

Area Size

123 155 km²

Qualifying Species and Criteria

Common dolphin – *Delphinus delphis*

Criterion B (2)

Harbour porpoise – *Phocoena phocoena*

Criterion B (2)

Marine Mammal Diversity

Criterion D (2)

Balaenoptera acutorostrata, *Balaenoptera physalus*, *Delphinus delphis*, *Globicephala melas*, *Grampus griseus*, *Halichoerus grypus*, *Kogia* sp., *Megaptera novaeangliae*, *Phocoena phocoena*, *Stenella coeruleoalba*, *Tursiops truncatus*, *Ziphius cavirostris*

Summary

This IMMA includes waters from the coast to the edge of the continental shelf, connecting the Bay of Biscay, the English channel and the South of Celtic Sea. More than ten species of marine mammals are observed regularly in the area and have been extensively documented through a series of standardised surveys since 2005. The northwestern portion of the IMMA contains high densities of common dolphins (*Delphinus delphis*), whilst the eastern part of the English Channel

Northern Continental Shelf of the Bay of Biscay IMMA

Summary, continued.

hosts high concentrations of harbour porpoises (*Phocoena phocoena*) in winter. The broad continental shelf of the Bay of Biscay shows particularly well-marked seasonality in its oceanographic conditions, with a strong phytoplankton bloom in spring driving high productivity throughout the summer.

Description:

Within the eastern North Atlantic, the Bay of Biscay, Celtic Sea and English Channel show particularly well-marked seasonality (Pingree & Garcia-Soto, 2014). The structure of the water column in summer is complex due to the strong interactions between tide currents, winds and thermal stratification, the two former locally preventing the latter, especially along the coasts. River inputs add to this complexity with several river plumes and estuaries associated with nutrient input and haline stratification (Borja et al., 2018). This broad continental shelf, from 20 km wide in the south to 180 km in the north, hosts currents mainly driven by winds, tides or freshwater inputs, depending on the area. Tidal currents predominate in shallower areas and are more extended in the north, while wind-driven currents predominate elsewhere, generating an important spatio-temporal variability of local currents (Koutsikopoulos & Le Cann, 1996).

Seasonality is well marked, with the thermal stratification establishing during spring from south to north. In coastal waters, however, tidal forcing in the north and wind-driven coastal upwelling in the south preclude summer stratification (Koutsikopoulos & Le

Cann, 1996). Interaction between tidal waves and the continental shelf edge also induces upwelling of colder and nutrient-rich deep waters associated with higher productivity, mostly around 47°N. In autumn, stratification breakdown starts in the northern part, and the whole shelf is vertically mixed in winter. In terms of productivity, the main phytoplankton bloom occurs in spring, then productivity declines in summer as a result of nutrient depletion, and a secondary bloom appears in autumn, mostly in coastal waters (Pingree & Garcia-Soto, 2014).

Criterion B: Distribution and Abundance

Sub-criterion B2: Aggregations

Several large-scale surveys have documented the distribution and abundance of marine mammals in the IMMA, particularly in summer. European surveys include CODA-2016 (Hammond et al., 2009), SCANS II summer 2005 (Hammond et al., 2013), SCANS III summer 2016 (Hammond et al., 2017; Lacey et al., 2022), and SCANS IV summer 2022 (Gilles et al., 2023) as well as the French aerial surveys, SAMM, in the Bay of Biscay and English Channel in winter 2011–2012, summer 2012 (Lambert et al., 2017; Laran et al., 2017) and winter 2021 (Laran et al., 2022a).

Aerial surveys in 2016 yielded an abundance estimate for common dolphins in European continental shelf and offshore waters of 467,000 dolphins (CV=0.26) with the majority of sightings in the Bay of Biscay and coastal waters of France and Spain (Hammond et al., 2017). Several large scale surveys indicate that common dolphins aggregate in the IMMA in summer (Gilles et al., 2023; Hammond et al., 2017; Lacey et al., 2022; Laran et al., 2017, 2022b), which is also confirmed by relatively high encounter rates from long-term citizen science platform of opportunity surveys (ORCA, 2007-2022; Robbins et al., 2020) (ORCA sightings databases).

Common dolphins are also found in important concentrations in this IMMA in winter months. Results from aerial surveys in winter 2011-12 and a dramatic increase in bycatch from fisheries in winter 2021 (Peltier et al., 2021) suggest a change in common dolphin distribution in the area, with groups spread over the entire shelf area in winter (Laran et al., 2022). The relative density estimated for common and/or striped dolphins in winter 2021 throughout the neritic shelf survey blocks of the Bay of Biscay is 0.92 individuals/km² (CV <21%; Laran et al., 2022). Digital high resolution photo system (STORMM) during aerial surveys, in order to supplement visual observations in the winter 2021, was used to estimate that common dolphins represent 96% of individual dolphins on those survey blocks. In the south of the IMMA the maximum density of common dolphins was encountered along the French coast during the autumn and winter (Authier et al., 2021; Laran et al., 2022a) and winter (Van Canneyt et al., 2023, 2020) with values of more than 1 ind/km² in winter. The fine-scale distribution of common dolphins and their overall densities increase over the winter period and peak in March–April. This trend was recently studied in relation to changes in oceanographic conditions to better understand the dolphins' movements within coastal waters, and a strong preference for the coastal-shelf front was evident (Lambert et al., 2022a).

While in summer the distribution of the Atlantic harbour porpoise (*Phocoena phocoena*) peaked in the Greater North Sea, a marked southward shift in summer distribution was observed between 1994 and 2005 (Geelhoed et al., 2022). Their uncorrected relative density was estimated to 0.042 ind.km² (CV=20%) in summer for the neritic portions of the IMMA in the summer of 2012 (Laran et al., 2017). Harbour porpoises in the Irish and Celtic Seas and those in the Greater North Sea form separate populations from harbour porpoises on the Iberian



Figure 1: Pod of common dolphins (*Delphinus delphis*). Photo credit: G. Dorémus / Pelagis



Figure 2: Harbour porpoises (*Phocoena phocoena*). Photo credit: G. Gautier

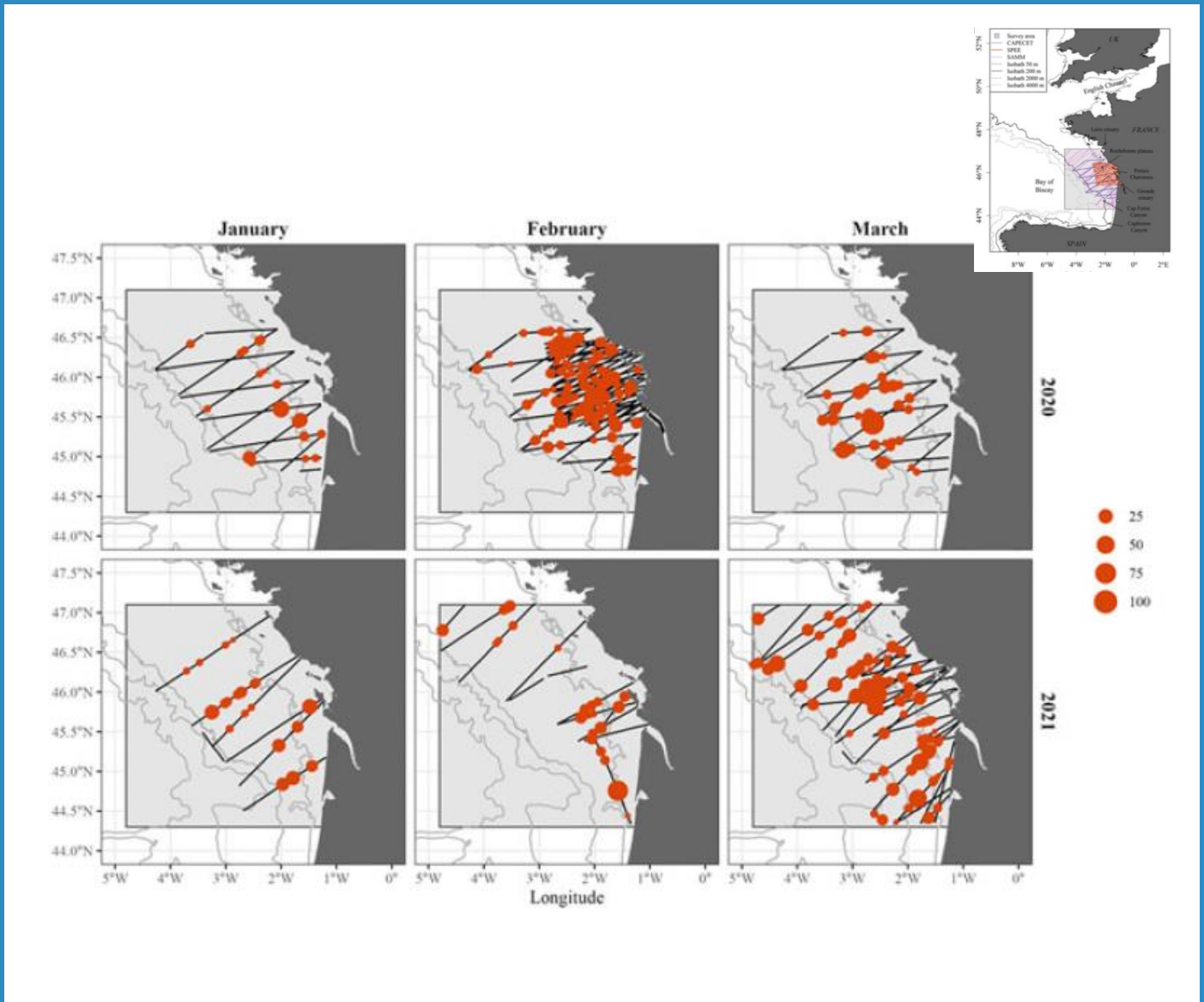


Figure 3: Survey design and common dolphin sightings in the southern part of the IMMA, by month from January to March, for winters 2020 and 2021. The size of points is proportional to the number of individuals recorded by sighting (Lambert et al., 2022).

Peninsula (NAMMCO, 2019). Winter density of harbour porpoises along the French coast (south of 48°North) was estimated to 0.031 ind.km² (CV=20%) in winter 2021 for the shelf block of the Bay of Biscay and 0.146 (CV=14%) for the English channel block, with patches in the west- and eastern part of the channel (relative densities uncorrected for bias, Laran et al., 2022a). Aerial surveys denote a high concentration of large groups of harbour porpoise aggregating in the south of the IMMA (Van Canneyt et al., 2023) with densities of more than 0.4 individuals/km², which was not visible from the previous wintering surveys in the area.

Criterion D: Special Attributes

Sub-criterion D2: Diversity

This IMMA contains habitat that supports an important diversity of cetacean species with 12 marine mammal species regularly occurring in the northern continental shelf of the Bay of Biscay. In addition to common dolphins and harbour porpoises, the Vulnerable North Atlantic fin whale (*Balaenoptera physalus physalus*) is regularly encountered during ship surveys in the area (Pelagis, 2021). Bottlenose dolphins (*Tursiops truncatus*, listed in ANNEX II of the European Habitat directive), minke

whales (*Balaenoptera acutorostrata*), Risso's dolphins (*Grampus griseus*), long-finned pilot whales (*Globicephala melas*), striped dolphins (*Stenella coeruleoalba*), Atlantic grey seals (*Halichoerus grypus atlantica*), Cuvier's beaked whales (*Ziphius cavirostris*), humpback whales (*Megaptera novaeangliae*) and pygmy and/or dwarf sperm whales (*Kogia* sp.) are regularly encountered (Gilles et al., 2023; Waggitt et al., 2020; Evans et al., 2021; Van Canneyt et al., 2020, 2023; ORCA, 2021).

Supporting Information

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**MARINE MAMMAL
PROTECTED AREAS
TASK FORCE**



WHALE AND
DOLPHIN
CONSERVATION



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