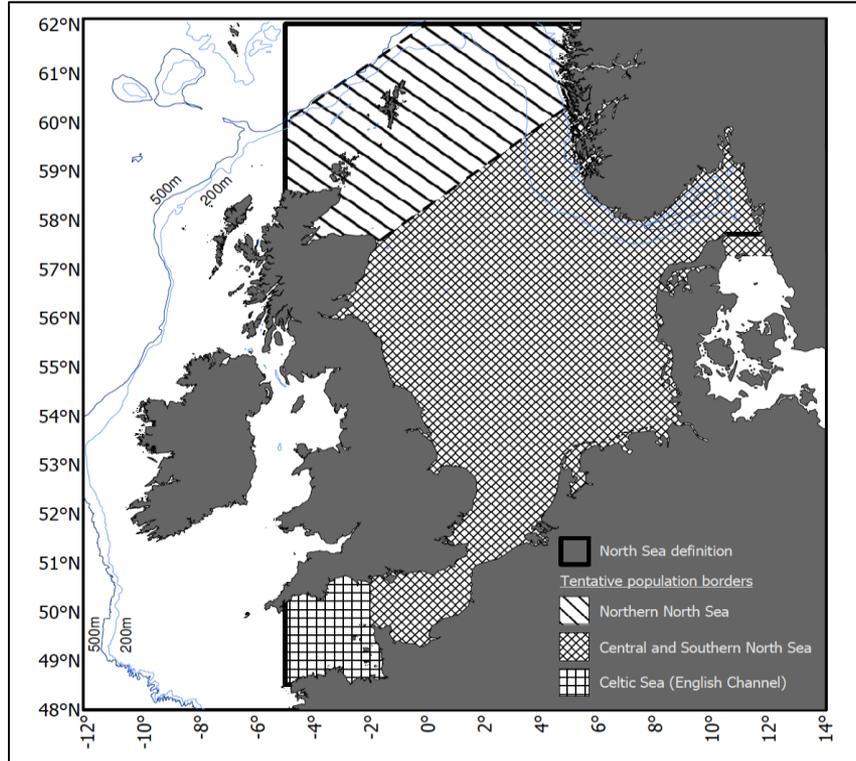


THE CONSERVATION PLAN FOR THE HARBOUR PORPOISE IN THE NORTH SEA



- Recovery Plan proposed, Mar 2002
- Plan developed by Germany and presented to ASCOBANS AC13 in Apr 2006
- Conservation Plan adopted at MOP6 in Sept 2009
- Steering Group established, May 2011
- SG Meetings annually or biennially since 2013
- Coordinator in place 2009-14, 2018-present

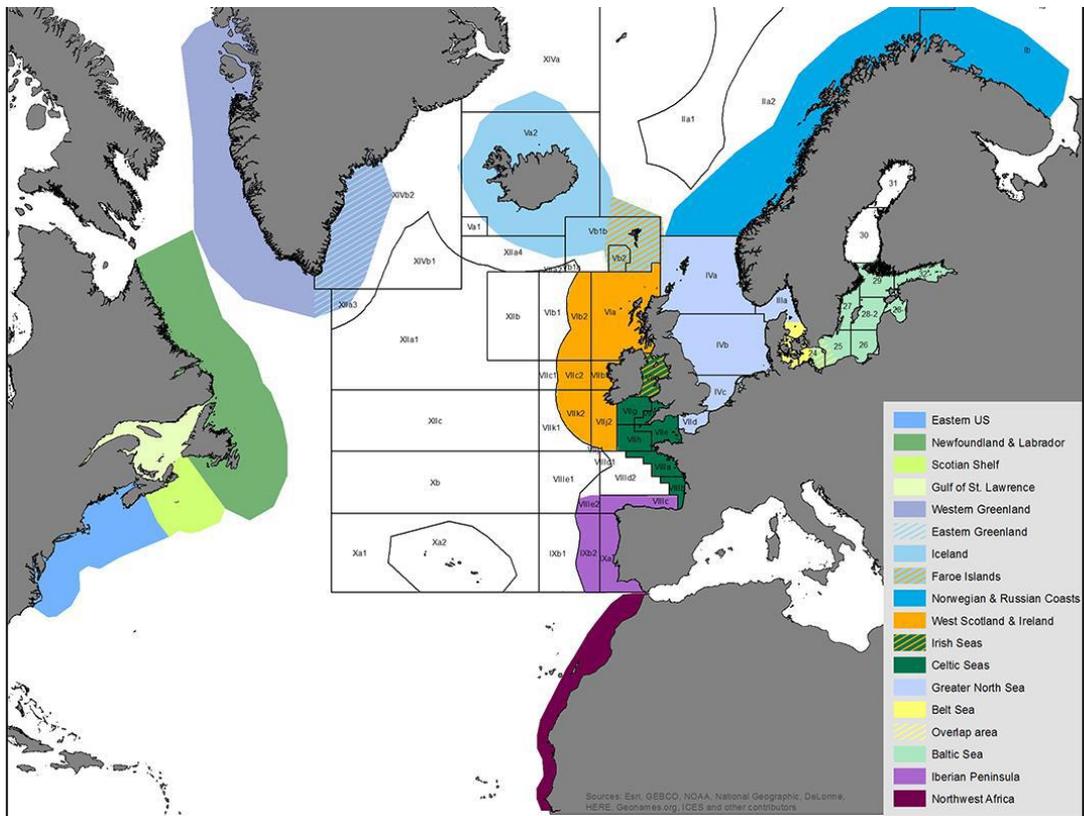
Area covered by Conservation Plan (Source: ASCOBANS, 2009)

THE NORTH SEA CONSERVATION PLAN initially proposed 12 ACTIONS:

Action 1 was the implementation of the plan through establishment of a coordinator and a Steering Committee. Seven of the remaining eleven actions were rated as **high priority**, centred around the most pressing conservation issue, that of bycatch (**Actions 2-6**), but including also monitoring trends in distribution and abundance (**Action 7**), and reviewing stock structure (**Action 8**).

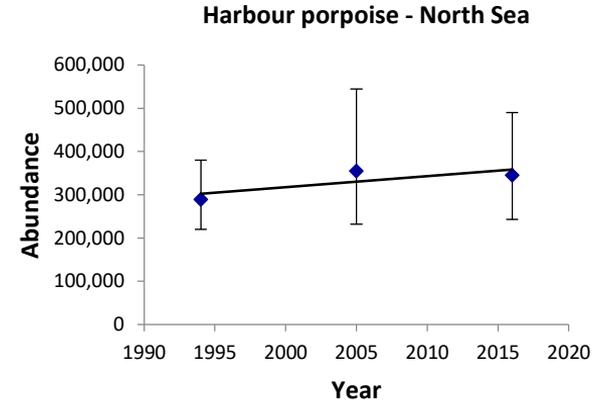
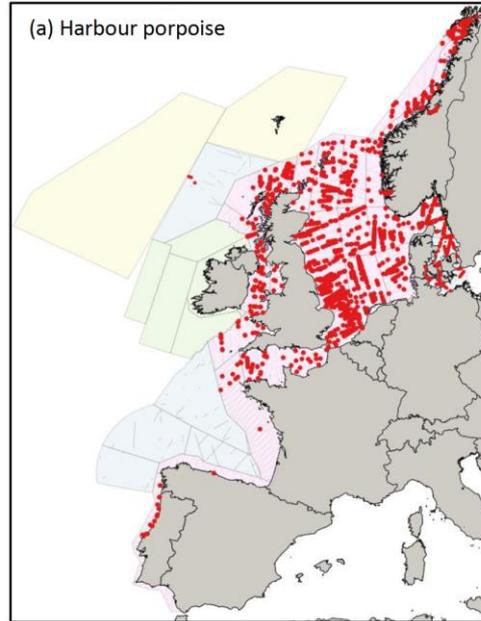
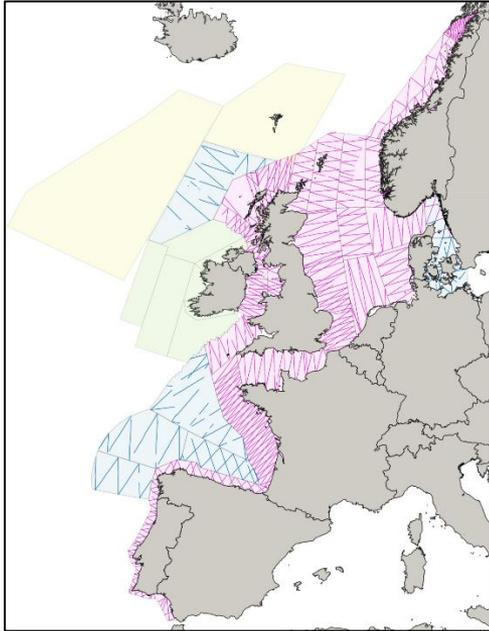
The three other actions rated as **medium priority** included the collection of incidental data on porpoises through stranding networks (**Action 9**), investigation of the health, nutritional status and diet of porpoises in the region (**Action 10**), investigation of the effects of anthropogenic sounds (**Action 11**), and collection and archiving of data on anthropogenic activities within a GIS (**Action 12**). Since 2011, the North Sea Group has focused on the eight priority actions, whilst also briefly reviewing progress on the other actions in the form of an Implementation Table.

PROPOSED PORPOISE MANAGEMENT UNITS



Source: NAMMCO & IMPR (2019)

HARBOUR PORPOISE ABUNDANCE ESTIMATES



July Abundance Estimate:

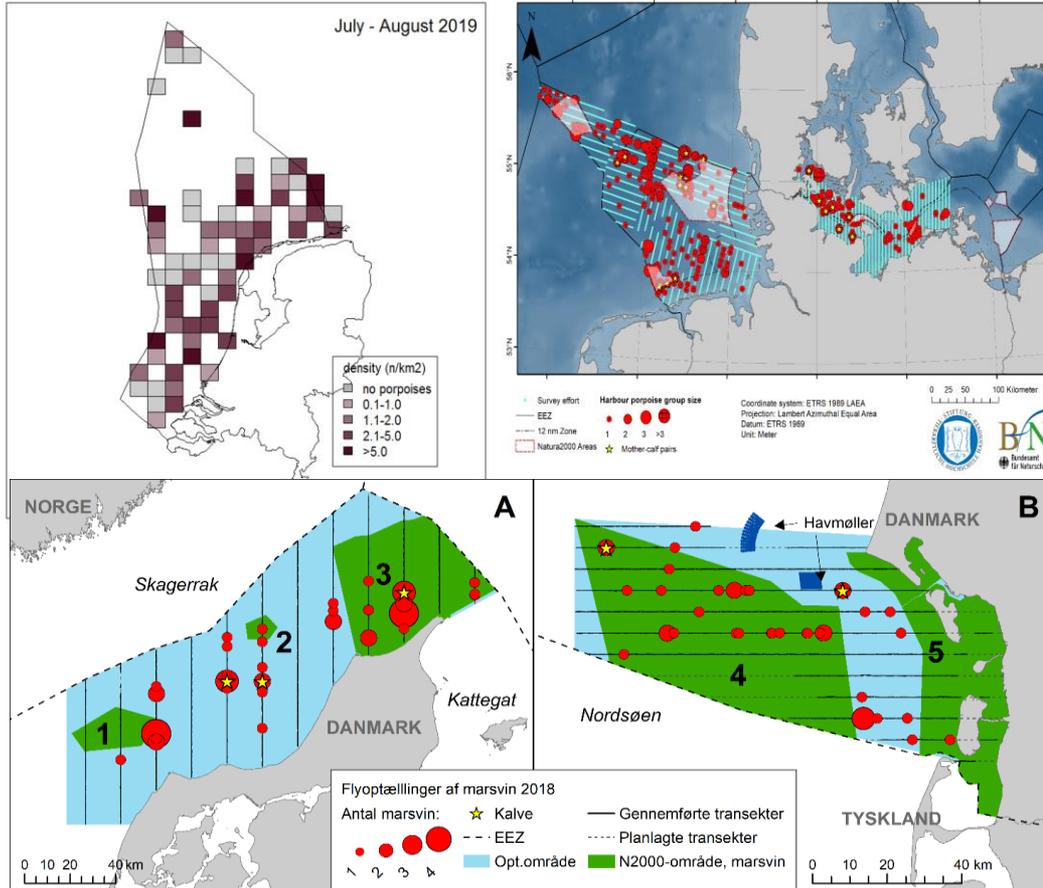
1994 – 289,150 (CV 0.14)

2005 – 355,408 (CV 0.22)

2016 – 345,373 (CV 0.18)

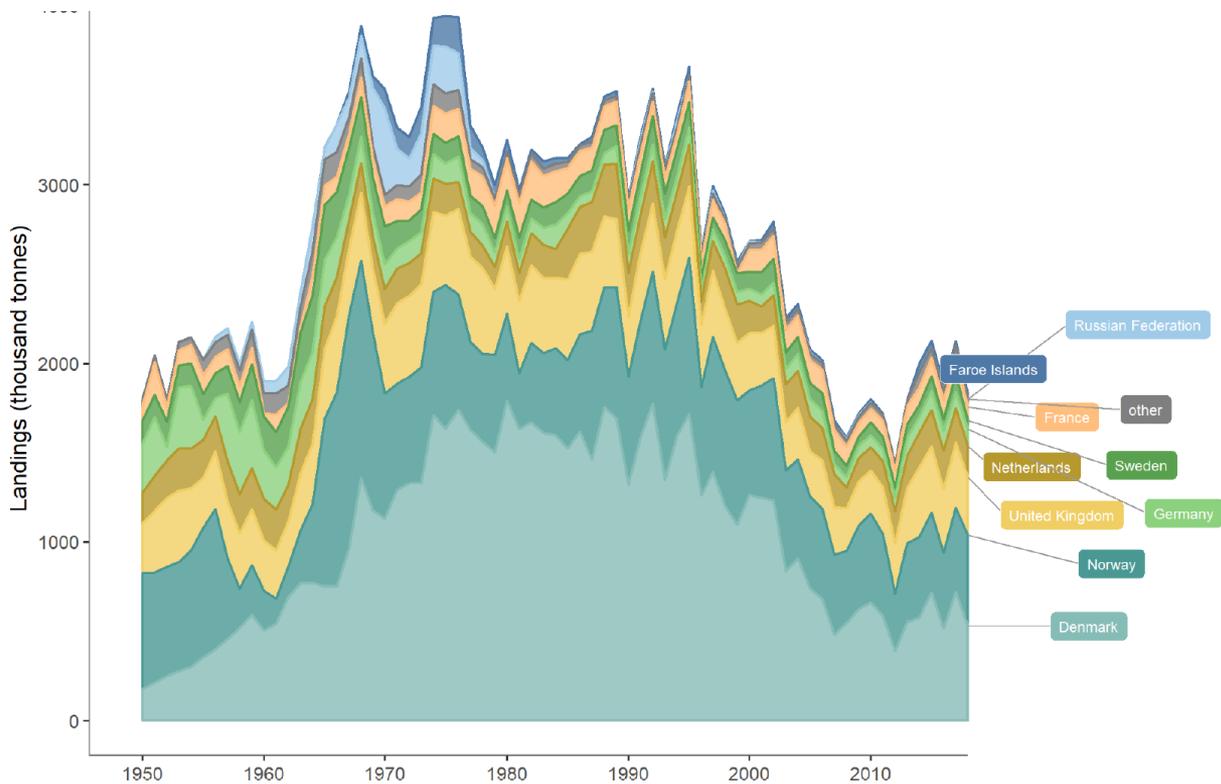
Source: Hammond *et al.* (2013, 2017)

HARBOUR PORPOISE ANNUAL SURVEILLANCE



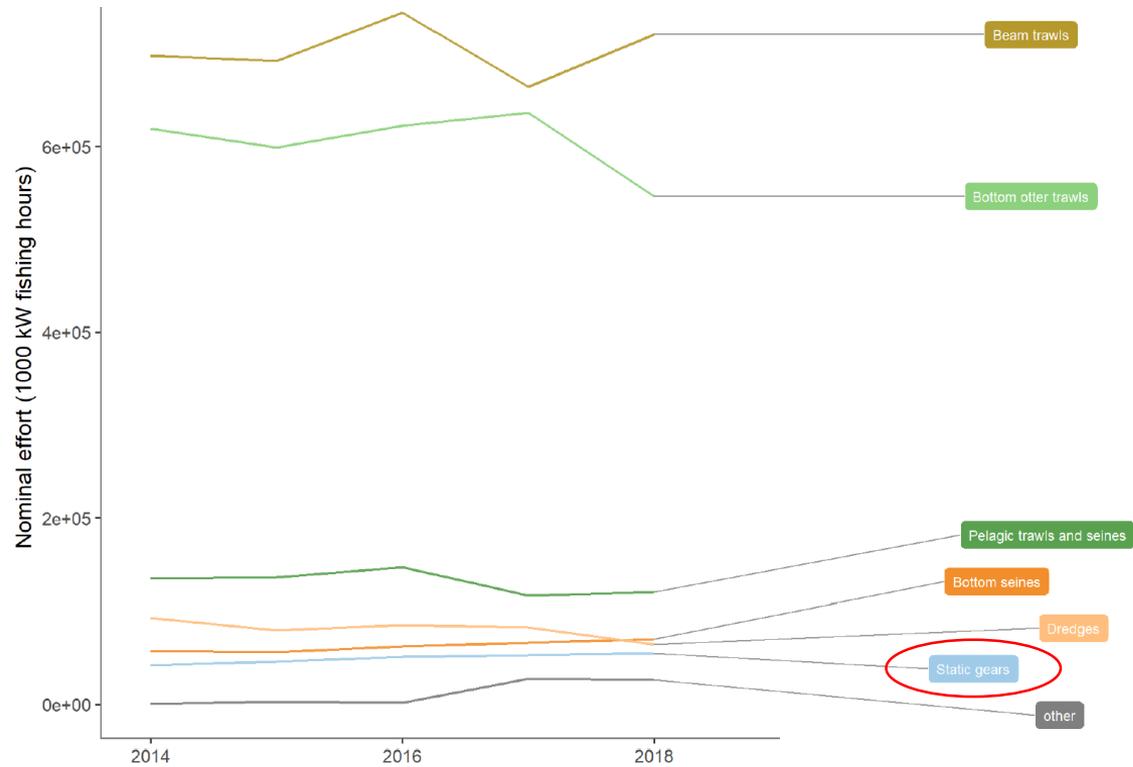
- Regular monitoring by BE, NL, DE and DK (N2K sites)
- Some monitoring by FR (2017-18)
- No routine monitoring by UK or SE
- Much spatio-temporal variation in abundance
- 63,514 (2018), 38,911 (2019) in NL; 7,707 (2019), Dogger Bank, 3,315 (2019) Borkum Reef, 887 Weser-Elbe Estuary in DE; 5,323 (2018) in Skagerrak, 2,013 in S North Sea in DK

TRENDS IN FISHING EFFORT WITHIN GREATER NORTH SEA, 1950-2018



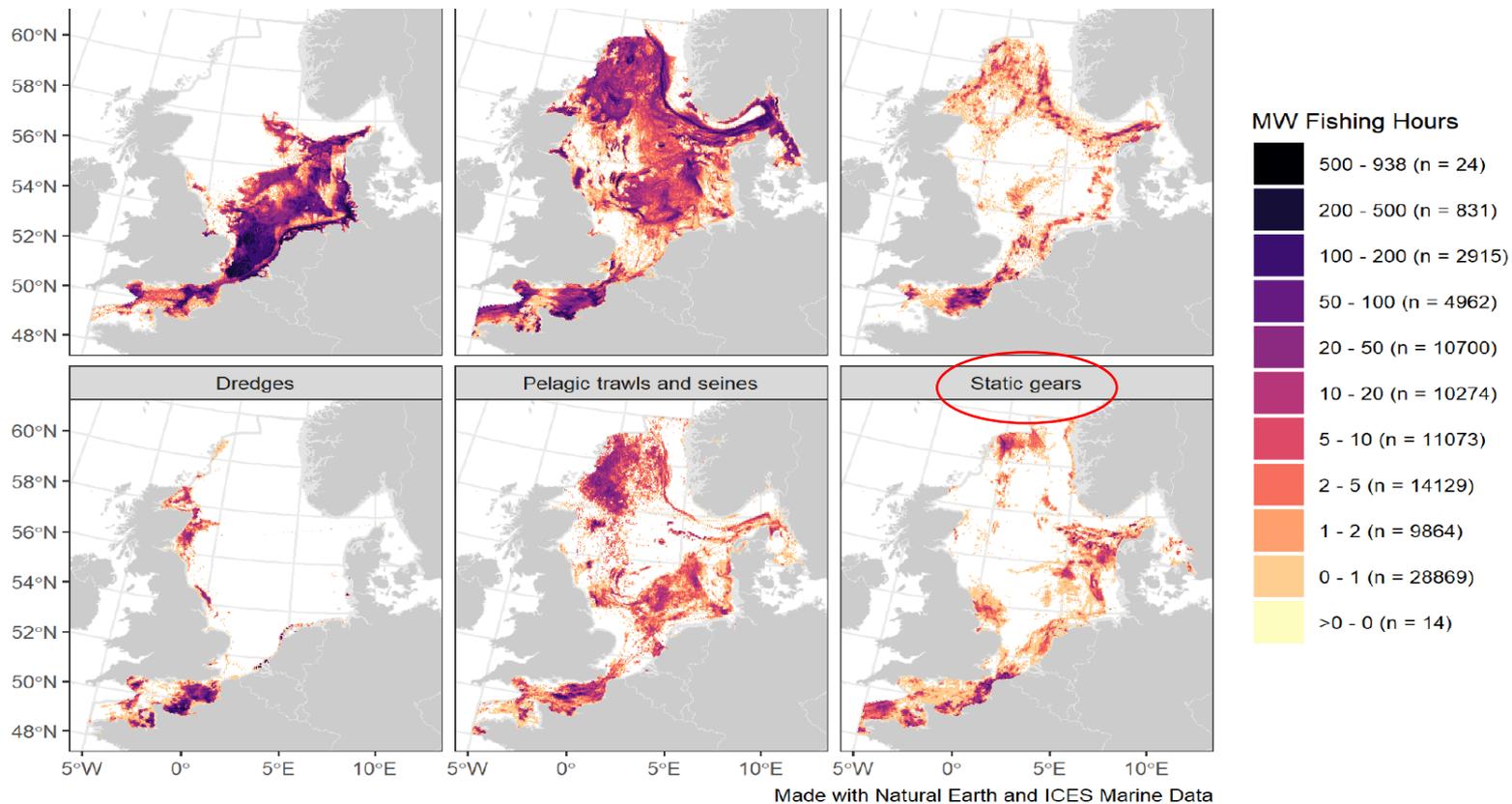
Source: ICES, (2020)

COMMERCIAL LANDINGS FROM GREATER NORTH SEA, 2014-2018



Source: ICES, (2020)

FISHING EFFORT, 2015-18



Source: ICES, (2020)

BYCATCH MONITORING & MITIGATION IN THE NORTH SEA, 2016-19

a) Bycatch Monitoring

Dedicated Observer Scheme – GB (2016-19)

Fisheries Observers – GB, FR, BE, NL, DE, DK (all 2016-19)

Remote Electronic Monitoring – NL (2016-17), DK (2016-19)

Self-reporting by fishermen – FR, BE, NL, DE (all 2016-19)

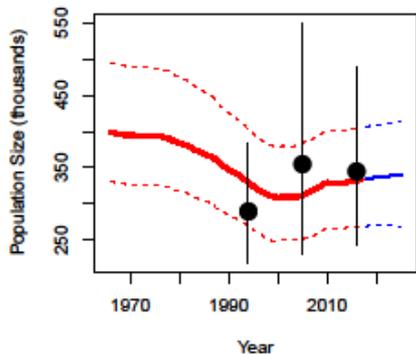
b) Bycatch Mitigation

Pinger Use – GB (24 netters), FR (9 netters in Channel),
NL (voluntary), DK (17 netters)

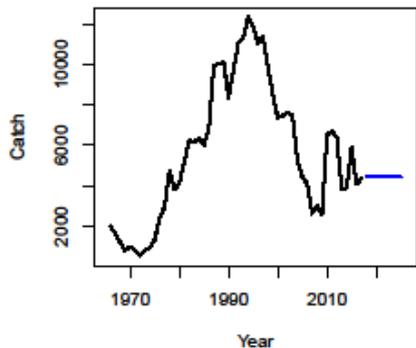
Gear type bans - BE (gillnets & trammel nets), DE (all gill nets in
Schleswig-Holstein Wadden Sea National Park)

POTENTIAL BIOLOGICAL REMOVAL ESTIMATES FROM BYCATCH

Population trend



Estimated annual bycatch



Estimated median r_{max}

$K = 395,66$

country	year	Area		number of recorded strandings	all stranded porpoises necropsied ^a	number of necropsied porpoises with			% of strandings necropsied ^b	% bycatch of		
		OSM	Sea			known cause of death	unknown cause of death	cause of death bycatch		all stranded animals necropsied	all animals necropsied with known cause of death	
FR	2013	NS	NS	31	1	1*	0	0	0.3	0	0	
FR	2014	NS	NS	18	10	3*	7	3	5.5	30	30	
FR	2015	NS	NS	13	6	5*	1	3	4.6	50	60	
FR	2016	NS	NS	26	2	2*	0	1	0.8	50	50	
FR	2017	NS	NS	16	1	1*	0	1	0.6	100	100	
FR	2018	NS	NS	18	2	73	73	0	26	40.1	36	36
BE	2016	NS	NS	13	7	116*	33*	83	21	84.7	18.1	63.6
BE	2017	NS	NS	94	85*	25*	60	9	90.4	10.6	36.0	
BE	2018	NS	NS	89	30	30	0	3	33.7	10	10	
NL	2014	NS	NS	58	2	57	24	33	2***	9.8	3.5	8.3
NL	2015	NS	NS	30	9	32	28	4	1***	10.4	3.1	3.6
NL	2016	NS	NS	66	1	68	54	14	2***	10.3	2.9	3.7
NL	2018	NS	NS	47	6	57	57	0	7	12.0	12.3	12.3
DE	2015	NS	NS	10	9	109	-	-	3****	100***	2.8	2.8
DE	2016	NS	NS	12	6	126	-	-	2****	100***	1.6	1.6
DE	2017	NS	NS	91	91	-	-	-	5****	100***	5.5	5.5
DE	2018	NS	NS	11	6	25	24	0	1	21.6	4.0	4.0
SE	2016	NS	NS	19	4	3	1	1	21.1	na	na	
SE	2017	NS	NS	19	20	6	1	1	30.0	na	na	
SE	2018	NS	NS	-	-	-	-	-	-	na	na	
UK	2015	NS	NS	24	8	39	39	0	1	15.7	2.6	2.6
UK	2017	NS	NS	18	5	33	33	0	1	17.8	3.0	3.0
UK	2018	NS	NS	18	3	20	20	0	2	10.9	10.0	10.0

- Stable population (increasing very slowly) since 2005 subject to an average annual bycatch of c. 4,500 animals (range 2,500-6,700)

Current level of depletion estimated at 0.87 (2017) increasing very slightly to depletion of 0.89 (2025)

Carrying capacity (K) in 1966 estimated at c. 400,000

Estimated r_{max} at 0.061 (90% CI 0.9023-0.088)

Source: NAMMCO & IMR (2019)

POTENTIAL BIOLOGICAL REMOVAL ESTIMATES FROM BYCATCH

CONCLUSIONS

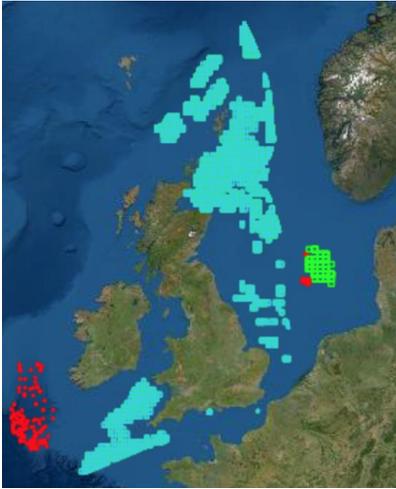


- The assessment model indicates that the population seems able to sustain a bycatch of around 4,500 animals a year.
- This is equivalent to c. 1.1% of the estimated carrying capacity and c. 1.3% of current abundance, while maintaining the population level at around 85-90% of carrying capacity.
- Assumptions: no population sub-structuring, no significant bycatch before 1966 , values of k and r_{\max} are broadly correct, accurate abundance estimates & trends, bycatch estimates more or less correct limited impact from other anthropogenic pressures

Source: NAMMCO & IMR (2019)

IMPULSIVE NOISE SOURCES IN THE NORTH SEA, 2016-19

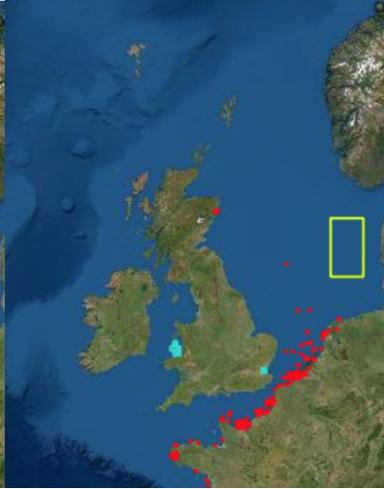
Airgun Arrays



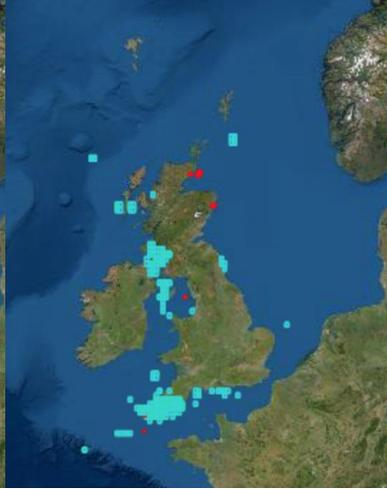
Pile Driving



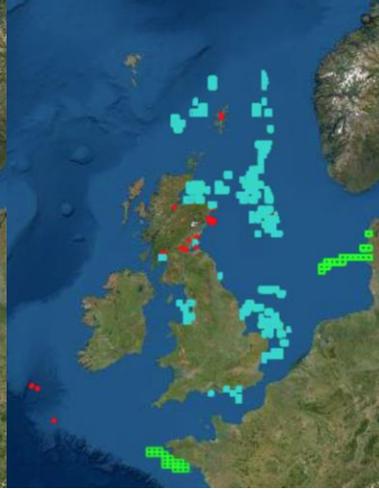
Explosions



Sonar

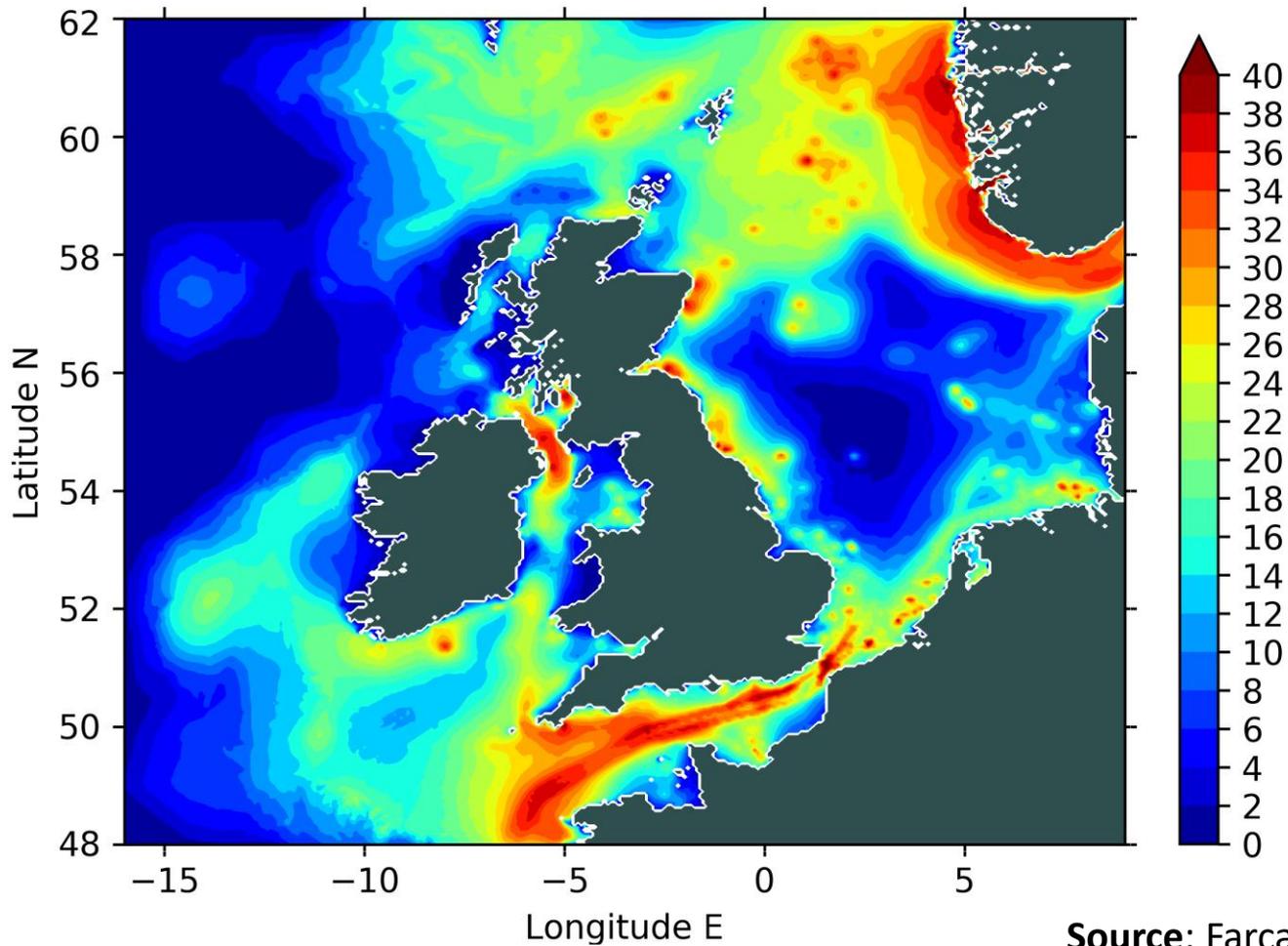


Generic

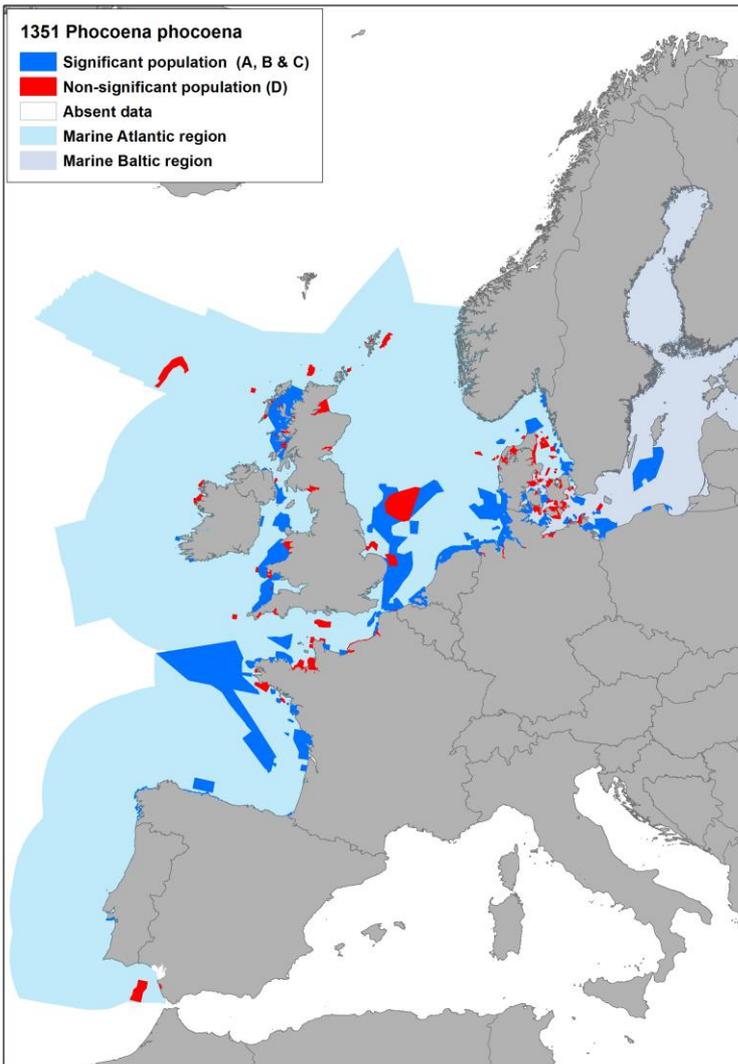


Source: ICES Noise Register (Sep 2020)

CONTINUOUS NOISE MAP



Source: Farcas *et al.* 2019



NATURA 2000 SITES FOR HARBOUR PORPOISE

- Most sites in the southern North Sea, particularly in the South-west and South-east
- Need for effective management plans
- Consideration of fisheries interactions (not only bycatch but also resource depletion) and anthropogenic disturbance
- SAC monitoring should cover all North Sea sites

Source: European Topic Centre (2019)

RECOMMENDATIONS



- Further Investigate Population Structure
- Regular Abundance Surveys throughout the Greater North Sea
- Improved monitoring of Fishing Effort from small vessels (<12m)
- Improved Dedicated Observer/Remote Electronic Monitoring
- Improved Implementation of Pinger Use and Compliance Monitoring
- Further Assessment of Noise Impacts

BYCATCHES REPORTED FROM STRANDING SCHEMES

country	year	Area		number of recorded strandings*	all stranded porpoises necropsied**	number of necropsied porpoises with			% of strandings necropsied	% bycatch	
		ICES MU	Sea			known cause of death	unknown cause of death	cause of death bycatch		all stranded animals necropsied	all animals necropsied with known cause of death
FR	2013	NS	NS	313	1	1*	0	0	0.3	0	0
FR	2014	NS	NS	181	10	3*	7	3	5.5	30	30
FR	2015	NS	NS	131	6	5*	1	3	4.6	50	60
FR	2016	NS	NS	262	2	2*	0	1	0.8	50	50
FR	2017	NS	NS	168	1	1*	0	1	0.6	100	100
FR	2018	NS	NS	182	73	73	0	26	40.1	36	36
BE	2016	NS	NS	137	116 [~]	33*	83	21	84.7	18.1	63.6
BE	2017	NS	NS	94	85 [~]	25*	60	9	90.4	10.6	36.0
BE	2018	NS	NS	89	30	30	0	3	33.7	10	10
NL	2014	NS	NS	582	57	24	33	2 ^{***}	9.8	3.5	8.3
NL	2015	NS	NS	309	32	28	4	1 ^{***}	10.4	3.1	3.6
NL	2016	NS	NS	661	68	54	14	2 ^{***}	10.3	2.9	3.7
NL	2018	NS	NS	476	57	57	0	7	12.0	12.3	12.3
DE	2015	NS	NS	109	109	-	-	3 ^{****}	100 ^{****}	2.8	2.8
DE	2016	NS	NS	126	126	-	-	2 ^{****}	100 ^{****}	1.6	1.6
DE	2017	NS	NS	91	91	-	-	5 ^{****}	100 ^{****}	5.5	5.5
DE	2018	NS	NS	116	25	24	0	1	21.6	4.0	4.0
SE	2016	NS	NS	19	4	3	1	1	21.1	na	na
SE	2017	NS	NS	19	20	6	1	1	30.0	na	na
SE	2018	NS	NS							na	na
UK	2016	NS	NS	248	39	39	0	1	15.7	2.6	2.6
UK	2017	NS	NS	185	33	33	0	1	17.8	3.0	3.0
UK	2018	NS	NS	183	20	20	0	2	10.9	10.0	10.0