

# **Area Size** 55,939 km<sup>2</sup>

#### **Qualifying Species and Criteria**

Common dolphin - *Delphinus delphis* Criterion A; B (ii); C (i, ii); D (i)

Common bottlenose dolphin -*Tursiops truncatus* Criterion A; B (ii); C (i, ii); D (i)

#### **Marine Mammal Diversity**

Criterion D (ii) [Balaenoptera physalus, Globicephala melas, Orcinus orca, Grampus griseus, Physeter macrocephalus, Ziphius cavirostris, Stenella coeruleoalba]

#### Summary

The Alborán Sea, the westernmost part of the Mediterranean Sea, opens to the Atlantic Ocean through the Strait of Gibraltar, becoming a transition area between these two basins which have radically different oceanographic characteristics. This transition area contains important habitat for Endangered Mediterranean common dolphins (Delphinus delphis) and Vulnerable common bottlenose dolphins (Tursiops truncatus). In addition, the area contains an important diversity of cetacean species, the highest such diversity observed within the Mediterranean Sea.

# Alborán Sea Important Marine Mammal Area - IMMA

#### Description

### **Criterion A – Species or Population Vulnerability**

Mediterranean The dolphin subpopulation is listed as Endangered in the IUCN Red List of Threatened Species. This area has the largest concentration of the common dolphin subpopulation within the whole Mediterranean, containing the large majority of the total population, both due to large density of groups and due to very large group sizes, much larger than anywhere else in the Mediterranean. The most recent abundance estimate of common dolphin is of 19,082 (CV=4.7%) animals only in the northern third of the Alborán Sea with an extension to include the Alborán island.

The common bottlenose dolphin Mediterranean subpopulation is listed as Vulnerable in the IUCN Red List of Threatened Species. The Alborán Sea also has large concentrations of bottlenose dolphins, which also present some of the largest group sizes in the Mediterranean. The latest estimate of abundance of bottlenose dolphin in the northern third of the Alborán Sea with an extension to include the Alborán island is 2,150 animals (CV=24.3).

### **Criterion B: Distribution and Abundance** Sub-criterion Bii: Aggregations

Large numbers of both common and bottlenose dolphins inhabit the Alboran Sea area, both in terms of number of groups encountered and on the mean size of the groups. Data has been gathered in this area from 1992 to 2011 (20 years), for all seasons but mainly during the summer months. The largest concentrations of the common dolphin are observed for this subpopulation within the whole Mediterranean, containing the large majority of the total population, both due to large density of groups and due to very large group sizes, much larger than anywhere else in the Mediterranean. The most recent abundance estimate is of 19,082 (CV=4.7%) animals only in the northern third of the Alborán Sea with an extension to include the Alborán Island and 1966 animals (CV=0.11%) in the Strait of Gibraltar.

This area has also large concentrations of bottlenose dolphins, which also present the larger group sizes in the Mediterranean (Cañadas and Hammond 2006). The latest estimate of abundance of bottlenose dolphin in the northern third of the Alboran Sea with an extension to include the Alborán island is 2,150 animals (CV=24.3), for the Strait of Gibraltar 297 (CV=6.0%) animals, and for the southern area along the coasts of Morocco and Algeria 870 (CV=11%) animals.

### Criterion C: Key Life Cycle Activities Sub-criterion Ci: Reproductive Areas

Both common dolphin and bottlenose dolphin species are seen mating and with calves in every year, including records of newborns. Data has been gathered in this area from 1992 to 2011 (20 years), for all seasons but mainly in summer. Calves for both species have been observed all years. Groups with calves have been modelled through density surface modelling (as opposed to groups with no calves) for common dolphins showing a more coastal usage of the area when calves are in the groups. Within the Strait of Gibraltar, the Bay of Algeciras has been identified as an area especially important for caring of young common dolphins.

#### **Sub-criterion Cii: Feeding Areas**

Both species are very frequently observed feeding in the Alborán Sea and Strait of Gibraltar. Data has been gathered in this area from 1992 to 2015 (23 years), in all seasons but mainly in summer. Foraging and feeding have been observed year-round, across all years of study, for both common dolphins and bottlenose dolphins. The distribution of Groups feeding have been modelled through density surface modelling (as opposed to groups not feeding) for common dolphins showing a more coastal usage of the area when feeding. In the Strait of Gibraltar, the Bay of Algeciras has been identified as an important feeding ground for common dolphins, especially at the end of the summer, where dolphins were observed preying on flying fishes, anchovies, sardines. Bottlenose dolphins have been observe actively foraging/feeding in 20% of the encounters, and up to 30% in the shallower waters of the continental shelf (up to 200m depth).

#### **Criterion D: Special Attributes Sub-criterion Di: Distinctiveness**

Genetic research has shown that the common dolphins within the Alborán Sea are genetically different than those in the rest of the Mediterranean. Bottlenose dolphins in the Western Mediterranean are differentiated genetically from those in the Eastern Mediterranean and North East Atlantic. Both nuclear and mtDNA analyses showed clear differentiation between the Ionian and Alboran populations. Considering the relative proximity of these populations, such marked differentiation was unexpected. The common dolphin is a highly mobile species capable of long distance dispersion, confirmed by the lack of strong population structure observed among North and South Atlantic populations. It is further considered that common dolphins within the Alborán Sea may also be distinctive within the Mediterranean region. In a genetic analysis of bottlenose dolphins in the Black Sea, Mediterranean Sea and North East Atlantic show a strong boundary between the western and eastern basins of the Mediterranean Sea, separated by the Italian peninsula. Furthermore, of the five samples collected nearest to the Strait of Gibraltar and Almeria-Oran frontal region, four were near a boundary region in the multi-dimensional scaling plot, supporting the possibility that this oceanic front represents a relevant boundary to gene flow.

#### **Sub-criterion Dii: Diversity**

The Alborán Sea is an area of high cetacean species diversity including killer whales, sperm whales, long-finned pilot whales, Cuvier's beaked whales and Risso's dolphins, striped, common and bottlenose dolphins. Furthermore, there are regular, though with less density, presence of migrating fin whales. Additional North Atlantic vagrants make it the area of highest cetacean diversity in the Mediterranean.

### **Supporting Information**

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Sea IMMA. Full Accounts of Mediterranean IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2017.

PDF made available for download at https://www.marinemammalhabitat.org/portfolioitem/alboran-sea/

# Annex I Supplementary Maps



# **Annex II**

## List of Primary and Secondary Species

#### Primary Species – Meet the IMMA Selection Criteria

Scientific Name	Common Name of Species	Population / Subpopulation Name	IUCN Red List Status
Delphinus delphis	Common dolphin	Mediterranean subpopulation	Endangered
Tursiops truncatus	Common bottlenose dolphin	Mediterranean Subpopulation	Vulnerable

# Secondary Species – Do not individually meet the IMMA Selection Criteria but are present within the area

Scientific Name	Common Name of Species	Population / Subpopulation Name	IUCN Red List Status
Orcinus orca	Killer whale	Strait of Gibraltar killer whale population	'Vulnerable' in the Spanish National Catalogue of Endangered Species (Royal Decree 139/2011)
Stenella coeruleoalba	Striped dolphin	Mediterranean Subpopulation	Vulnerable
Physeter macrocephalus	Sperm whale	Mediterranean subpopulation	Endangered
Ziphius cavirostris	Cuvier's beaked whale	Mediterranean subpopulation	Data Deficient
Grampus griseus	Risso's dolphin	Mediterranean subpopulation	Data Deficient
Globicephala melas	Long-finned pilot whale	Mediterranean subpopulation	Data Deficient
Balaenoptera physalus	Fin whale	Mediterranean Subpopulation	Vulnerable