AARHUS
UNIVERSITET
DCE - NATIONALT CENTER FOR MILJØ OG ENERGI

Kommentering af udkast til produkt af forskningsbaseret faglig rådgivning fra DCE, Aarhus Universitet

Titel på produkt	Changes in the distribution and abundance of common scoter and diver species in the Horns Rev I, II and III windfarm areas, Denmark		
Ansvarlig for produktet *(projektleder i DCE)*	Ib Krag Petersen		
Rekvirent	Energinet Eltransmission A/S		
Kontaktperson hos rekvirent	**Majken Them Tøttrup**		
Deadline for fremsendelse af kommentarer	***10. oktober 2024***	***Dato for afslutning af håndtering af kommentarer***	***27. oktober 2024***

Husk venligst at kommentering skal foretages på baggrund af rapportens PDF-version.

	Rekvirent		***DCE***	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
1	Please consider adding 'offshore' before wind farm areas in the title. Please consider changing the subtitle from 'Birds, Horns Rev' to 'Studie on habituation of birds'	Front page	"Offshore" has been added, and subtitle now: Bird distribution response to wind farms, Horns Rev"	**IKP**
2	In the Declaration: Please consider adding which entity is responsible for the overall quality check and assurance of the work and report.	63	Done	**IKP**
3	Please consider deleting last sentence – seems to fit better in the discussion	91-92	We need to mention the covariate here, but do not need to indulge in a discussion. Therefore, last part of the sentence was deleted.	**IKP**

	Rekvirent		*DCE*	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
4	Question: Have factors like water temperature, salinity and currents been considered in the analyses – if not, why?		These covariates have not been considered, mainly because of the relatively small size of the survey area and the coarse nature of the data available on these oceanographic variables. In fact. There is very little variation in temperature or salinity within the survey area. Also, common scoter rely on non-mobile benthic food resources, the availability of which will not be correlated with changes in the salinity of the immediate surrounding water, for instance.	**IKP**
5	Very technical paragraph for a summary. Please consider moving it to the Methods section. And please consider if the wording can be changed to make the 'flexible spatial term' easier to understand for non-experts.	93-99	Agree. The section was moved to 2.4 I have tried to clarify the term.	**IKP**
6	General comment: Please consider using the abbreviation OWF, instead of 'offshore wind farm' or 'wind farm'.		Done	**IKP**
7	Please consider changing Aim to Objective	125	Done	**IKP**
8	Please re-visit the sentence from line 147 – 149. Please use Energinet....not Energinet.dk.	147	Changed	**IKP**
9	Please consider changing 'background' to 'baseline' in line 151	151	Changed	**IKP**
10	Please refer to Energinet as Energinet – not Energinet.dk	153	Changed	**IKP**
11	Question: The text says '...to determine the degree of displacement shown by two specific key species...'. Is the objective of the 2023-2024 surveys not more to evaluate whether a habituation of the presence of the wind farms has developed.... referencing the Scope report by NIRAS / DCE.	154	This is in my opinion the same thing: We have changed the sentence to "…to determine potential changes in displacement shown by two specific key bird species, common scoter and red-throated diver".	**IKP**

	Rekvirent		*DCE*	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
12	The text says: 'The present report analysis whether there have been any changes….' Please consider adding '…changes that can be explained by either displacement or habituation of the offshore wind farm…'	179	The sentence was changed to "The present report analyses whether there have been changes in common scoter and red-throated diver distribution in relation to the three wind farms over time".	**IKP**
13	Consider replacing 'A major' with 'The (main?) objective'	157	Changed.	**IKP**
14	Please consider changing the wording 'At Horns Rev, west of Blåvandshuk in west Juland, the Horns Rev...' to make it more precise.	161	Now reads: "At Horns Rev, a shallow sand bar extending ca. 40 km west of Blåvandshuk in west Jutland, the Horns Rev I…"	**IKP**
15	Question: Did the study reported in 2014 not conclude anything in relation to divers?	178	Answer to your question: The 2014 report was the first result on diver displacement and the report didn't conclude that the change in distribution was caused by the wind farms. Later studies from Germany confirms similar findings there.	**IKP**
16	Question: Can it be indicated on the map (Figure 1-1) which area (of the 2818 km2) has continuously been covered by all the 56 surveys?	187	We feel that such information is given in Figure 2-3.	**IKP**
17	Consider moving this section to Introduction and Objective	202-212	Agree and done	**IKP**
18	Consider moving this section up after line 185 (before the map)	222-227	Chapter was moved as suggested.	**IKP**
19	Section 2 Methods / Data analysis: Please consider adding a paragraph for each data analysis method (abundance estimation, spatial analysis, distance analysis, area of persistence etc. explaining (in layman terms). For the reader it will be helpful to understand: - Why do you perform this analysis – what is the result an indication of? - What does the figures/scores of the different analysis express, e.g. persistence scores. What does a value of '0/blue' mean? Consider also adding an explanatory sentence along with the figures/results for each species/species group	228-	We added the following text: "A persistence score of 1 indicates that the density in that grid cell was estimated to be above average in every bootstrap replicate in every survey (so uniformly above the mean; high persistence), while a value of 0.1 indicates that just 10% of the estimates were above the estimated mean, and thus indicates low persistence in that location."	**IKP**

	Rekvirent		*DCE*	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
20	Figures 3.19 - 3.22 (legends): are the '+' and 'o' signs appear on the map? – it is very difficult/impossible to see	553-	Admittedly difficult to see the difference, yes. The captions for all related figures has a changed text saying "A "+" sign in the bluish background colours indicates a significant positive difference and a "o" in reddish background colours a significant negative difference.".	**IKP**
21	Please consider revisiting the text from line 615 – 626 as the wording doesn't seem to reach the level of language needed for a report like this.	615-626	Text has been revised as follows: In general, these difference maps show that the area in and around HR I supported few birds pre-construction but showed an increase to relatively stable densities thereafter. It is hard to know if the birds showed low levels of displacement response this wind farm and have always been present at low density in the area, or if the construction has kept numbers low within and around HR I. The common scoter densities around HR II increased prior to construction (from Phase 0 to 1), reflecting the expansion of their distribution westward at this time, particularly increasing on and to the west of HR II. After the construction of HR II (Phase 2) there was a significant decline in the footprint (approximately 50%, Table 3-3). Much later after construction of HRII, during Phase 3, numbers within the footprint returned to pre–construction levels. At the same time the common scoters expanded westwards at Horns Rev, with increasing densities around the HR II OWF.	**IKP**

	Rekvirent		***DCE***	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
22	Question: Rather than just stating that '…it is hard to know if the birds do not mind the wind farms…..' and '….shows birds expanding to the west….' and '….there was a significant decline…' Would be possible to suggest some potential environmental factors causing these changes? Please consider making it more clear which changes can be explained by the OWFs and which could be caused by other factors.	615-627	The question of which factors influence changes in distribution and abundance is addressed in the discussion section. We need to be careful with concluding a causal relationship between changes in bird distributions and the wind farms. The relationship can, as addressed in the discussion section, be a direct or an indirect factor. We consider that this element of the discussion is best placed in the discussion section.	**IKP**
23	<u>General comment for the Discussion:</u> Please consider including reflections, comparisons and references to other studies looking at changes in the distribution and abundance of birds – and the links to human activities. For example, it might be relevant to reflect on the study / the article by Peschko et al. (2024) *Cumulative effects of offshore wind farms on common guillemots*….	869-	We have included two chapters to the end of the Discussion section, presenting studies of the effect from OWF's on red-throated divers (Heinänen et al. 2020, Mendel et al. 2019). We have not included the Peschko et al 2024 reference to effects on Common Guillemot because this report specifically addresses red-throated diver and common scoter.	**IKP**
24	Please consider mentioning the outcomes / conclusions in a timewise order, i.e. first HR I, then HR II and then HR III (referring to the phases)	925-929	Fixed.	**IKP**

	Rekvirent		*DCE*	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
25	The text says: 'We can only speculate what the mechanisms behind these observed displacement effects are'. Question: Would it be more correct to say that the observed changes in distribution cannot with statistical certainty be explained by displacement caused by the OWFs ?	930	We can describe statistically significant changes in distribution over time and with respect to different areas. We also can relate these changes to the construction and positions of the OWF's over time. However, we cannot establish a causal relationship between changed in bird abundance in time and in space and the appearance of the OWF's. Because of the wide range of other factors affecting bird distribution and abundance, which we cannot eliminate here, such causal relationships are very difficult to establish, which was also the case in this analysis. That said, the geographical distribution and the timing of changes strongly indicate a causal relationship.	**IKP**
26	Please consider moving this section to the Discussion as it seems to be much more about discussing the factors than concluding.	930-947	Agree, and the section has been moved to Discussion.	**IKP**
27	Question: Is it relevant to elaborate on food supply and its role in regard to scoter occurrence? It was mentioned in the online presentation that DCE gave on 16th September 2024 that the massive replacement/movement of common scoters from the more nearshore parts of the west coast of Jutland to the Horns Rev area in the early 2000 was likely caused by higher occurrence of the American Jack knife clam in Horns Rev area. It is suggested to elaborate more on this in the Discussion.	930-932	We feel that the issue of shift in food supply for common scoter over the study period has been thoroughly raised and described. We relate our findings and conclusions in that light. Regrettably, we have very little access to the historical development, distribution and abundance of the razor clam population at Horns Rev and are thus unable to address that in further detail.	**IKP**

	Rekvirent		*DCE*	
	Kommentar	***Placering i produktet***	***Håndtering af kommentar***	***Ansvarlig for håndtering af kommentar***
28	General comment for the Conclusion: The entire text (line 935 – 946) seems very speculative and as such it would be better placed in the Discussion. The Conclusion should be specifically about the presented study.	935 - 946	The section was moved to the Discussion chapter.	**IKP**
35	Please either delete the text 'We urge immediate….' (until end of Conclusion) or move it to a new section which can be called 'Recommendations for future studies'	947-951	We have made a Chapter 6 "Recommendations for future studies"	**IKP**
29	General comment for the Discussion and Conclusion: Energinet calls for the text to be sharpened so that it becomes clear to the reader what the overall results, uncertainties and conclusions are.	869-952	We have tried to sharpen the Discussion and the Conclusion sections	**IKP**