

A prioritised selection of representative species potentially vulnerable to effects of installing and / or operating offshore windfarms in the North Sea / Irish Sea region

Contact person: Maarten Platteeuw (RWS, The Netherlands) maarten.platteeuw@rws.nl

Introduction

As a consequence of the so-called 'Copenhagen Initiative' (2015), seven countries surrounding the North Sea have been uniting within an Inter Governmental Forum on environmental issues related to offshore wind energy development. In the course of seven meetings, it was agreed that an attempt should be made to join forces internationally for the transboundary sharing of data and knowledge on the (potential) environmental effects of the development of multiple wind farms in these countries with North Sea offshore areas. This was considered particularly important in order to be able to estimate and assess the possible cumulative effects (and potential impacts on populations) of the foreseeable development plans for offshore wind farms around the North Sea.

Selection of target species

A preliminary list of species of animals (birds, marine mammals and bats) has been drafted by the participating countries (Appendices 3 and 4 for species of high and medium concern, respectively). As it is impractical to set up and operationalize a functional CEAF for all species identified in Appendices 3 and 4, it is proposed here to make a selection of a very limited number of receptor species for development of the CEAF approach.

The selection criteria are (in order of perceived importance):

1. Species selected is representative of a likely potential cause-effect relationship (e.g. noise production by pile driving at installing offshore wind turbines and disturbance of locally feeding harbour porpoise, rotating turbine blades causing fatal collisions in birds or bats, operational wind farms and immediate surroundings lead to displacement of certain seabirds causing barrier effects and/or direct habitat loss);
2. Species selected are recognized as a likely (high) concern by at least two of the participating countries;
3. Species selected have already been studied (or are presently being studied), thus providing us with relevant monitoring data / study information on e.g. offshore distribution of the species, behavioural responses to offshore wind farm related pressures, population dynamics, etc. for the CEAF approach.

Target species

1. **Harbour porpoise** (*Phocoena phocoena*) is considered to be the most representative receptor species for assessing the cumulative effects of underwater noise production by pile driving during the installation of offshore wind farms.
2. For assessing the cumulative effects of bird collisions with rotating rotor blades of offshore turbines, the most representative receptor species are thought to be: **black-legged kittiwake** (*Rissa tridactyla*) for the UK and Norway and **lesser black-backed gull** (*Larus fuscus*) for continental NW Europe. A choice can still be made.
3. For assessment of the cumulative effects of habitat loss among seabirds due to the presence of operational offshore wind farms, two representative species are proposed, each of which represent a slightly different challenge because of clearly different ecological requirements. These are **red-throated diver** (*Gavia stellata*) because of their extreme vulnerability to any human disturbance and the fact that they tend to prefer relatively shallow waters also currently favoured by wind farm prospectors (but the most important diver sites could be avoided) and, on the opposite end, **common guillemot** (*Uria aalge*) because they may occur anywhere at sea and are thus always likely to be influenced (but it is likely to take much more massive offshore wind farm development in the future to reach significant cumulative effects).
4. For assessing cumulative effects of collisions of bats with rotating rotor blades, although not necessarily deemed high risk by some of the participating countries, it is proposed to also select **Nathusius's pipistrelle** (*Pipistrellus nathusii*), particularly to explore how to handle data-deficiency in producing and using a species-specific CEAF. Because of insufficient data on population size this species is not taken into account in this stage.

Appendix 1.

Species of high concern

| Species | | | Country Priority | | | | | | | | | | Impact | | | |
|---------------------|-----------------------------------|---------------------------|----------------------------|-----|----|-----|----|----|------|------|----|--------------|-----------|---------|--------|--|
| Bird, Mammal, Other | Latin Name | English common name | No. Countries listing this | BE | DE | DK | FR | IE | NL | NO | UK | Displacement | Collision | Barrier | Injury | |
| | | | species | | | | | | | | | | | | | |
| Bird | <i>Sterna paradisaea</i> | Arctic tern | 1 | | | | | | | B, P | | | | | | |
| Bird | <i>Fratricula arctica</i> | Atlantic puffin | 1 | | | | | | | | YR | Yes | | Yes | | |
| Bird | <i>Cygnus bewickii</i> | Bewick's swan | 1 | | | | | | P | | | | Yes | | | |
| Bird | <i>Cephus grylle</i> | Black guillemot | 1 | | | | | | | B, W | | | | | | |
| Bird | <i>Chlidonias niger</i> | Black tern | 0 | | | | | | | | | | | | | |
| Bird | <i>Chroicocephalus ridibundus</i> | Black-headed gull | 0 | | | | | | | | | | | | | |
| Bird | <i>Rissa tridactyla</i> | Black-legged kittiwake | 2 | | | | | | | W | YR | | Yes | Yes | | |
| Bird | <i>Gavia arctica</i> | Black-throated diver | 1 | | SP | | | | | | | | | | | |
| Mammal | <i>Tursiops truncatus</i> | Bottlenose dolphin | 0 | | | | | | | | | | | | | |
| Bird | <i>Grus grus</i> | Common crane | 1 | | | P | | | | | | | | | | |
| Bird | <i>Somateria mollissima</i> | Common eider | 2 | | | YR | | | | B, W | | | | | | |
| Bird | <i>Uria aalge</i> | Common guillemot | 2 | Yes | | | | | P, W | | | Yes | | | | |
| Mammal | <i>Nyctalus noctula</i> | Common noctule | 1 | | | | | | P | | | | Yes | | | |
| Bird | <i>Melanitta nigra</i> | Common scoter | 2 | | | YR | | | | W | | | | | | |
| Bird | <i>Sterna hirundo</i> | Common tern | 2 | Yes | | | | | | B, P | | | | | | |
| Bird | <i>Branta bernicla bernicla</i> | Dark bellied brent goose | 0 | | | | | | | | | | | | | |
| Bird | <i>Branta bernicla hrota</i> | Light bellied brent goose | 1 | | | | | | | P | | | | | | |
| Bird | <i>Numenius arquata</i> | Eurasian curlew | 1 | | | | | | | P | | | | | | |
| Bird | <i>Larus marinus</i> | Great black-backed gull | 4 | Yes | | | | | P, W | P, W | YR | | Yes | | | |
| Mammal | <i>Halichoerus grypus</i> | Grey seal | 2 | | | YR | | | YR | | | Yes | | | Yes | |
| Mammal | <i>Phocoena phocoena</i> | Harbour porpoise | 5 | Yes | C | YR | | | YR | | YR | Yes | | | Yes | |
| Mammal | <i>Phoca vitulina</i> | Harbour/common seal | 2 | | | YR | | | YR | | | Yes | | | Yes | |
| Bird | <i>Larus argentatus</i> | Herring gull | 4 | Yes | | | | | YR | P, W | YR | | Yes | | | |
| Bird | <i>Larus fuscus</i> | Lesser black-backed gull | 3 | Yes | | | | | B, P | | B | | Yes | | | |
| Bird | <i>Hydrocoloeus minutus</i> | Little gull | 2 | Yes | | | | | P | | | Yes | Yes | | | |
| Bird | <i>Clangula hyemalis</i> | Long-tailed duck | 1 | | | | | | | W | | | | | | |
| Mammal | <i>Balaenoptera acutorostrata</i> | Minke whale | 0 | | | | | | | | | | | | | |
| Mammal | <i>Pipistrellus nathusii</i> | Nathusius's pipistrelle | 2 | | | Yes | | | P | | | | Yes | | | |
| Bird | <i>Morus bassanus</i> | Northern gannet | 2 | Yes | | | | | | | YR | Yes | Yes | | | |
| Mammal | <i>Vespertilio murinus</i> | Parti-coloured bat | 1 | | | | | | P | | | | Yes | | | |
| Bird | <i>Anser brachyrhynchus</i> | Pink-footed goose | 0 | | | | | | | | | | | | | |
| Bird | <i>Alca torda</i> | Razorbill | 1 | Yes | | | | | | | | | | | | |
| Bird | <i>Gavia stellata</i> | Red-throated diver | 3 | | SP | YR | | | | | W | Yes | | Yes | | |
| Bird | <i>Thalasseus sandvicensis</i> | Sandwich tern | 2 | Yes | | YR | | | | | | | | | | |
| Bird | <i>Melanitta fusca</i> | Velvet scoter | 2 | | | YR | | | | W | | | | | | |
| Mammal | <i>Lagenorhynchus albirostris</i> | White-beaked dolphin | 0 | | | | | | | | | | | | | |
| Bird | <i>Cygnus cygnus</i> | Whooper swan | 0 | | | | | | | | | | | | | |
| Bird | <i>Calidris canutus</i> | Red Knot | 0 | | | | | | | | | | | | | |
| Bird | <i>Calidris alba</i> | Sanderling | 0 | | | | | | | | | | | | | |
| Bird | <i>Stercorarius skua</i> | Great skua | 0 | | | | | | | | | | | | | |
| Bird | <i>Turdus philomelos</i> | Song thrush | 0 | | | | | | | | | | | | | |
| Bird | <i>Turdus iliacus</i> | Redwing | 0 | | | | | | | | | | | | | |
| Bird | <i>Sturnus vulgaris</i> | Common starling | 0 | | | | | | | | | | | | | |
| Bird | <i>Tadorna tadorna</i> | Common shelduck | 0 | | | | | | | | | | | | | |
| Bird | <i>Scolopax rusticola</i> | Eurasian woodcock | 0 | | | | | | | | | | | | | |
| Bird | <i>Passerines</i> | Migrating song birds | 2 | | | | | | P | P | | | Yes | | | |
| Mammal | <i>Microchiroptera</i> | Migrating bats | 1 | | | | | | | P | | | | | | |

- P – passage
- B – breeding
- W – wintering
- YR – year round
- SP – spring passage
- C – calving

Appendix 2. Species of medium concern

| Species | | | Country Priority | | | | | | | | | Impact | | | |
|---------------------|-----------------------------------|---------------------------|------------------------------------|-----|----|-------|----|----|------|------|------|--------------|-----------|---------|--------|
| Bird, Mammal, Other | Latin Name | English common name | No. Countries listing this species | BE | DE | DK | FR | IE | NL | NO | UK | Displacement | Collision | Barrier | Injury |
| Bird | <i>Sterna paradisaea</i> | Arctic tern | 2 | | P | | | | | | P | | Yes | | |
| Bird | <i>Fraercoala arctica</i> | Atlantic puffin | 0 | | | | | | | | | | | | |
| Bird | <i>Cygnus bewickii</i> | Bewick's swan | 0 | | | | | | | | | | | | |
| Bird | <i>Cephus grylle</i> | Black guillemot | 0 | | | | | | | | | | | | |
| Bird | <i>Chlidonias niger</i> | Black tern | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Chroicocephalus ridibundus</i> | Black-headed gull | 1 | | | | | | | W | | | | | |
| Bird | <i>Rissa tridactyla</i> | Black-legged kittiwake | 1 | | | | | | | | P, W | | Yes | Yes | |
| Bird | <i>Garria arctia</i> | Black-throated diver | 1 | | | | | | | | W, P | | | | |
| Mammal | <i>Phocoena phocaena</i> | Bottlenose dolphin | 1 | | | | | | | | NR | Yes | | | |
| Bird | <i>Grus grus</i> | Common crane | 1 | | | P | | | | | | | | | |
| Bird | <i>Somateria mollissima</i> | Common eider | 1 | | | NR | | | | | | | | | |
| Bird | <i>Uria aalge</i> | Common guillemot | 2 | Yes | | | | | | | NR | Yes | | Yes | |
| Mammal | <i>Nyctalus noctule</i> | Common noctule | 0 | | | | | | | | | | | | |
| Bird | <i>Melanitta nigra</i> | Common scoter | 3 | | | NR | | | W, P | | W | Yes | | Yes | |
| Bird | <i>Sterna hirsuta</i> | Common tern | 3 | Yes | P | | | | | | B | | Yes | | |
| Bird | <i>Anas boschas boschas</i> | Dark bellied brent goose | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Anas boschas boschas</i> | Light bellied brent goose | 0 | | | | | | | | | | | | |
| Bird | <i>Numenius arquata</i> | Eurasian curlew | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Larus marinus</i> | Great black-backed gull | 2 | Yes | | | | | | | NR | | | | |
| Mammal | <i>Halichoerus grypus</i> | Grey seal | 2 | | | NR | | | | | NR | Yes | | | Yes |
| Mammal | <i>Phocaena phocaena</i> | Harbour porpoise | 3 | Yes | | NR | | | | | NR | Yes | | | Yes |
| Mammal | <i>Phoca vitulina</i> | Harbour/common seal | 2 | | | NR | | | | | NR | Yes | | | Yes |
| Bird | <i>Larus argentatus</i> | Herring gull | 3 | Yes | | | | | | W, B | NR | | | | |
| Bird | <i>Larus fuscus</i> | Lesser black-backed gull | 3 | Yes | | | | | | W, B | NR | | | | |
| Bird | <i>Hydrocoloeus minutus</i> | Little gull | 3 | Yes | P | | | | | | P | | | | |
| Bird | <i>Clangula hyemalis</i> | Long-tailed duck | 0 | | | | | | | | | | | | |
| Mammal | <i>Balaenoptera acorororata</i> | Minke whale | 1 | | | | | | | | NR | Yes | | | |
| Mammal | <i>Pipistrellus nathusii</i> | Nathusius's pipistrelle | 1 | | | (Yes) | | | | | | | | | |
| Bird | <i>Merula bassanica</i> | Northern gannet | 4 | Yes | | | | | P, W | P, W | P, W | Yes | Yes | | |
| Mammal | <i>Vesperugo murinus</i> | Parti-coloured bat | 0 | | | | | | | | | | | | |
| Bird | <i>Anser boschas boschas</i> | Pink-footed goose | 1 | | | | | | | | P | | Yes | | |
| Bird | <i>Alca torda</i> | Razorbill | 2 | Yes | | | | | | | NR | Yes | | Yes | |
| Bird | <i>Garria stellata</i> | Red-throated diver | 3 | | | NR | | | W | W | | Yes | | | |
| Bird | <i>Thalasseus sandwicensis</i> | Sandwich tern | 5 | Yes | P | NR | | | B, P | | B | Yes | Yes | | |
| Bird | <i>Melanitta fusca</i> | Velvet scoter | 1 | | | NR | | | | | | | | | |
| Mammal | <i>Lagenorhynchus albirostris</i> | White-beaked dolphin | 1 | | | | | | | | NR | Yes | | | |
| Bird | <i>Cygnus cygnus</i> | Whooper swan | 1 | | | | | | | | P | | Yes | | |
| Bird | <i>Colaptes cafer</i> | Red knot | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Colaptes alba</i> | Sanderling | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Stercorarius skua</i> | Great skua | 1 | | | | | | P | | | Yes | Yes | | |
| Bird | <i>Turdus philomelos</i> | Song thrush | 2 | | | | | | P | P | | | Yes | | |
| Bird | <i>Turdus iliacus</i> | Redwing | 2 | | | | | | P | P | | | Yes | | |
| Bird | <i>Sternas vulgaris</i> | Common starling | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Tadorna tadorna</i> | Common shelduck | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Scolopax rusticola</i> | Eurasian woodcock | 1 | | | | | | P | | | | Yes | | |
| Bird | <i>Passerines</i> | Migrating song birds | 1 | | | | | | | | P | | | | |
| Mammal | <i>Microchiroptera</i> | Migrating bats | 0 | | | | | | | | | | | | |