

# BALHAB

Baltic Sea Harbour porpoise foraging habitats



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# Aims

- Can we identify foraging areas for harbour porpoises within the distribution from SAMBAH?
- Are certain times of day more important for foraging?



# Methods – acoustic analyses

- SAMBAH data
- Standard algorithm + Hel1 classifier
- ICI  $\leq 15$  ms  $\rightarrow$  foraging buzz (Wisniewska et al 2012)
- Number of foraging ICIs over number of total ICIs per station per day per diel phase  $\rightarrow$  ratios



# Methods – modelling

- Spatial distribution modelling using Random forest
- Environmental variables
  - static variables
  - oceanographic variables



# Results – data points

Data points  $\geq 9$  ppm per diel phase per day

→ 3610 data points

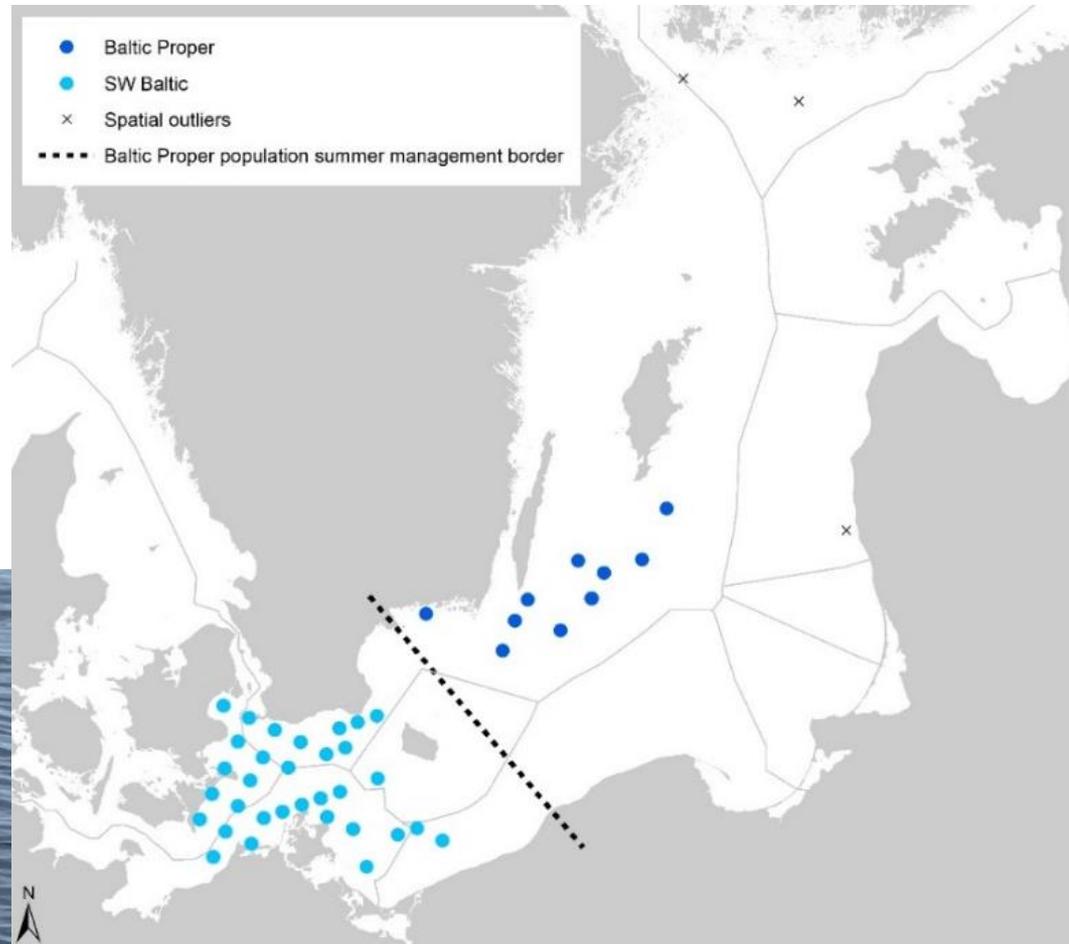
	<b>Dawn</b>	<b>Day</b>	<b>Dusk</b>	<b>Night</b>	<b>Total</b>
<b>SW Baltic</b>	233	1341	200	1712	<b>3486</b>
<b>Baltic Proper</b>	7	73	5	39	<b>124</b>
<b>Total</b>	<b>240</b>	<b>1414</b>	<b>205</b>	<b>1751</b>	<b>3610</b>

# Results – data points

→ Two spatial clusters

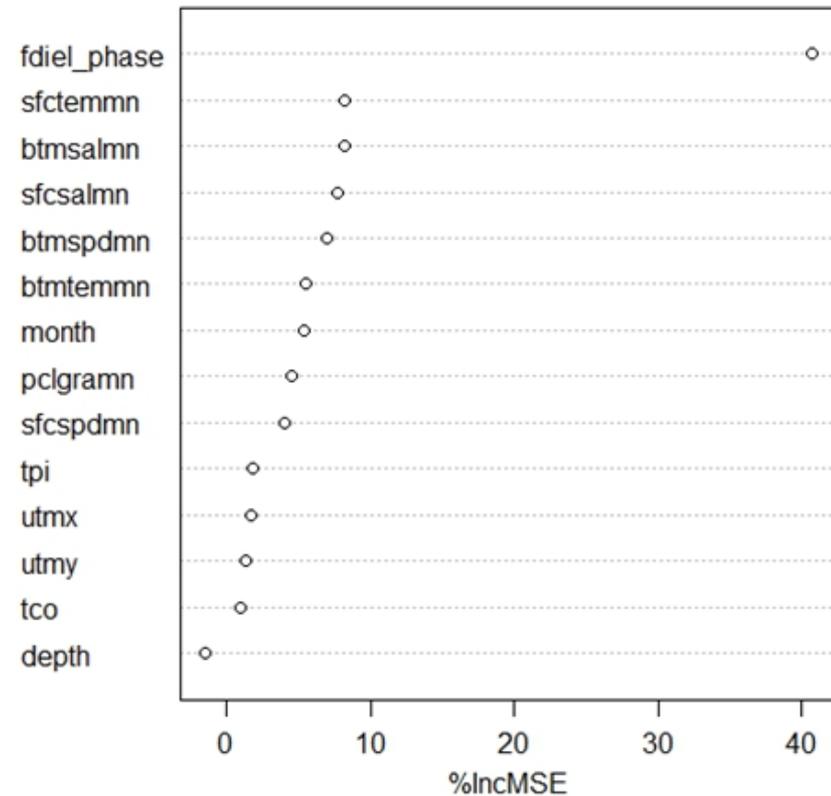
1) Southwest Baltic

2) Baltic Proper



# Results – modelling

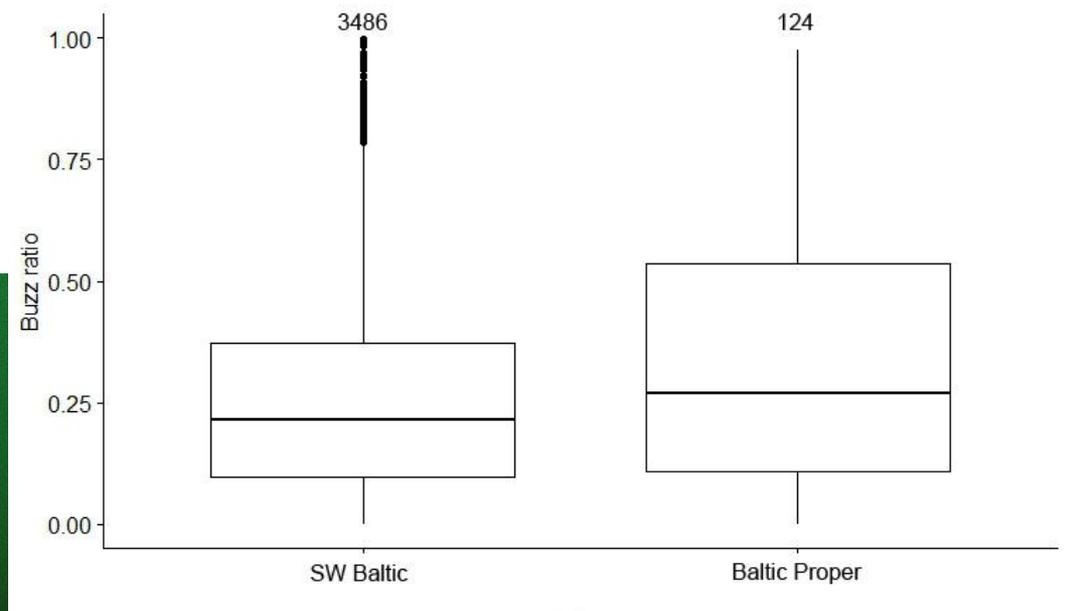
- Models explaining max ~20% of variation
  - Diel phase single most important variable
- Decision not to produce maps



# Results – spatial differences

- Higher mean buzz ratio in the Baltic Proper (average of 35.3 % as opposed to 26.0 % in the SW Baltic)

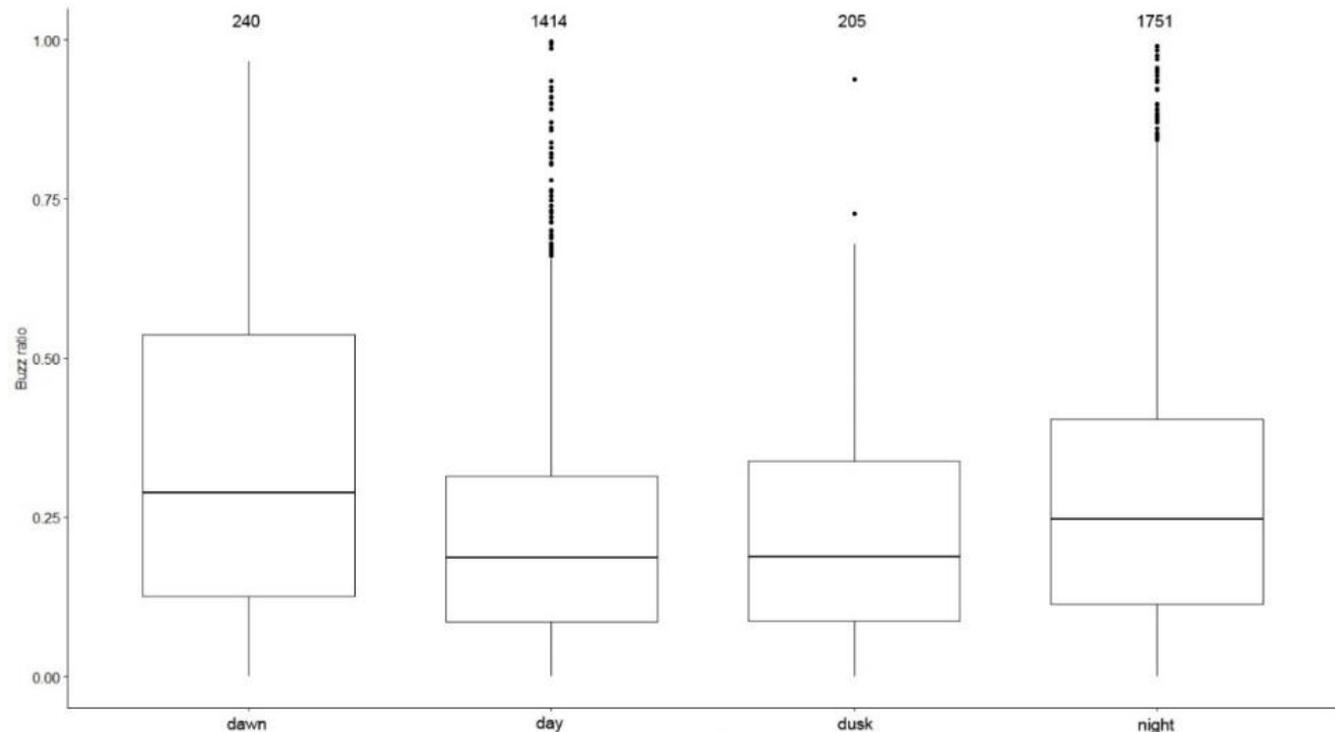
Kruskal-Wallis chi-squared = 8.9363, df = 1, p-value = 0.0028



# Results – temporal differences

- Both areas together: higher mean buzz ratio during night and dawn

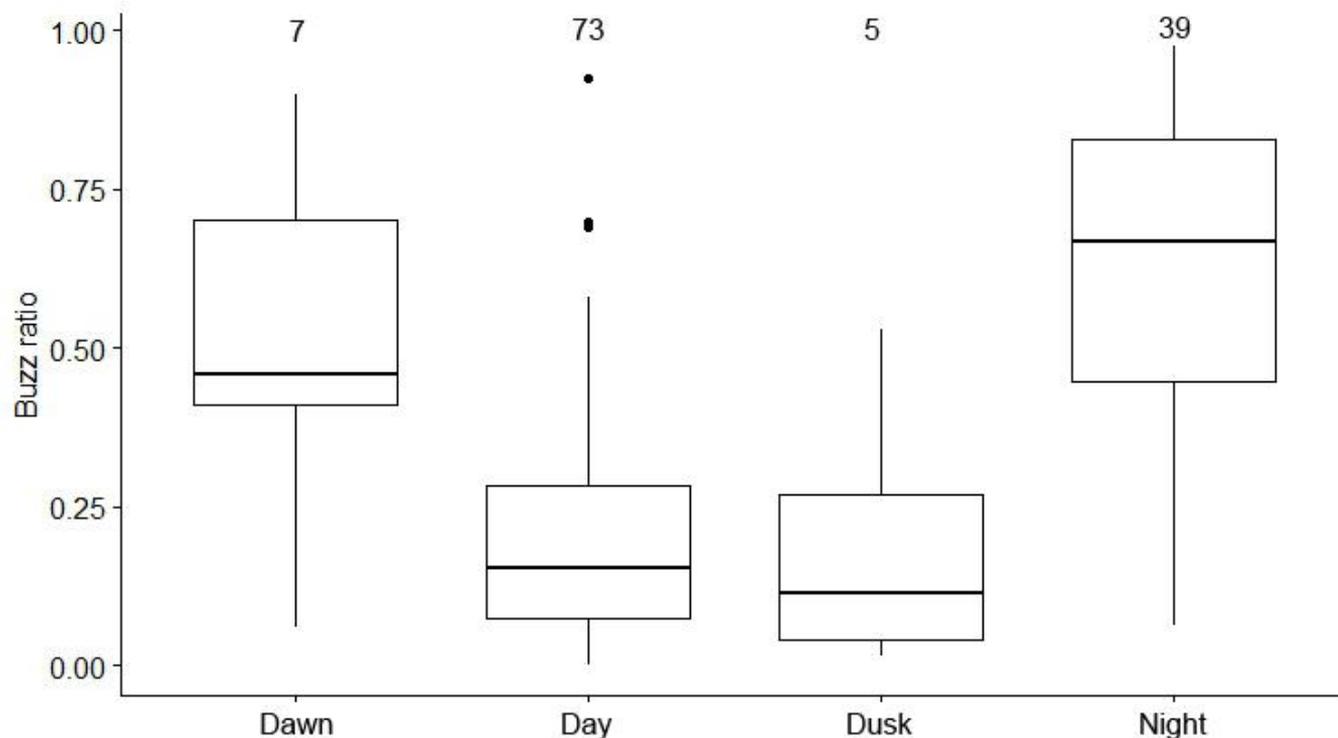
Pairwise comparison	P-value
Dawn – day	<0.001
Dawn – dusk	<0.001
Dawn – night	0.004
Day – night	<0.001
Day – dusk	0.73
Dusk – night	0.001



# Results – temporal differences

- Baltic Proper: higher mean buzz ratio during night and dawn

Pairwise comparison	P-value
Dawn – day	0.013
Dawn – dusk	0.1
Dawn – night	0.5
Day – night	<0.001
Day – dusk	0.6
Dusk – night	0.005



# Conclusions and questions raised

- No spatial pattern of more important foraging areas within the distribution range
- Clear pattern in diel variation, especially in the Baltic Proper
  - Could this be due to differing foraging strategies depending on time of day?
- Higher feeding buzz ratio in the Baltic Proper
  - Is this due to lower prey quality in the Baltic Proper?





**Questions?**

