

Red-Listed Species at Risk; Mapping Norway's Proposed Deep-Sea Mining Regions



Aim: Identify species of the phylum Chordata within the proposed mining area, with focus on red-listed species.

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BACKGROUND

Earlier this year, Norway opened for seabed mining (Fig 1), to extract minerals necessary for the transition from fossil fuel. This occurred despite warnings from specialist authorities, research communities and criticism from other countries, who raised concern about limited knowledge of the area and the potential harm to biodiversity.

POTENTIAL IMPACTS

- **Noise pollution** can change the behaviour of fish and marine mammals [1,2]
- **Light pollution** can affect bird behaviour [3]
- The mining process can release **harmful chemicals and toxins** [4]
- **Sediment plumes** can cause physiological damage and reduce visibility [5,6]

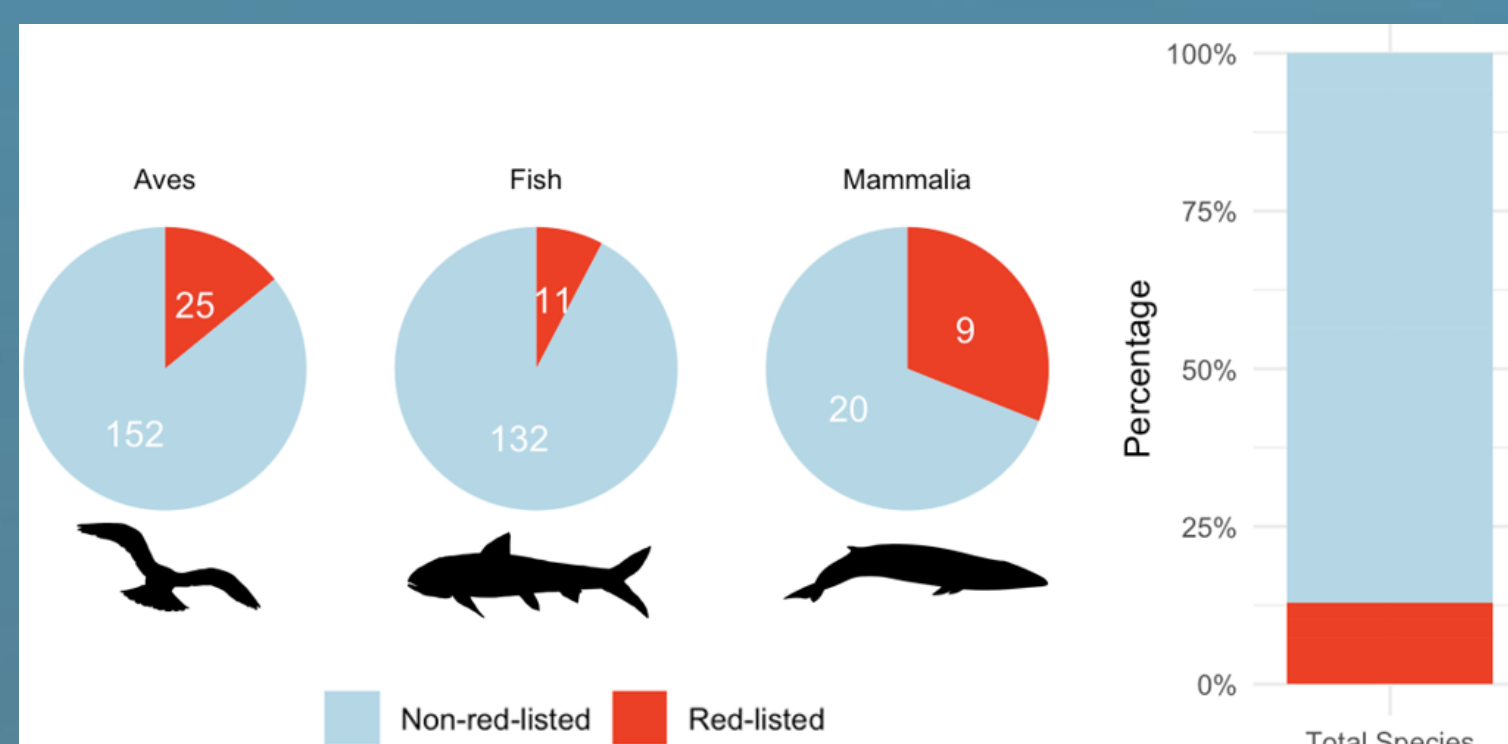


Figure 2: Proportion of red-listed species within the total species found in the research area.

Table 1: List of particularly vulnerable species found in study area

Class	Scientific name	Common name	IUCN redlist	Norwegian redlist
Mammalia	<i>Balaenoptera musculus</i>	Blue whale	EN	VU
Mammalia	<i>Balaenoptera physalus</i>	Fin whale	VU	LC
Mammalia	<i>Cystophora cristata</i>	Hooded seal	VU	EN
Mammalia	<i>Hyperoodon ampullatus</i>	Northern bottlenose whale	NT	LC
Mammalia	<i>Odobenus rosmarus</i>	Walrus	VU	NA
Aves	<i>Calidris canutus</i>	Red knot	NT	NA
Aves	<i>Clangula hyemalis</i>	Long-tailed duck	VU	NT
Aves	<i>Fratercula arctica</i>	Atlantic puffin	VU	EN
Aves	<i>Fulmarus glacialis</i>	Northern fulmar	LC	EN
Aves	<i>Pagophila eburnea</i>	Ivory gull	NT	NA
Aves	<i>Rissa tridactyla</i>	Black-legged kittiwake	VU	EN
Aves	<i>Somateria mollissima</i>	Common eider	NT	VU
Aves	<i>Uria aalge</i>	Common murre	LC	CR
Aves	<i>Uria lomvia</i>	Thick-billed murre	LC	CR
Elasmobranchii	<i>Amblyraja radiata</i>	Thorny skate	VU	LC
Elasmobranchii	<i>Bathyraja spinicauda</i>	Spinytail skate	NT	LC
Holocephali	<i>Chimaera monstrosa</i>	Rabbit fish	VU	LC
Actinopterygii	<i>Lycenchelys platyrhina</i>		DD	LC
Actinopterygii	<i>Molva dypterygia</i>	Blue ling	VU	EN

References

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 - 2: Erbe et al. (2019). Managing the Effects of Noise From Ship Traffic, Seismic Surveying and Construction on Marine Mammals in Antarctica. *Frontiers in Marine Science*, 6.
 - 3: Ronconi, Allard, & Taylor (2015). Bird interactions with offshore oil and gas platforms: Review of impacts and monitoring techniques. *Journal of Environmental Management*, 147, 34–45.
 - 4: Levin et al. (2016). Defining "serious harm" to the marine environment in the context of deep-seabed mining. *Marine Policy*, 74, 245–259.
 - 5: Drazen et al. (2019). Observations of deep-sea fishes and mobile scavengers from the abyssal DISCOL experimental mining area. *Biogeosciences*, 16(16), 3133–3146.
 - 6: Drazen et al. (2020). Midwater ecosystems must be considered when evaluating environmental risks of deep-sea mining. *Proceedings of the National Academy of Sciences*, 117(30), 17455–17460.
 - 7: Sjøkkeldirektoratet (2024). *Åpningsområde med forekomster - Meld.St. 25 (2022-2023)* [Figur]. https://www.sodir.no/globalassets/1-sodir/om-oss/informasjons tjenester/kart tjenester/opningsomrade_m_forekomst_meld.st.25.png
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METHOD

1. Analysis using observational data from Global Biodiversity Information Facility database (GBIF)
2. Species were grouped into categories; **fish**, **mammal** and **bird**, and the percentage of vulnerable species in each group was calculated
3. Red-listed species in the area were evaluated based on pre-defined criteria, and a list of the species we evaluated as most vulnerable to deep-sea mining was compiled

MAIN FINDINGS

- 13 % of species classified as red-listed
- 19 species were identified as particularly vulnerable
- Mammals has the highest proportion vulnerable species.

CONCLUSION

- There are **vulnerable species** in the area proposed for mining, which highlights the need for precautionary measures to protect these species before the mining can commence.
- **Further research** is needed on the impacts of mining on these species and other species living more directly in the mining zones.

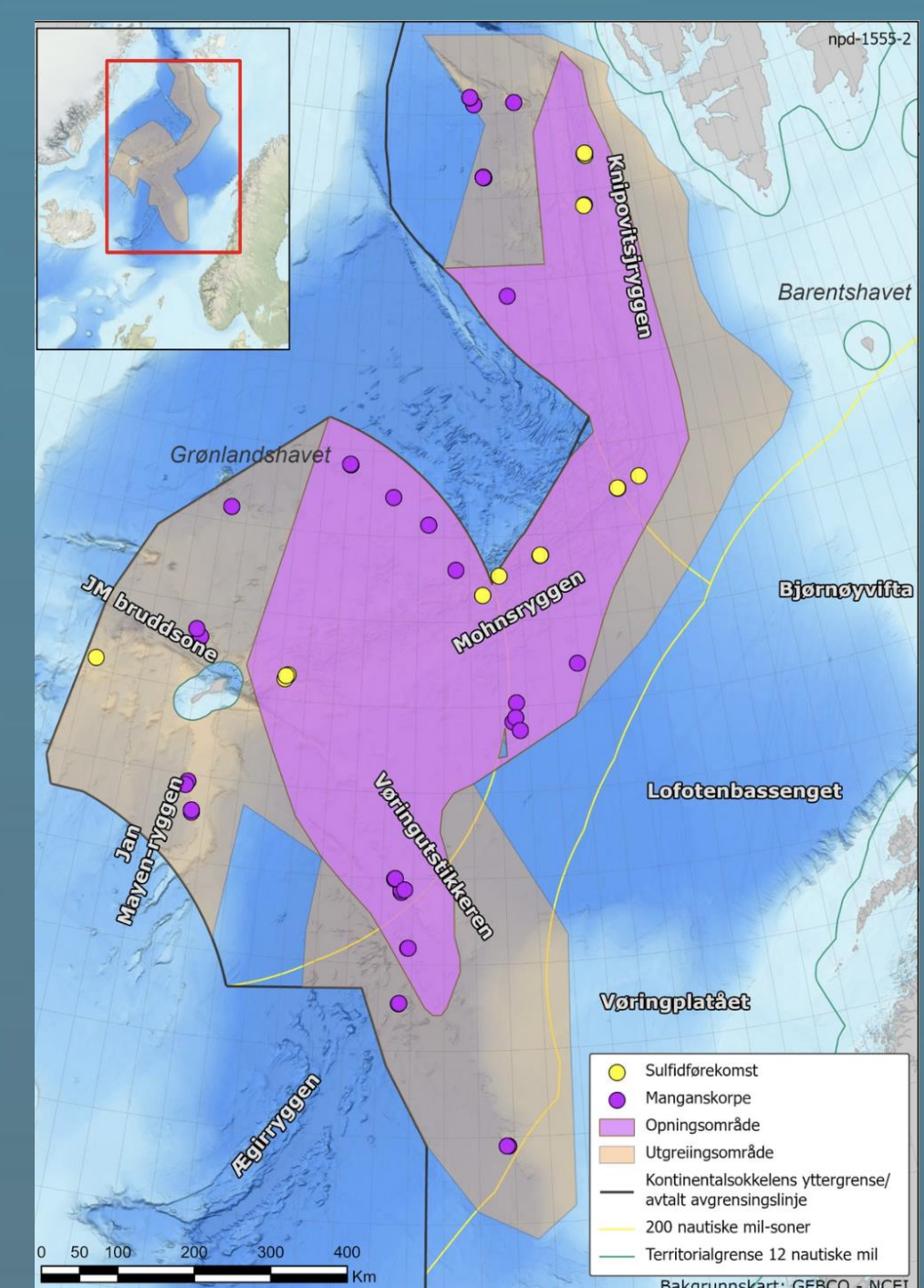


Figure 1: Map of the area the Norwegian government is opening for deep-sea mining [7].

