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An increase in detection rates of the critically endangered Baltic Proper harbor porpoise in Swedish waters in recent years

Kylie Owen, Martin Sköld, Julia Carlström

Foto: Patrik Eld

Data availability

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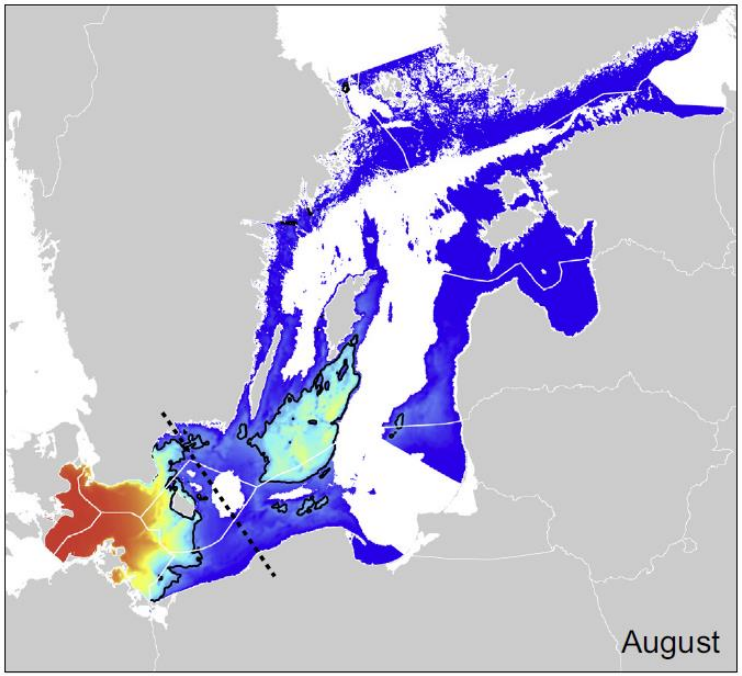
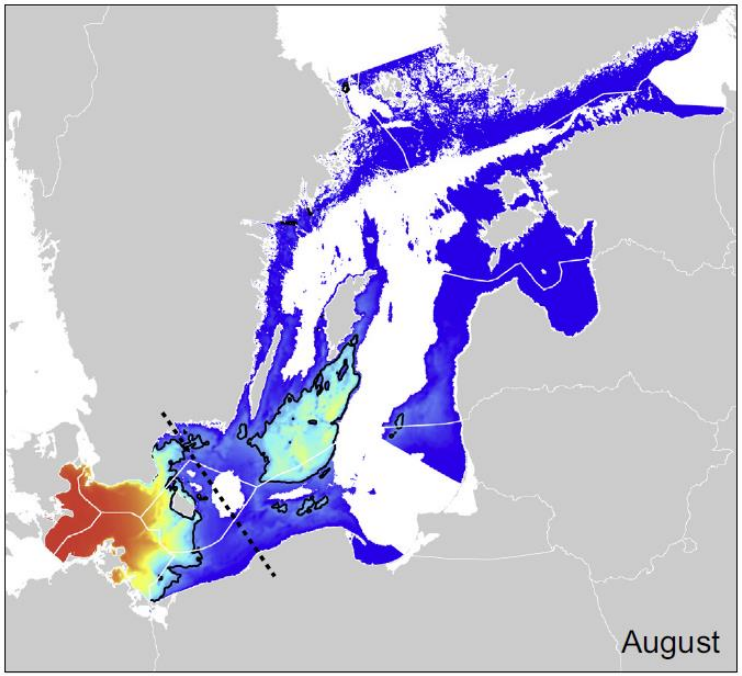
- SAMBAH project:
  - 2 years of data (2011 – 2013)
  - During May – October most of the detections were in Swedish waters



Carlén et al. (2018) Biological Conservation

Data availability

- SAMBAH project:
  - 2 years of data (2011 – 2013)
  - During May – October most of the detections were in Swedish waters
- Swedish national monitoring program (SNMP):
  - 12 stations
  - 3.5 years of data (2017 – 2020)
  - Highest detection frequency during May – October



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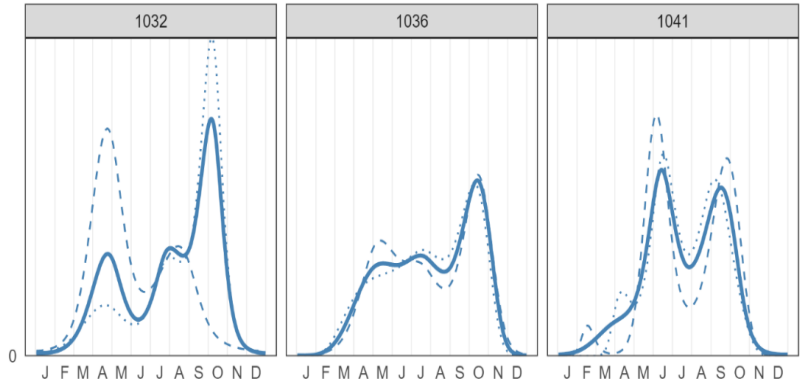

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Aims

- Compare detection frequency during May – October from SAMBAH (2011-2013) with the SNMP (2017-2020)

Foto: Kustbevakningen

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Aims

- Compare detection frequency during May – October from SAMBAH (2011-2013) with the SNMP (2017-2020)
- Determine the trend in detection rates over the years
- Estimate the power to detect a 5% change over 10 years in the Baltic Proper data
- Estimate the number of years required to have 80% power to detect a 5% change in this region

Foto: Kustbevakningen

Methods

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- Problem with critically endangered species: very little data

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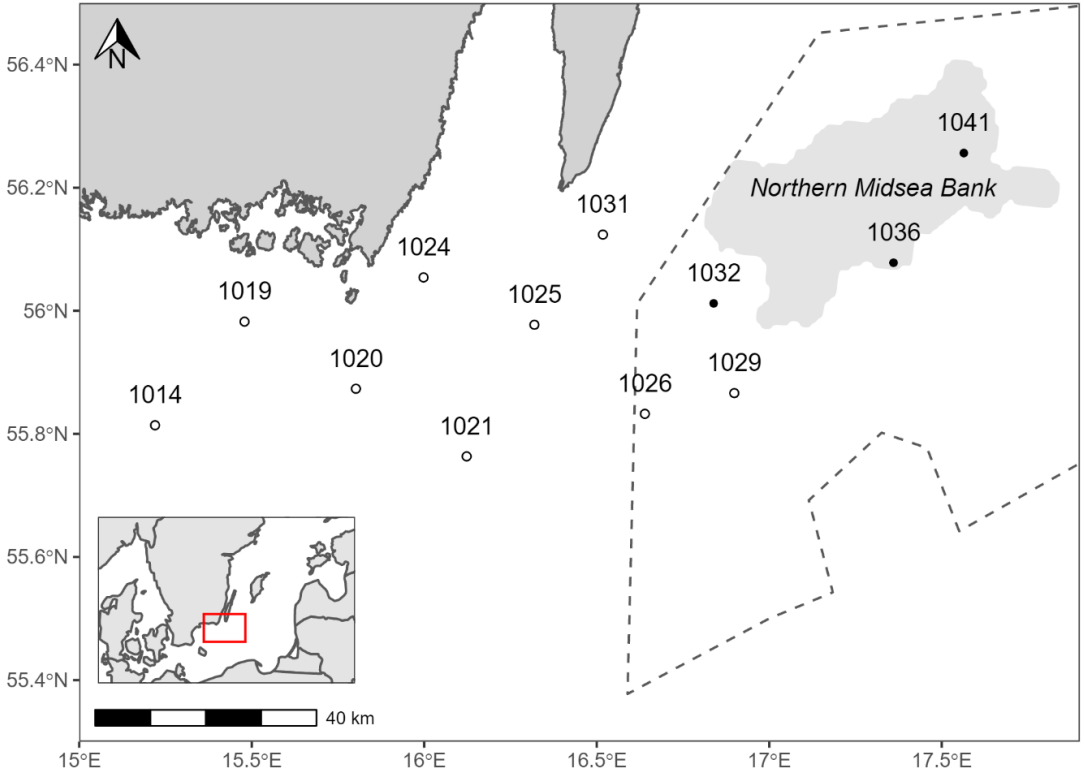
- Trend and power analyses focus on three stations (black dots):



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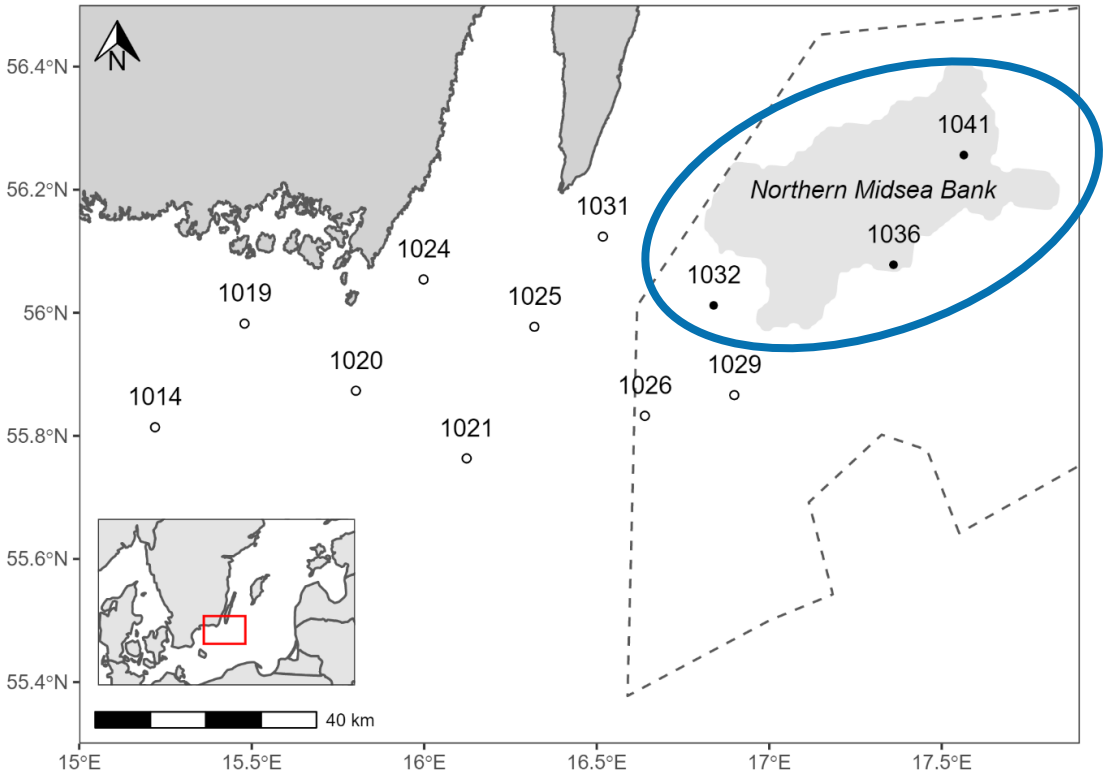

- Had most data
- In the Natura 2000 area (- - - - -)
- On or near Northern Midsea Bank

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Results

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- Increase at 10 of 12 stations (83%) (5 – 479% higher)

	May - October						
	Days reorded		DPD		Daily mean DPH		
Station	SAMBAH	SNMP	SAMBAH	SNMP	SAMBAH	SNMP	Change DPH (%)
1014	415	466	4	21	0.010	0.056	479
1019	336	366	0	24	0.000	0.085	NA
1020	284	504	2	6	0.007	0.012	69
1021	147	154	4	1	0.041	0.006	-84
1024	266	254	0	0	0.000	0.000	NA
1025	356	435	2	5	0.008	0.014	64
1026	234	465	3	14	0.013	0.045	252
1029	272	183	7	10	0.033	0.087	164
1031	377	527	0	7	0.000	0.013	NA
1032	420	493	14	39	0.036	0.097	173
1036	359	464	236	337	1.855	1.950	5
1041	353	438	56	132	0.212	0.438	106
All stations	3819	4749	328	596	0.205	0.265	29

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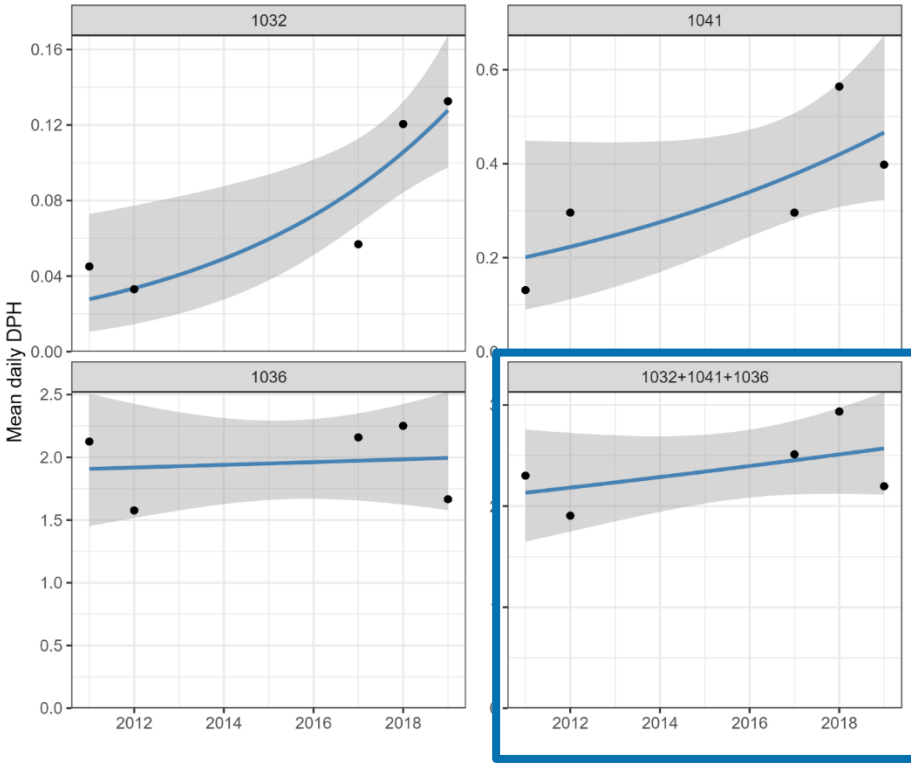
Results

- Trend at three stations, and the combination of these
- Combined trend: 2.4% increase per year (95% CI -4.4–9.6)

15.9% (0.3 – 34.0)



12.6% (-4.2 – 32.0)

0.6% (-7.3 – 9.2)

2.4% (-4.4 – 9.6)

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Results

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- Combined, the three stations had > 80% power to detect a 5% change over 10 years data

		Power to detect trend based on 10 years data		Years required for 80% power	
Station	Yearly trend %	-5%	5%	-5%	5%
1032	15.9 (0.29, 34)	0.36 (0.11)	0.34 (0.11)	16	16
1036	0.6 (-7.3, 9.2)	0.73 (0.19)	0.69 (0.18)	11	11
1041	12.6 (-4.2, 32)	0.31 (0.11)	0.29 (0.1)	17	17
1032+1041+1036	2.4 (-4.4, 9.6)	0.86 (0.24)	0.82 (0.22)	10	10

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Results

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- Combined, the three stations had > 80% power to detect a 5% change over 10 years data
- Individually, over 15 years of data may be needed.
- Supports the need for continuous monitoring in the Baltic Proper to detect changes

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Conclusions

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- Potential indication that the decline has stalled or that the population has started to increase?
- However, only detection rates in part of the range…
- Trend much lower than what is possible for porpoises

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- Potential indication that the decline has stalled or that the population has started to increase?
- However, only detection rates in part of the range…
- Trend much lower than what is possible for porpoises
- Urgent need for:
  - Measures to reduce threats and protect porpoises
  - New abundance estimate (SAMBAH II LIFE)
  - Better / more data on:
    - Bycatch rates,
    - Demography,
    - Prey (SAMBAH II LIFE),
    - Environmental toxins,
    - Spatial overlap with threats (SAMBAH II LIFE).

Thankyou

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