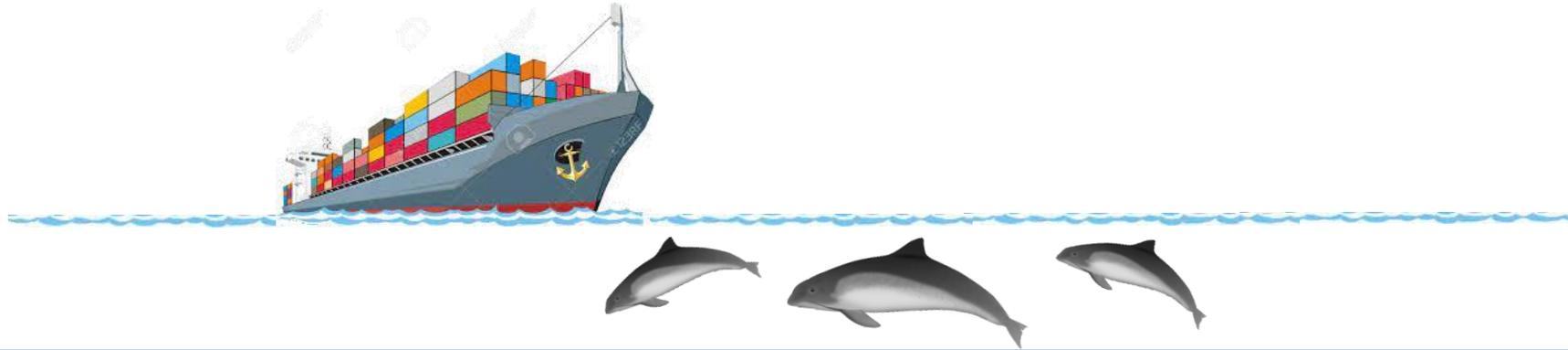


Tango project



Investigating the impact of a relocation of a major shipping lane on harbour porpoises

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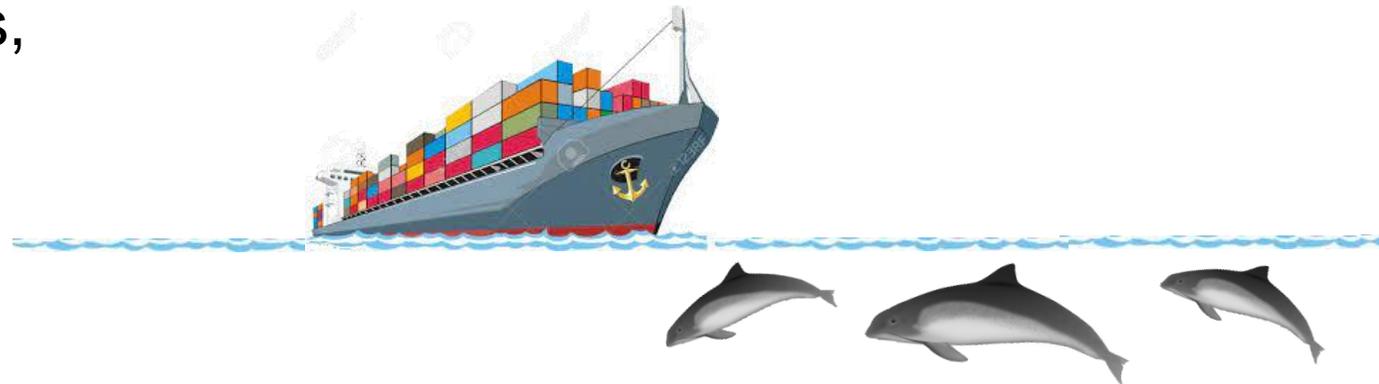
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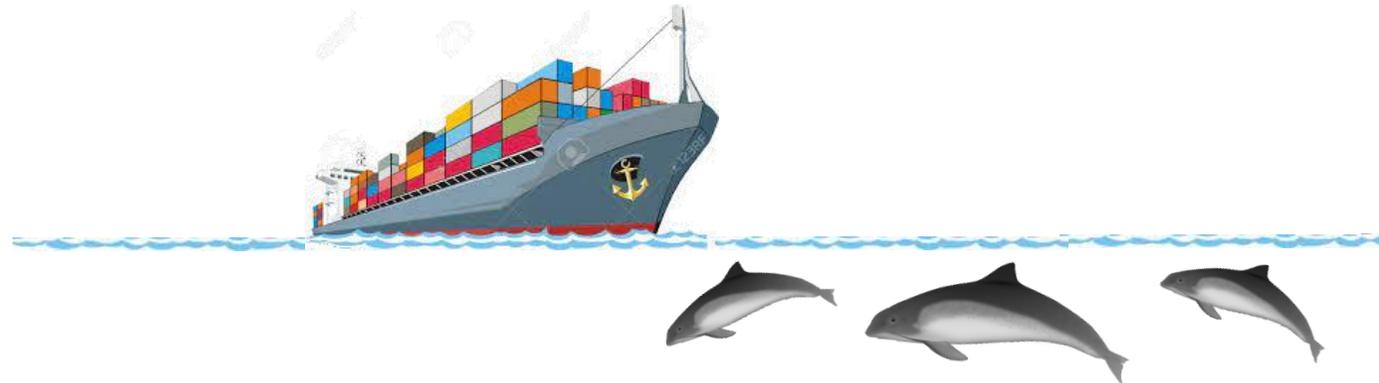
Background

- Shipping is world's largest industries (80% of world merchandise trade).
- Largest contributor to anthropogenic noise in the oceans.
- Shipping (and associated noise) increased substantially over the last century, and expected to continue to rise.
- Negative impacts on marine life include:
 - Masking of acoustic communication,
 - Disturbance of behaviour,
 - Increases in stress hormones,
 - Other physiological effects.



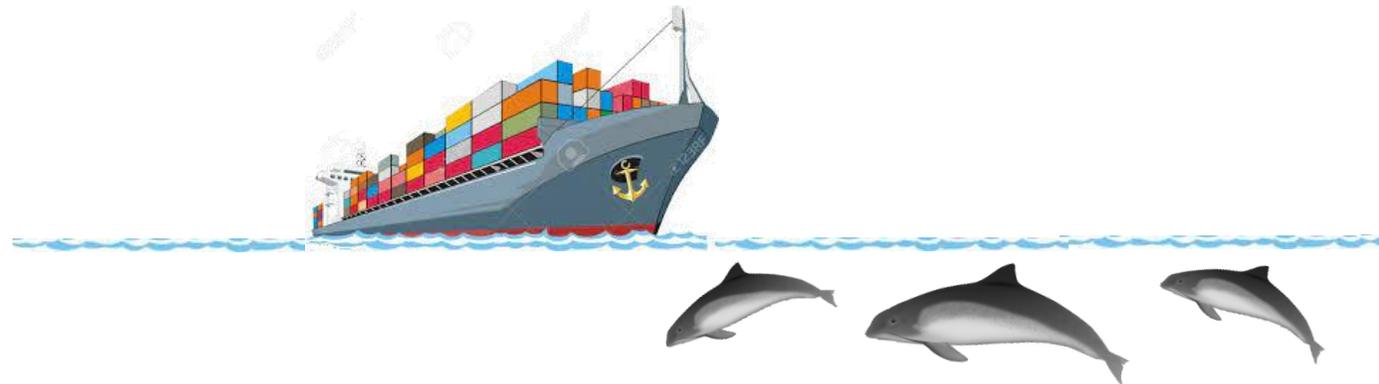
Background

- Negative impact on individual harbour porpoises has been shown including:
 - Disrupted foraging; increased fluking intensity; sudden dives to the bottom; reduced prey capture attempts and echolocation.
- However, impact that shipping has on the longer-term occurrence and habitat use of marine species is unknown.
- Long-standing question: must be answered for the successful development of noise management and spatial planning legislation worldwide.



Background

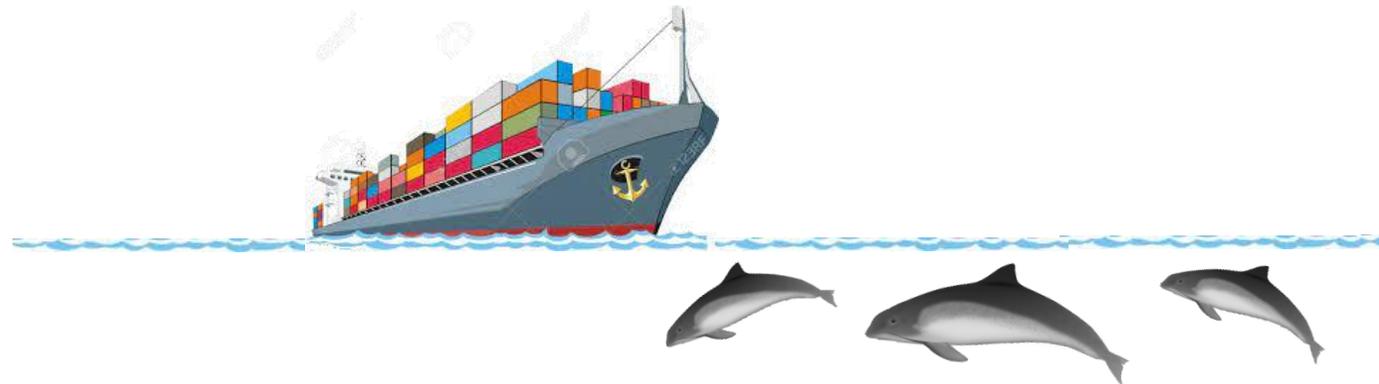
- Kattegat is the only passageway into the Baltic Sea- one of the busiest waterways in the world.
- To increase maritime safety, on 1 July 2020, vessel traffic was separated in the Kattegat- new route through important harbour porpoise habitat (Natura 2000 area).
- The TANGO project utilised a unique opportunity:
 - Changes occurring for other reasons were exploited as if they were deliberately manipulated as part of a planned experiment



Aim

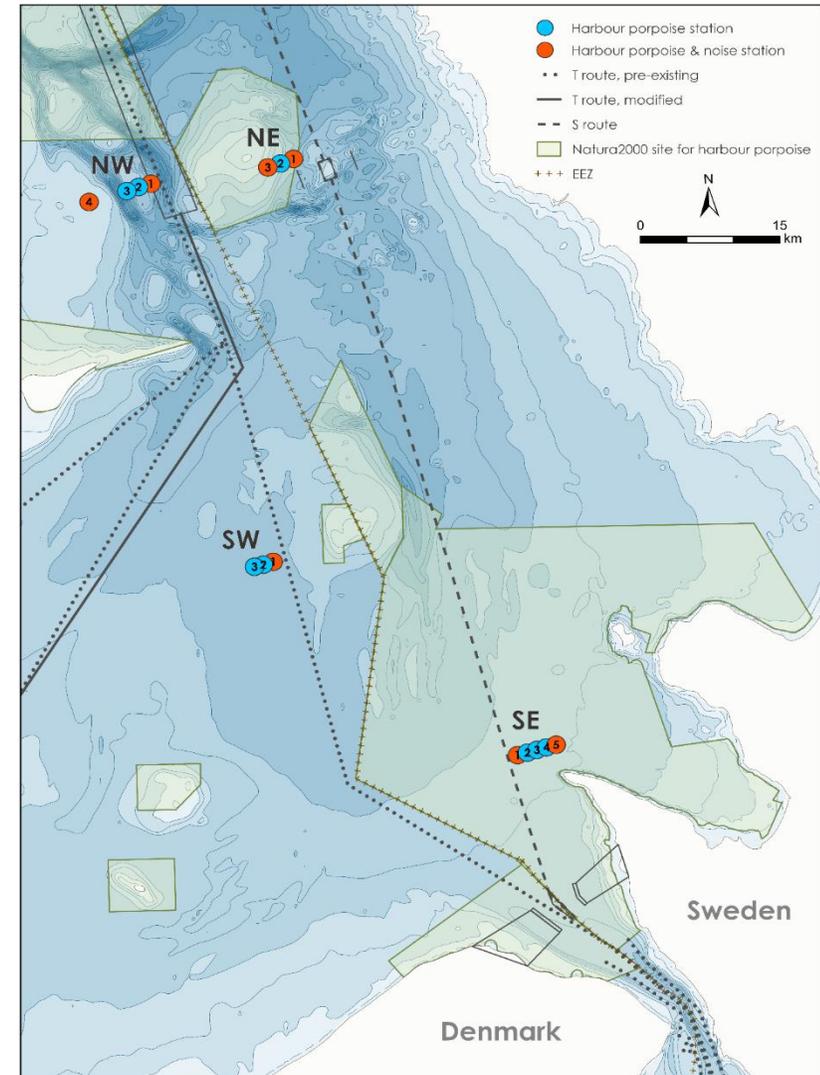
Aim: Determine whether rerouting a major shipping lane through important habitat influenced the presence and foraging behaviour of harbour porpoises

Hypothesis: reduced harbour porpoise presence and foraging behaviour in areas where noise and traffic increased

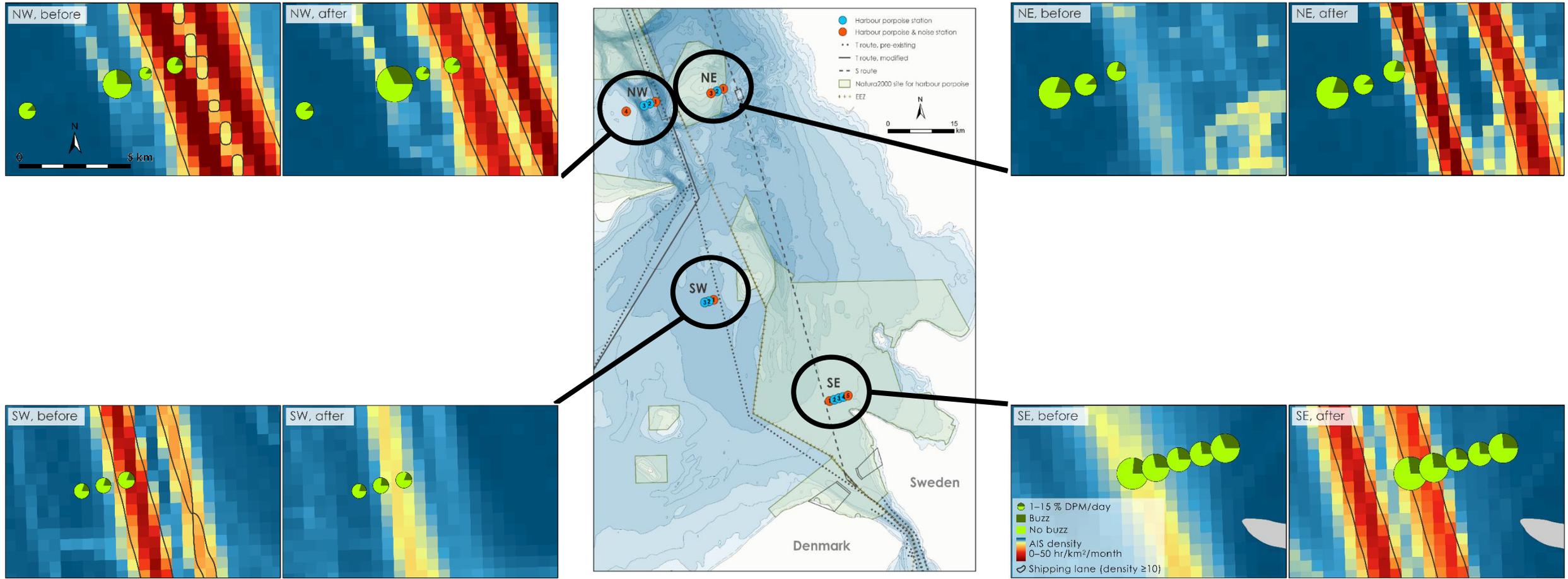


Methods

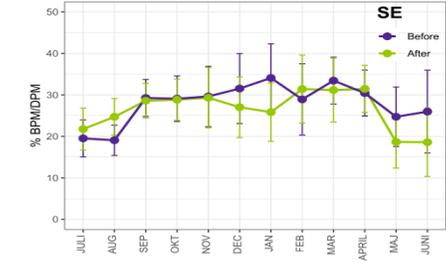
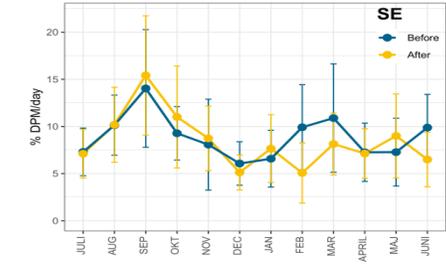
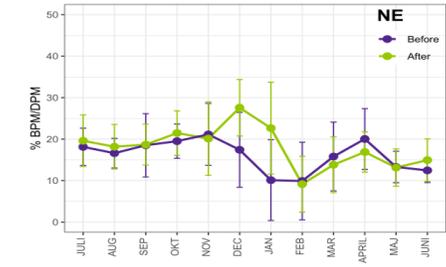
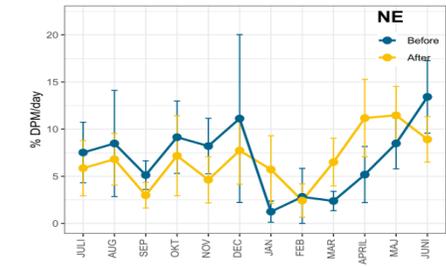
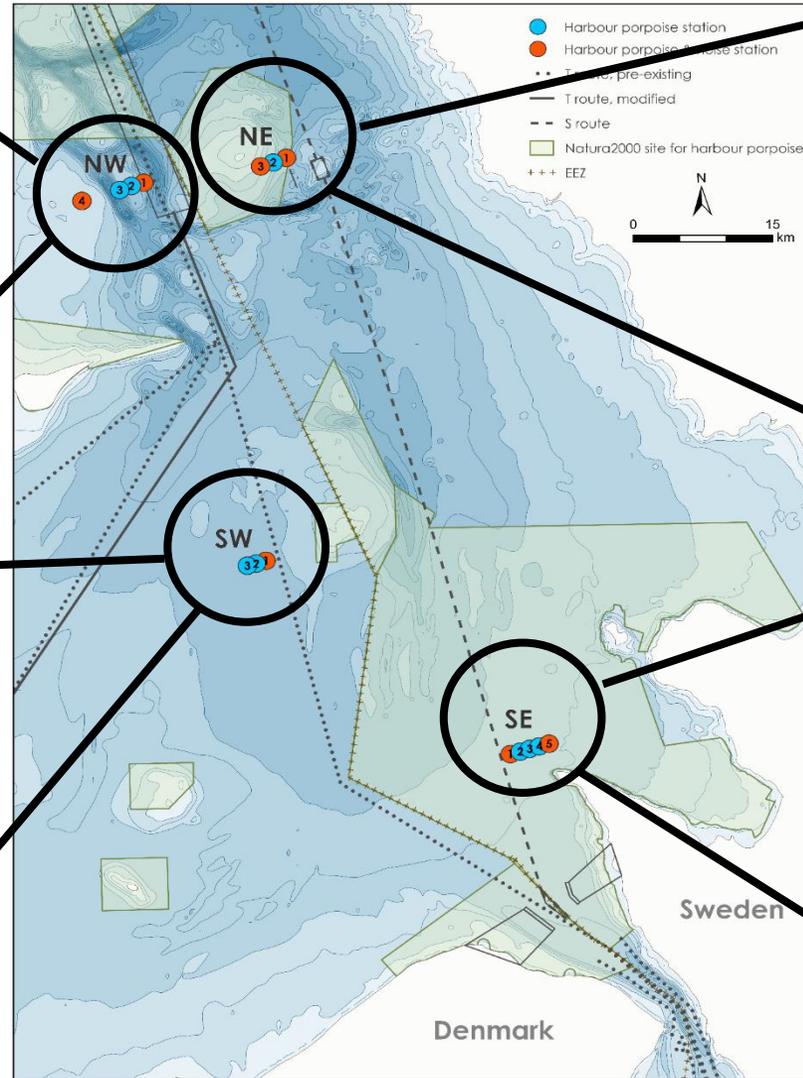
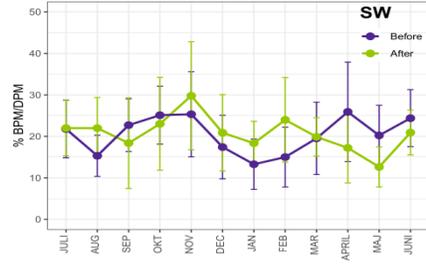
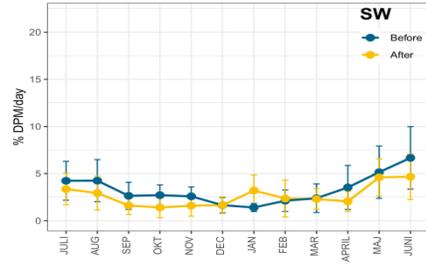
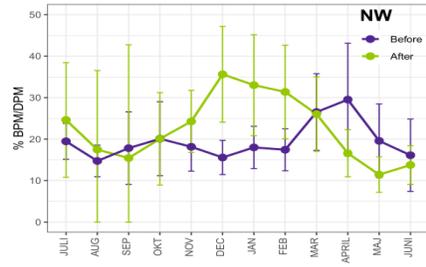
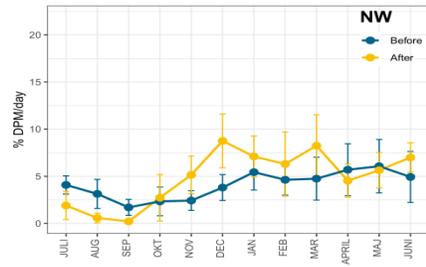
- Data collection for 1 year before and after the relocation
- Harbour porpoise:
 - CPODs (blue and red stations)- presence and foraging “buzzes”
- Underwater noise
 - Recorded noise (red stations) and monthly maps of modelled underwater noise from Quiet Oceans
- Vessel traffic
 - AIS data on ship presence



Results



Results



Conclusions

- Against our hypothesis, no change in the long-term presence or foraging behaviour of harbour porpoises was detected.
- This is despite recorded changes in underwater noise and vessel traffic.
- Suggests that within the observed level of change in shipping and noise, harbour porpoises continue to use preferred habitat.
- Potential population-level impact of long-term heightened noise levels and ship passes in preferred habitat, on stress level and fitness remains unknown.

