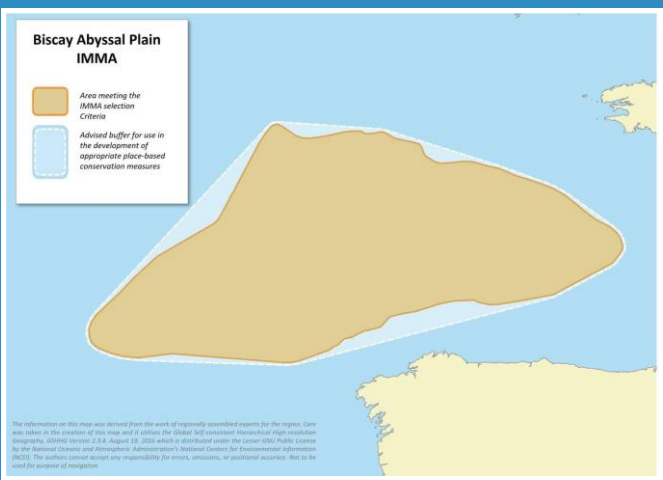

Area Size

216 173 km^2

Qualifying Species and Criteria

Sperm whale – *Physeter macrocephalus*

Criterion A; B (2)

Fin whale – *Balaenoptera physalus*

Criterion A; B (2)

Striped dolphin – *Stenella coeruleoalba*

Criterion B (2)

Marine Mammal Diversity

Criterion D (2)

Balaenoptera acutorostrata, Balaenoptera borealis, Balaenoptera musculus, Balaenoptera physalus physalus, Delphinus delphis, Globicephala melas, Grampus griseus, Megaptera novaeangliae, Orcinus orca, Physeter macrocephalus, Stenella coeruleoalba, Tursiops truncatus, Ziphius cavirostris

Summary

The abyssal plain of the Bay of Biscay hosts a large number of fin whales (*Balaenoptera physalus*), which concentrate in the area in the summer. It is estimated that more than 10,000 fin whales, which are considered *Vulnerable* on the IUCN Red List of Threatened Species, aggregate in this area. For centuries commercial whaling efforts were concentrated in the IMMA and

Biscay Abyssal Plain IMMA

Summary, continued.

surrounding areas. Since the cessation of whaling, large-scale dedicated scientific surveys and citizen science efforts conducted from platforms of opportunity, have revealed a high density of fin whales. The area also encompasses the highest densities of sperm whales (*Physeter macrocephalus*) in the North East-Atlantic. In addition, a dozen of additional species of cetaceans are encountered on this area, including common dolphins (*Delphinus delphis*), striped dolphins (*Stenella coeruleoalba*), bottlenose dolphins (*Tursiops truncatus*), Risso's dolphins (*Grampus griseus*), Long-finned pilot whales (*Globicephala melas*), killer whales (*Orcinus orca*), minke whales (*Balaenoptera acutorostrata*), Cuvier's beaked whales (*Ziphius cavirostris*) and more rarely blue whales *(Balaenoptera musculus*).

Description:

The Bay of Biscay abyssal plain comprises a generally flat, deep region of the ocean floor, with depths up to 4550 m. This oceanic abyssal plain is limited by the continental shelf in the north-east, where phytoplankton blooms first occur in early summer (Pingree & Garcia-Soto, 2014).

The general circulation, originating from the North-Atlantic Gyre, is weak and flows from north to south (Pingree & Garcia-Soto, 2014), while the slope current is strong and flows from the Iberian Peninsula to the northern Bay of Biscay along the shelf break. The interaction between these two opposite circulations frequently results in mesoscale eddies that are relatively persistent in time (Caballero et al., 2014).

Figure 1: Fin whale (*Balaenoptera physalus*) surfacing. Photo credit: S. Laran / Pelagis

Figure 2: Sperm whales (*Physeter macrocephalus)* surfacing. Photo credit: ORCA

Criterion A: Species or Population Vulnerability

This IMMA is identified on the basis of important habitat for North Atlantic fin whales, (Gilles et al., 2023; Hammond et al., 2009; Lacey et al., 2022) which are considered Vulnerable on the IUCN Red List of Threatened Species (Cooke, 2018). The IMMA also encompasses highly preferential habitat for sperm whale (*Physeter macrocephalus*; Rogan et al., 2017; Virgili et al., 2022), which is also considered vulnerable on the IUCN Red List of Threatened Species (Taylor et al., 2019).

Criterion B: Distribution and Abundance Sub-criterion B2: Aggregations

Fin whales are known to aggregate in the IMMA during summer months, based on evidence from several large scale European ship and aerial surveys (SCANS I in 2005, CODA in 2007, SCANS II in 2016 and SCANS III in 2022 (Gilles et al., 2023; Hammond et al., 2009; Lacey et al., 2022) as well as French surveys, SAMM, of the eastern part of the IMMA (Laran et al., 2022, 2017). Predicted density from the SCANS III survey included densities of greater than 0.075 individuals/km^2 within the limit of the IMMA (Lacey et al., 2022), and the species showed the least variation in predicted distribution between surveys of any of the species modelled (Lacey et al., 2022). A compilation of data from a wide range of methods clearly underlines the species' oceanic distribution (Evans & Wagitt, 2020), which is also highlighted in encounter rates from long-term citizen science platform of opportunity surveys (2007-2022) by ORCA (Matear et al., 2019).

During SCANS III (summer 2016) density was estimated as 0.073 (CV=29%) over the oceanic strata of the Bay of Biscay (Hammond et al., 2021), corresponding to an estimated 10,600 individuals in this area (95% Confidence Interval 5,800-19,200). It is suspected that these individuals migrate out of the area during winter months, as only a small number of encounters were observed during the SAMM-II winter survey (2021) in the eastern part of the IMMA (Laran et al., 2022).

Results from large-scale surveys conducted in the North Atlantic have reported a concentration of sperm whales in deep ocean waters off Galicia (western Spain) and in the Bay of Biscay (Rogan et al., 2017; Virgili et al., 2022; Evans, 2021). The total abundance of sperm whales in the area is estimated to be 3,267 (CV = 0.23) individuals. Adjusting this estimate to include a proportion of sightings of unidentified large whales, the abundance reaches 7,035 (CV = 0.28) sperm whales (Rogan et al., 2017).

Finally, surface modelling conducted by Lacey et al. (2022) indicated that the IMMA also hosts a high density of striped dolphins (*Stenella coeruleoalba*) (> 0.15 ind.km^2).

Criterion D: Special Attributes Sub-criterion D2: Diversity

This IMMA contains habitat that supports an important diversity of cetacean species. In addition to fin whales, sperm whales and striped dolphins, the Bay of Biscay abyssal plain hosts at least a dozen species of cetaceans, including Cuvier's beaked whales (*Ziphius cavirostris*), common dolphins (*Delphinus delphis*), bottlenose dolphins (*Tursiops truncatus*), listed in the ANNEX II of European Habitat directive), long-finned pilot whales (*Globicephala melas*), Risso's dolphins (*Grampus griseus*), minke whales (*Balaenoptera acutorostrata*), Endangered Sei whales (*Balaenoptera borealis*) (Hammond et al., 2017, 2009, 2007; Laran et al., 2017; Rogan et al., 2017) and

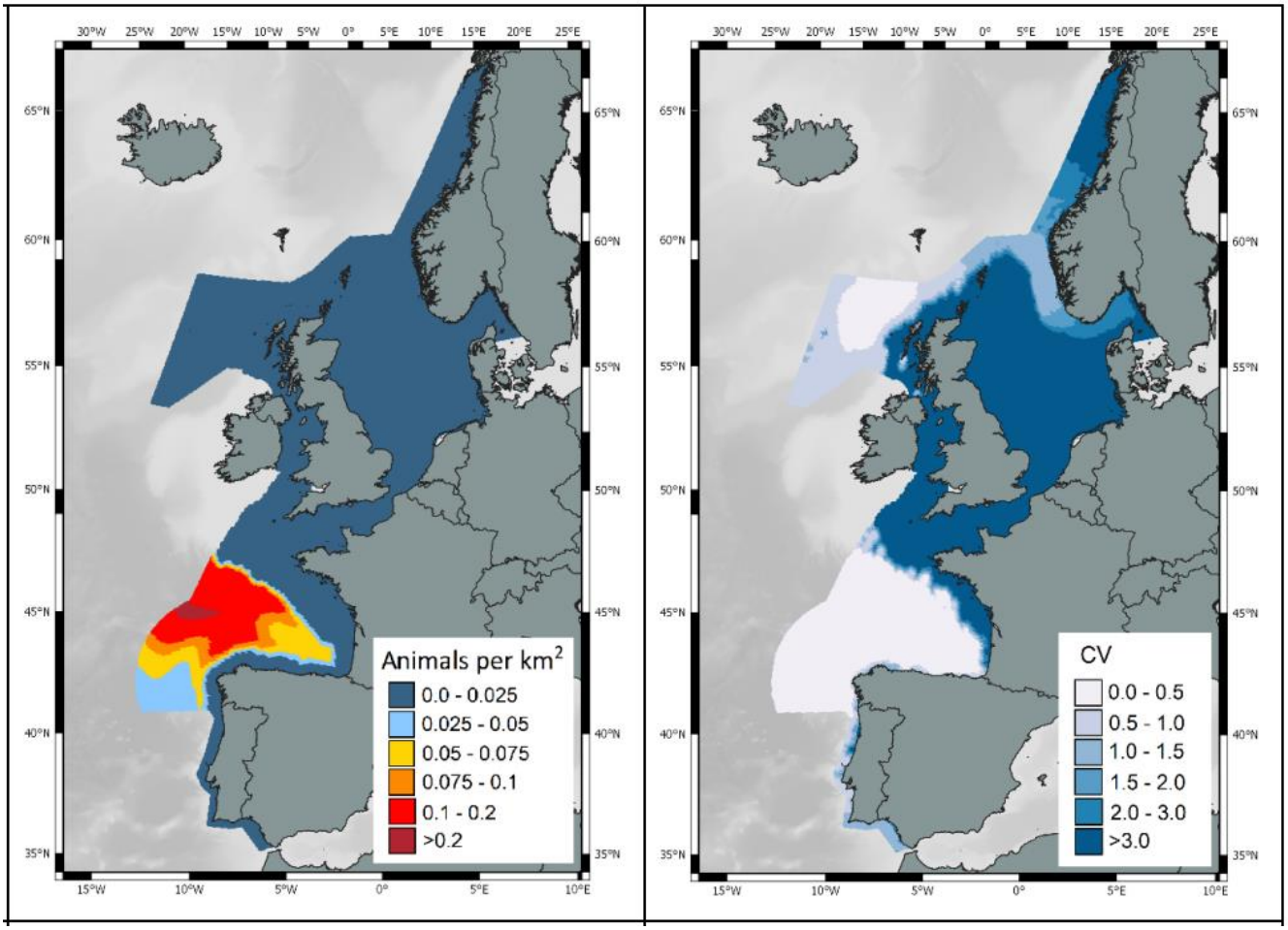

Figure 3: Predicted surfaces of estimated density (left) and associated coefficient of variation (CV, right) for fin whale in SCANS-III (2016) from Lacey et al. (2022).

Figure 4: Sperm whale (*Physeter macrocephalus*) in the IMMA. Photo credit: S Laran / Pelagis

more rarely blue whales (*Balaenoptera musculus*) (Gilles et al., 2023; Laran et al., 2017). Killer whales (*Orcinus orca*) and humpback whales (*Megaptera novaeangliae*) are also encountered in the area (https://seamap.env.duke.edu/).

Supporting Information

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