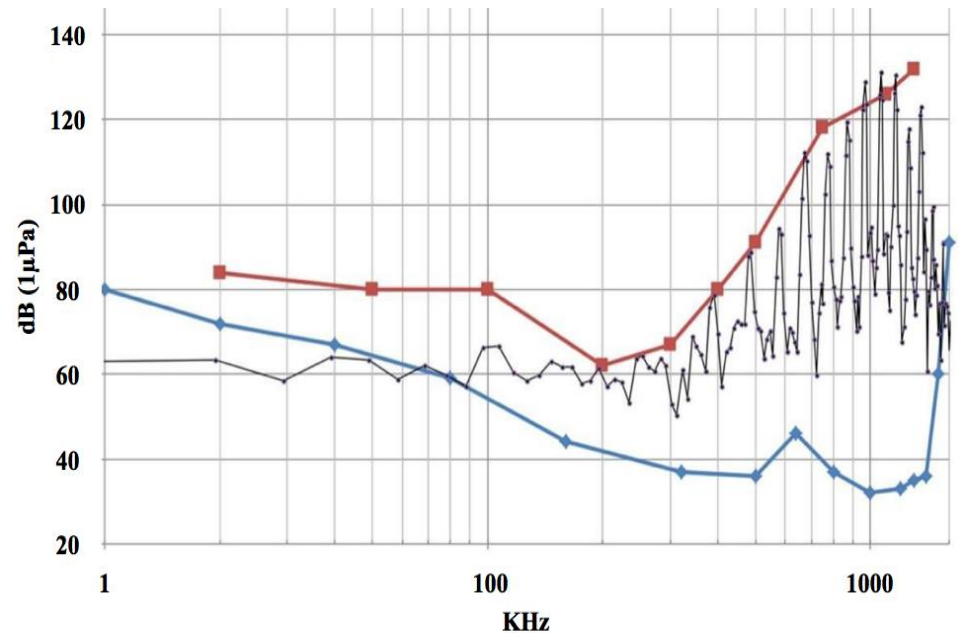


2017: 9 Fishermen are using pingers voluntarily

Fishermen are reporting bycatch

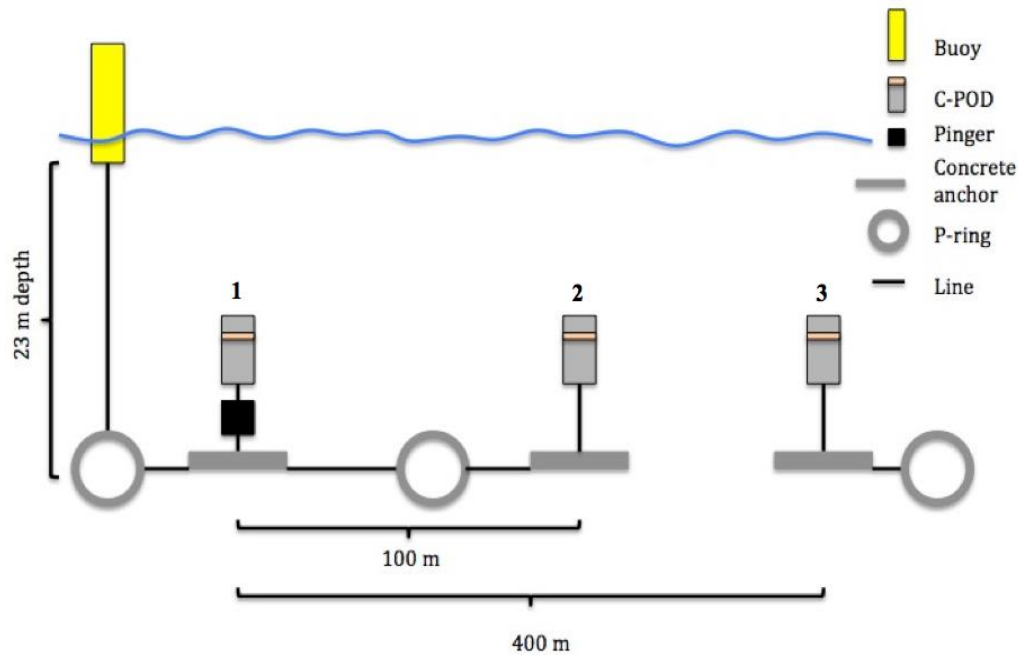
2018: 20 fishermen will start using pingers in 2018

Development of a seal safe pinger

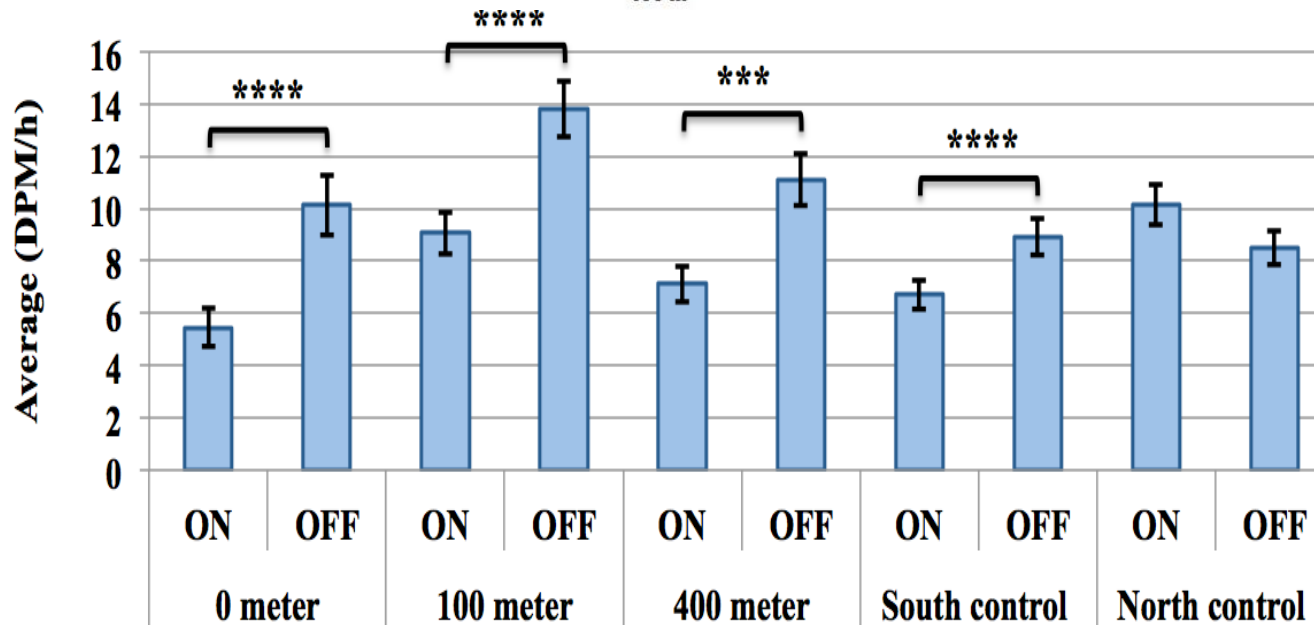


The required frequency spectrum of the pinger sound (short section of the normal multi-harmonic pinger sounds). Blue: audiogram for a harbor porpoise. Red: audiogram for a grey seal.

Y scale: dB re 1μPa; SL for pinger harmonics measured @1m; X scale: Hz, log scale.



Experimental set up at 2 locations

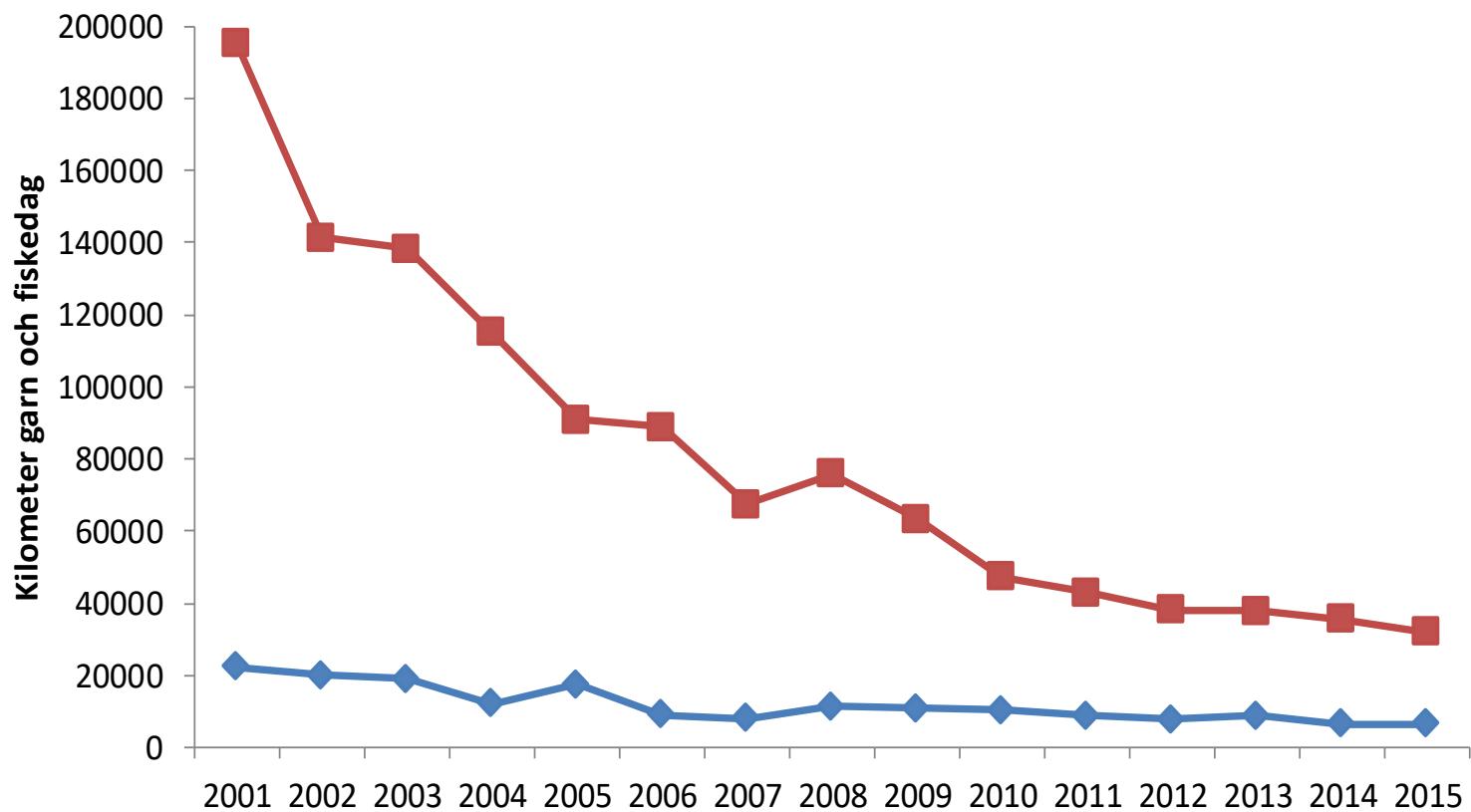


Preliminary results at one location

Thank you for listening!

Peter, Sven-Gunnar, Maria and Sara





Central and south Baltic sea, fishing effort in km net per fishing day

