

# Possible impacts of wind farms on seabirds: the case study Alpha Ventus

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# **Research questions**

Possible effects of the construction of offshore wind farms on seabirds

Here: Alpha Ventus

- Changes in spatial distribution ?
- Changes in abundance ?
- Changes in behaviour ?
- Risk of collision (flight heights)
- Changes in flight heights ?



# Principal responses of seabirds to offshore wind farms

- Avoidance
- No response
- Attraction
- Habituation

 $\rightarrow$  different for the different seabird species (ca. 35 in German waters)



# **Distribution: Common Scoters – winter**





# **Distribution: Little Gulls – spring**





## **Distribution: Lesser Black-backed Gulls – summer**





### **Distribution: Lesser Black-backed Gulls**

May 2010

#### June 2011



Heringsmöwe



# **Distribution: Guillemot and Razorbill – winter**





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# **Distribution: Common Guillemot**

April 2011

#### October 2011



#### Trottellumme



# **Distribution: Divers (loons) – winter and spring**





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## **Divers: Abundances before/after construction of AV**



Zone	abundance (birds/km²)		trend	
	before	construction/after		
0-2 km	0.18	0.00	_	
2-10 km	0.41	0.17	-	
10-20 km	0.33	0.18	-	
20-30 km	0.47	0.52	+	Seetauche



# Behaviour: Comparison between zones

Zone	<u>0-200 m</u>	<u>200-5000 m</u>	<u>reference area</u>
Lesser Black-back	ed Gull:		
- foraging	42 %	20 %	21 %
- resting	17 %	27 %	28 %
Little Gull:			
- foraging	<b>62 %</b>	10 %	24 %
- resting	15 %	38 %	29 %





# Flight heights: Northern Gannet







# Flight heights: Lesser Black-backed Gulls



RCH AT ALPHA VENTUS

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# Flight heights: Seabirds in relation to rotor heights

Species	below	overlapping	<u>above</u>
Common Scoter	76 %	24 %	0 %
Northern Fulmar	100 %	0 %	0 %
Northern Gannet	91 %	9 %	0 %
Little Gull	82 %	18 %	0 %
Common Gull	89 %	11 %	0 %
LBB Gull	71 %	29 %	0 %
Herring Gull	57 %	40 %	3 %
GBB Gull	44 %	56 %	0 %
Kittiwake	81 %	18 %	1 %
Sandwich Tern	92 %	8 %	0 %
Common+Arctic Tern	100 %	0 %	0 %



# Conclusions

- Data are preliminary and partly still (too) scarce
- Likely avoidance reactions by divers and to some extent guillemots
- Possible attraction for gull species
- LBB Gull is clearly the most frequent seabird species in Alpha Ventus wind farm
- Flight heights by most seabird species are lower than Alpha Ventus rotors but some species overlap quite substantially
- Flight heights of seabirds suggest wind turbines to be constructed as high as possible to reduce collision risks
- Within the wind farm site, foraging behaviour appears to be conducted relatively more often than outside the wind farm, in contrast to resting behaviour

