



Partnership for  
**nature** and **people**

# Impact of offshore wind development on seabirds in the North Sea and Baltic Sea: identification of **data** sources and at-risk **species**

**Antonio Vulcano**  
**Alexa Piggott**



Powered by



# Data sources

First step = a review of identified data sources and at-risk seabird species in the North and Baltic Sea

## *Identified Data Sources*

- European Seabirds at Sea database — Standardised ship and/or aerial offshore surveys (1979 -2011)
- National at-sea survey schemes
- Coordinated offshore waterbird surveys in the Baltic Sea, winter 2015/16.  
(1992/3 Durinck et al. 1994 and 2007 – 2009 SOWBAS project Skov et al. 2011)

# Data sources

## *Identified Data Sources*

- Tracking data:
  - ✓ BL Seabird Tracking Database
  - ✓ MoveBank
  - ✓ SEATRACK (\* Geolocator data)
  - ✓ Research studies by BL partners, Universities and Research Institutes
- National Breeding Bird Census/Colony Monitoring – e.g., Seabird Monitoring Programme (UK)
- National Winter Waterbird Census

# Who?

## *Various players*

- Research institutes and universities
- NGOs
- Environment agencies
- Intergovernmental organizations (e.g., ICES)
- Regional sea conventions (e.g., HELCOM)
- Public advisory bodies (e.g., JNCC)
- Industry (data usually not publicly available)

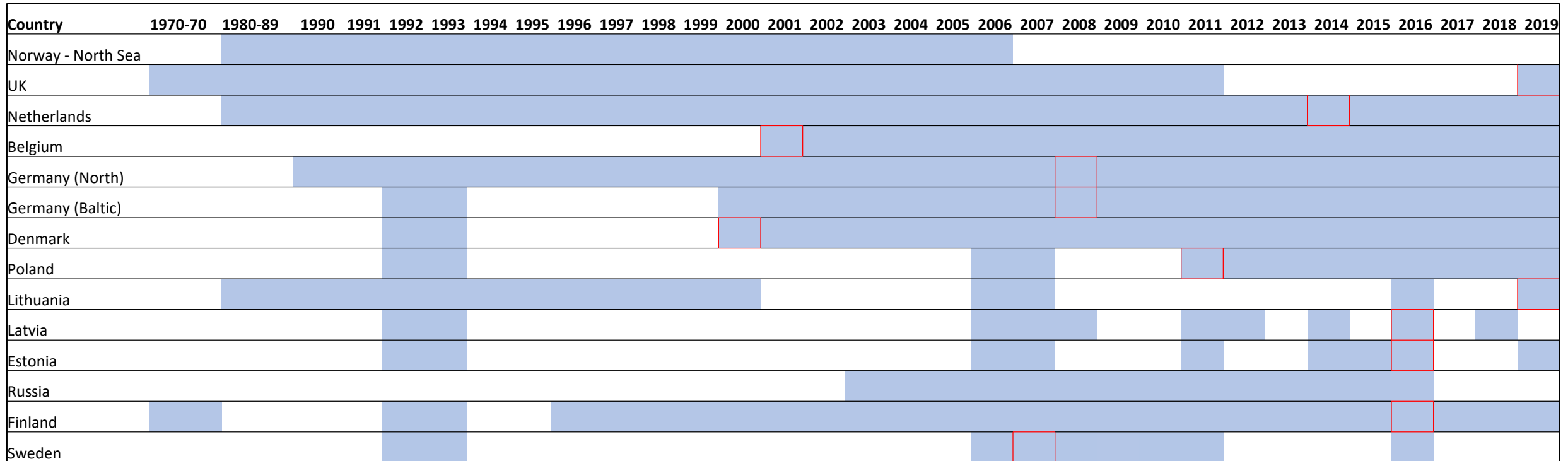




# Identifying data from BL partners and national monitoring programmes

Name of source	Collection Method	Data Type	Zone	Site	Country	Basin	Years	Season	Species
Mid-Winter Waterbird Census	Land count	Abundance	Coastal	whole coastline	Sweden	Baltic Sea	Annual	Winter	All waterbirds
National breeding bird surveys	Boat total count	Abundance	Coastal	Bothnian Bay coast	Sweden	Baltic Sea	2010 - ongoing	Breeding	All breeding birds
National breeding bird surveys	Boat total count	Abundance	Coastal	whole coastline	Sweden	Baltic Sea	2015 - ongoing	Breeding	All breeding birds
Offshore wintering waterbirds survey	Aerial/Boat transects	Abundance and Distribution	Offshore	Southern Kattegat – Öla	Sweden	Baltic Sea	1992-93	Winter	All waterbirds
Coastal wintering waterbirds survey	Aerial/Boat transect	Abundance and Distribution	Coastal	Archipelagos, Skagerak-	Sweden	Baltic Sea	1971, 1988/89, 1993, 2004, 2015	Winter	All waterbirds
SOWBAS - Winter waterbird census	Aerial/boat transect	Abundance and Distribution	Offshore	Scania - Gävlebukten, w	Sweden	Baltic Sea	2007 - 2009	Winter	All waterbirds
Offshore wintering waterbirds survey	Aerial/Boat transects	Abundance and Distribution	Offshore	Archipelagos and offsho	Sweden	Baltic Sea	2010-2011	Winter	All waterbirds
Long-tailed duck distribution maps	Processed	Abundance and Distribution	Offshore	Scania - Gävlebukten	Sweden	Baltic Sea	2009, 2011,2016	Winter	Long tailed duck
Baltic co-ordinated offshore wintering	Aerial transect	Abundance and Distribution	Offshore	Mainly offshore areas ar	Sweden	Baltic Sea		2016 Winter	All waterbirds
Offshore monitoring programme - -Birds in	Aerial transect	Abundance and Distribution	Offshore	southern Öresund	Sweden	Baltic Sea	2001 - 2005 & 2007 - 2011	Year Roun	All waterbirds
BirdLife Sweden - Tracking data	GPS	Distribution	Coastal/Offshore	Fågelsundet, Björns arch	Sweden	Baltic Sea	2012 - ongoing	Breeding,	Caspian Tern
BirdLife Sweden -Tracking data	GPS	Distribution	Offshore	Stockholm archipelago	Sweden	Baltic Sea	2012 - 2017	Breeding,	Lesser black-backed gull
BSP: Foraging behavior common murre 2009	GPS	Distribution	Offshore	Stora Karlsö, Baltic Sea,	Sweden	Baltic Sea	2009	Breeding	Common guillemot
BSP: Foraging behavior razorbills 2010-2015	GPS	Distribution	Offshore	Stora Karlsö, Baltic Sea,	Sweden	Baltic Sea	2010 -2016	Breeding	Razorbill
BirdLife: Black guillemot 2017	GPS	Distribution	Offshore	Gävlebukten, Sweden	Sweden	Baltic Sea	2017 - ongoing	Breeding	Black guillemot
BirdLife: Common gull	GPS	Distribution	Offshore		Sweden	Baltic Sea	2014 - ongoing	Breeding	Common gull
BirdLife: Common murre	GPS	Distribution	Offshore	Gunnarsstenarna, Swed	Sweden	Baltic Sea	2017 - ongoing	Breeding	Common guillemot
BirdLife: Greater black-backed gull	GPS	Distribution	Offshore		Sweden	Baltic Sea	2013 - ongoing	Breeding	Great black-backed gull
BirdLife: Herring gull	GPS	Distribution	Offshore		Sweden	Baltic Sea	2013 - 2014	Breeding	Herring gull
BirdLife: Razorbill	GPS	Distribution	Offshore	Gunnarsstenarna, Swed	Sweden	Baltic Sea	2017 -	Breeding	Razorbill
Seabird tracking study	GPS	Distribution	Offshore	Stora Karlsö, Gotland, Sv	Sweden	Baltic Sea	Common Guillemot - 2009, 2014, 2015	Breeding	Common guillemot, Mew gull, Herring Gull, Great black-backed gull, lesser black-
Seabird tracking study	GPS	Distribution	Offshore	Stora Karlsö island, Swe	Sweden	Baltic Sea	2009	Breeding	Lesser black-backed gull

# National offshore monitoring programmes and archived offshore survey data

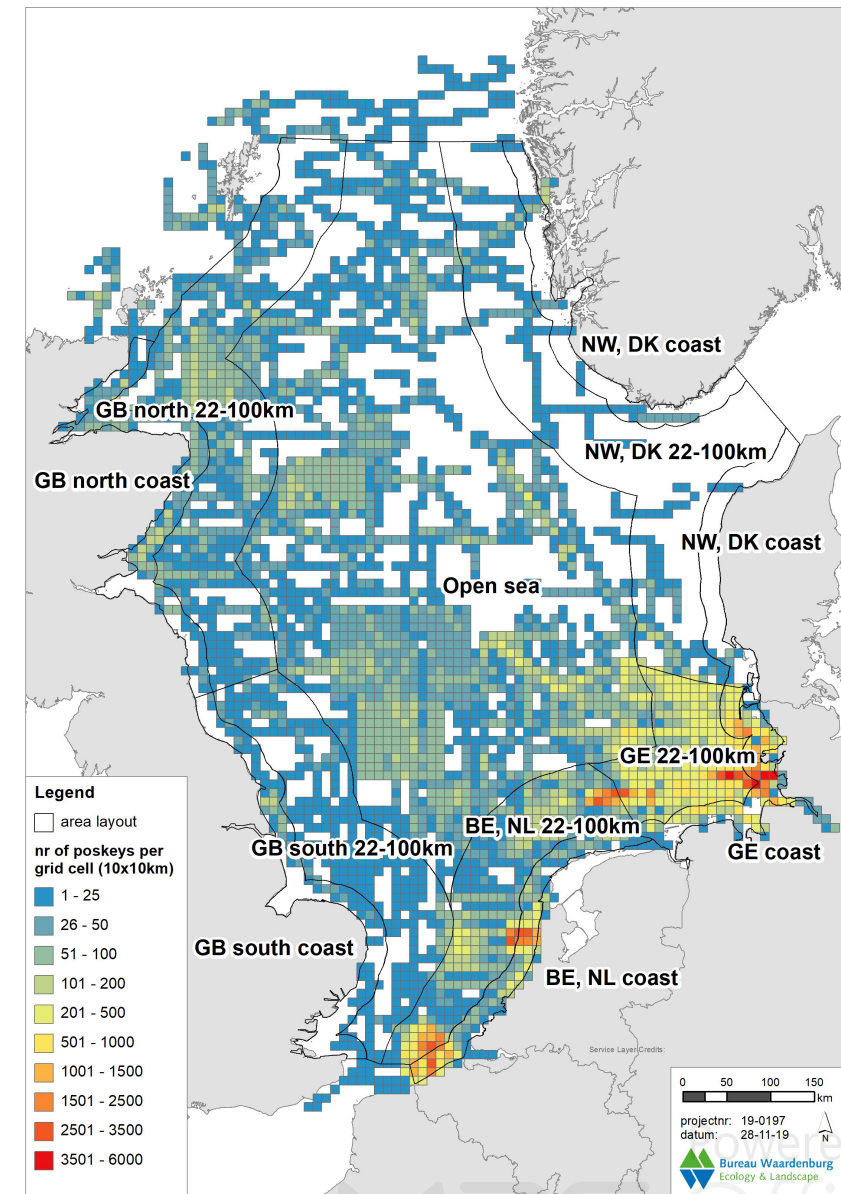


- Blue filled boxes indicate years when offshore aerial or boat based surveys have taken place
- Red outlines mark the year national monitoring programmes started in that country

Note: Survey type, effort, and seasons not represented here. May be partial or full surveys

# ESAS Database – North Sea

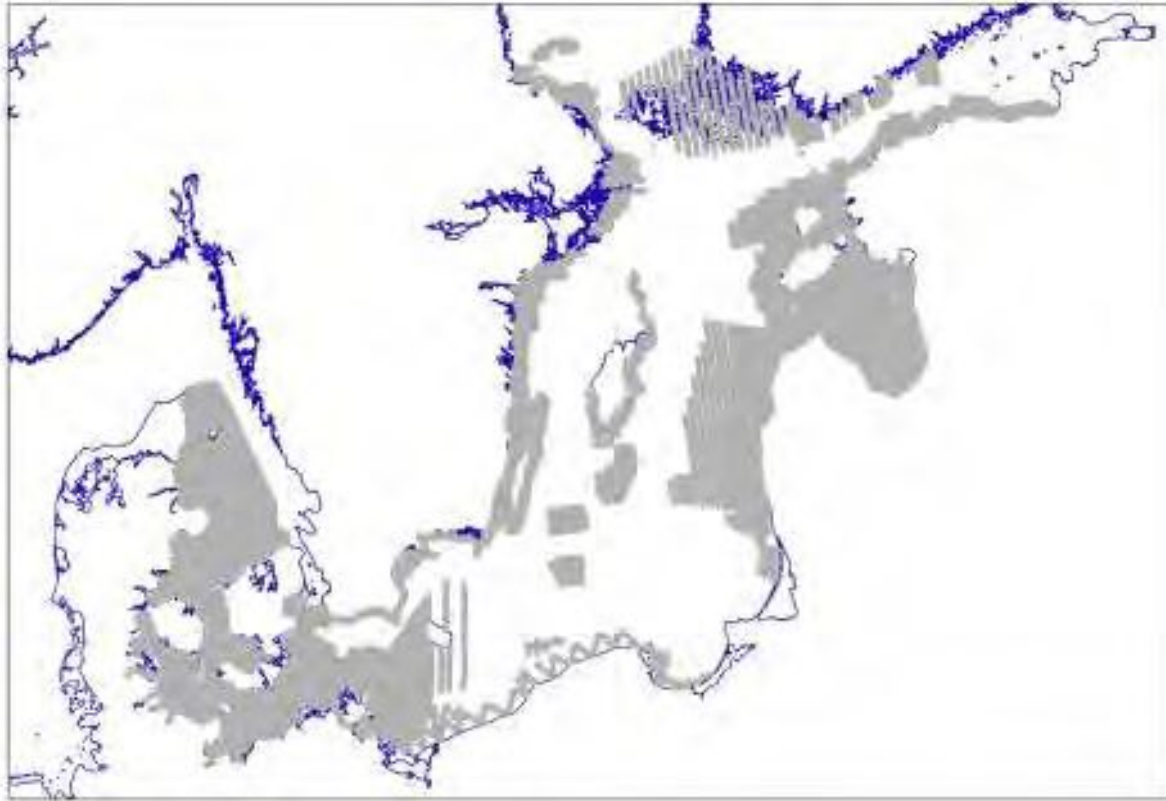
- Broad regional coverage
- Spans long time scales
- Collected all year round
- Last updated in 2013
- New update taking place and moving to a centralized data base on ICES.
- Data call for offshore data from the Baltic Sea and other European countries



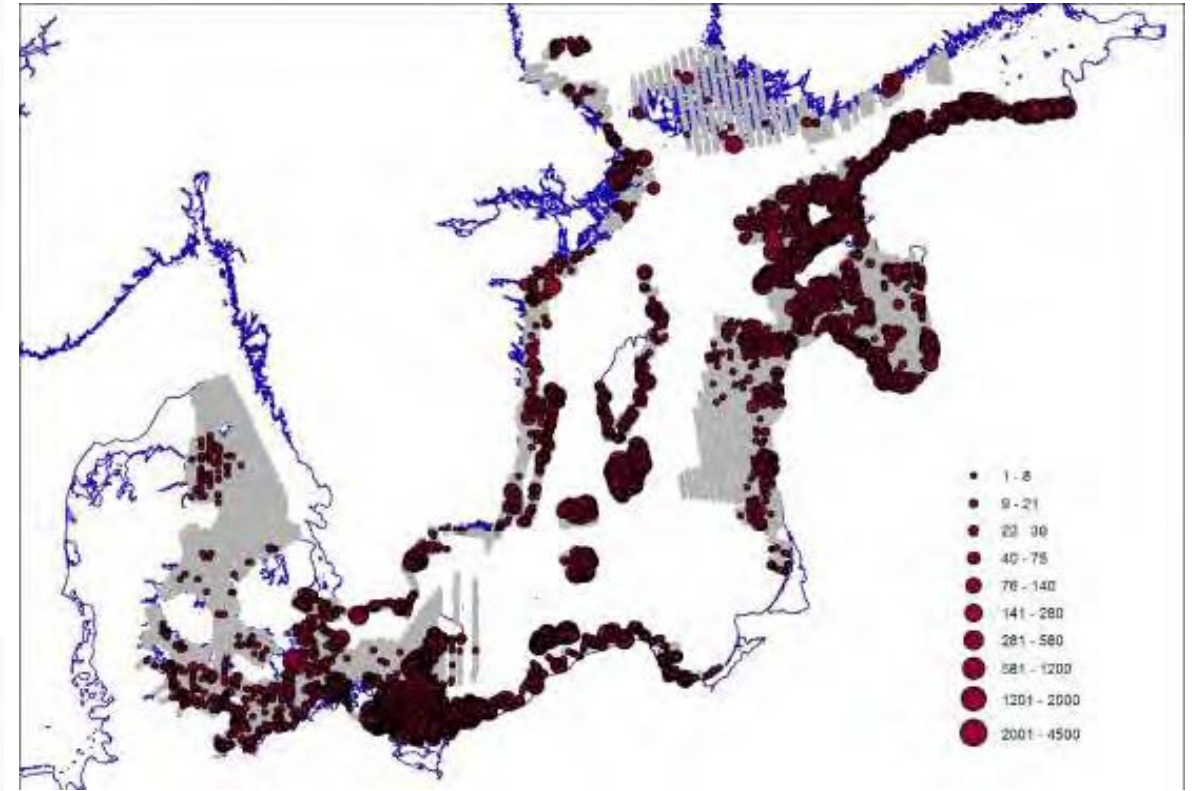
Potiek, A., N. Vanermen, R.P. Middelveld, J. de Jong, E.W.M. Stienen & R.C. Fijn. 2019 Spatial and temporal distribution of different age classes of seabirds in the North Sea. Analysis of ESAS database. Bureau Waardenburg report 19-129. Bureau Waardenburg, Culemborg



# Offshore (at-sea) Surveys - Baltic



Coverage of offshore (at-sea) surveys in the Baltic Sea in winter 2015/16. Grey lines indicate surveyed areas.



Distribution of the Long-tailed Duck *Clangula hyemalis* in the Baltic Sea in winter 2015/16.

ICES. 2020. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2019 meeting). ICES Scientific Reports. 2:80. 101 pp. <http://doi.org/10.17895/ices.pub.7466>



# Tracking data

Species Name				
★ Herring Gull	6		Balearic Shearwater	1
★ Lesser black-backed Gull	6		Black guillemot	1
★ Black-legged Kittiwake	3	★	Black-throated diver	1
Common Guillemot	3		Brent Goose	1
★ Great black-backed gull	3		Common Eider	1
★ Northern Gannet	3	★	Common Gull	1
Razorbill	3		Common Tern	1
Atlantic Puffin	2		Curlew	1
Barnacle goose	2		Dabbling ducks (wigeon and pintails)	1
Bewick's Swan	2		Great Cormorant	1
Caspian Tern	2		Great Skua	1
Common Shelduck	2		Gulls	1
European Shag	2		Long-tailed duck	1
Northern Fulmar	2		Mallard	1
Pink footed goose	2		Taiga Bean goose	1
★ Red throated diver	2		Tufted Duck	1
Sandwich Tern	2		Velvet Scoter	1
			Whooper Swan	1

★ Star indicates species that have been identified as high risk from offshore wind farms

# Identified high risk species

Risk categories developed by Humphries et al. (2015) based solely on species characteristic and overall ecology by removing the conservation scores from Bradbury et al. (2014).

Bradbury, G., Trinder, M., Furness, B., Banks, A. N., Caldow, R. W. G., & Hume, D. (2014). Mapping seabird sensitivity to offshore wind farms. *PLoS One*, 9(9), e106366.

Humphreys, E. M., Cook, A. S. C. P., & Burton, N. H. K. (2015). Collision, Displacement and Barrier Effect Concept Note. 669.

# Data gaps and challenges

- Offshore (at-sea) surveys

Temporal and spatial coverage not homogenous (e.g., Baltic Sea lacks year-round survey data and historic data patchy)

- Tracking Studies

Need access to raw data & GPS/PPT data for sensitivity mapping. Need data on winter distribution, migration, different age classes. Need more high-risk species (e.g., Diving ducks, Terns spp.)

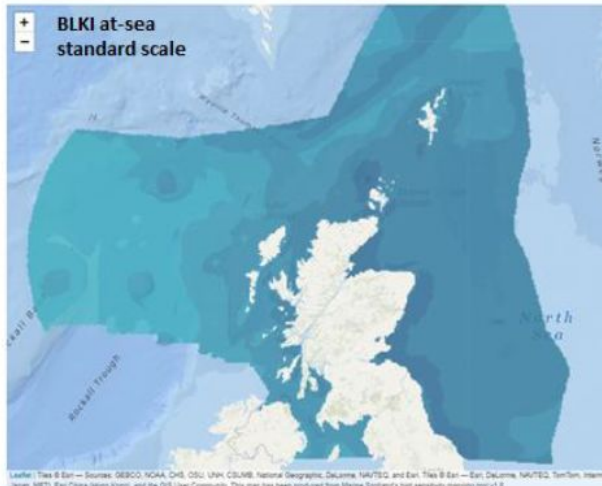
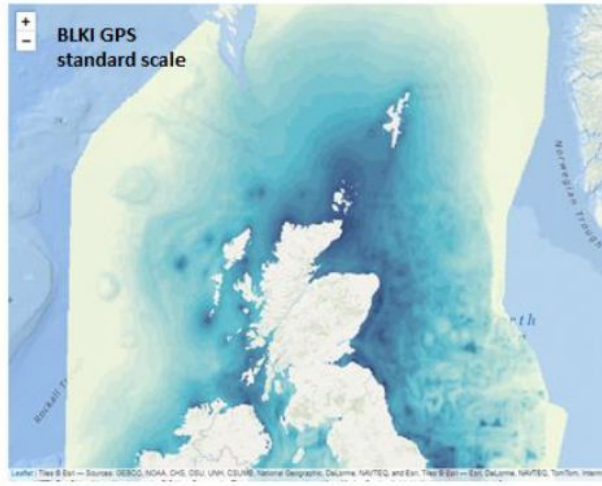
- Species specific interactions with offshore wind farms

Empirical data is lacking for many species. Additional focus on species with data uncertainties (e.g., shearwaters). Shed light on population level impacts (e.g., for displacement). Update sensitivity indices. Lack of knowledge on micro-avoidance behavior and on individual behavior variation.

- Unknown species

Migration risk for estuarine/coastal species. High-risk non-seabird species.

# Possible use of the data



Centre for  
Ecology & Hydrology  
NATURAL ENVIRONMENT RESEARCH COUNCIL



## Development of a 'Seabird Sensitivity Mapping Tool for Scotland'

### Final Report

Kate Searle, Adam Butler, Deena Mobbs, Maria Bogdanova, James Waggitt, Peter Evans, Mark Rehfish, Roger Buisson & Francis Daunt

Offshore Renewables Joint Industry Programme (ORJIP)

## Sensitivity maps

To include a variety of methods so that all data that is available can be used



# Offshore Coalition for Energy and Nature (OCEaN) expanded to the Mediterranean

- Sustainable expansion of offshore wind and grid development
- Feed in the OCEaN Energy & Nature Database to showcase good practice projects implemented by renewable energy developers
- Data TF to make data available and accessible
- Data collection needs to be standardized, its storage centralized, to be made available across borders
- Remove obstacles to sharing (existing) data
- Data-driven decision-making to support better spatial decision-making



**ocean**  
Offshore Coalition for  
Energy and Nature

Powered by  
 WPS Office



Thanks for  
your  
attention!