

### Area Size

13,003 km<sup>2</sup>

### Qualifying Species and Criteria

Common bottlenose dolphins -  
*Tursiops truncatus*  
 Criterion A; C (i, ii)

### Marine Mammal Diversity

[*Balaenoptera physalus*  
*Tursiops truncatus*  
*Stenella coeruleoalba*  
*Grampus griseus*  
*Ziphius cavirostris*  
*Physeter macrocephalus*]

### Summary

The Shelf of the Gulf of Lion is a large shelf along the French coast of the north western Mediterranean Sea. This area contains important habitat for Vulnerable Mediterranean common bottlenose dolphins (*Tursiops truncatus*). Around 650 individuals live here year-round, feeding, breeding and taking care of their young. This area is enriched by the Rhone river, along with the geostrophic northern Mediterranean current. It is a biogeographic entity of its own and an important Mediterranean fishing ground.

# Shelf of the Gulf of Lion Important Marine Mammal Area - IMMA

## Description

The Gulf of Lion is a passive, protruding continental margin that extends from Cap de Creus in Spain to Toulon in France. It is characterized by having an unusually broad continental shelf for the Mediterranean basin, reaching lengths of up to 72 km in its widest locations. Its shelf break is well defined at 100-200 m depth and incised by a complex network of submarine canyons, which converge towards the base of the slope, with tributaries of different orders reaching depths of almost 2,000 m. Due to differences in shelf width along the continental margin, some of these canyons can be found relatively close to the shore, just a few kilometres from land (for example Cap de Creus canyon in the western part of the gulf), while others appear relatively far offshore (e.g. Grand and Petit Rhône canyons in the eastern part of the gulf). The currents in the Gulf of Lion are largely influenced by the Mediterranean Northern Current along the continental slope of the northeast to the southwest. This current enters the shelf to its east part (entrance of the system), in the centre and also in the west part (exit of the system).

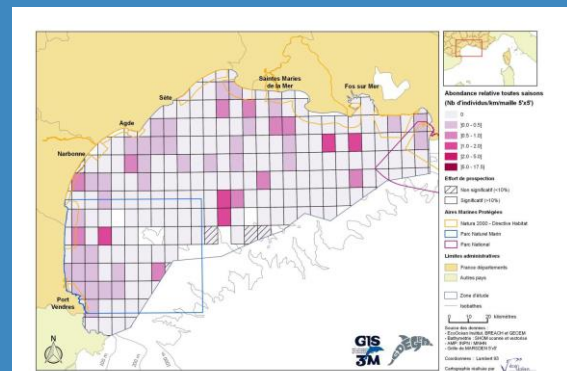
The dominant current system on the Gulf of Lyon flows then towards the southwest. Hence, the associated freshwater plume produced by the Rhône river sediment discharge tends to get deflected south-westward by the general water-mass movement. River plumes usually expand over the continental shelf at a relatively short distance from the coast. In situations when Mistral and Tramontana winds blow, the brackish waters produced by the Rhône can reach the outer part of the shelf and slope, located a few kilometres away from the coastline. This situation creates a wind induced coastal upwelling of deeper and

denser waters. So, the north-western wind blows (Mistral, Tramontana) are common in this region and generate coastal upwelling (i.e. upwelling to the surface rich in nutrients) in six areas of the Gulf of Lion. Anticyclonic eddies of several weeks can be observed in summer in the western part of the Gulf of Lion, combined also with Mistral wind blows.

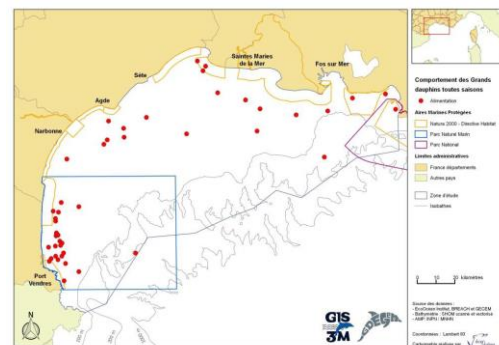
This area is located on the French Mediterranean coast. The Gulf of Lion stretches 250 kilometres from west to east and 150 km from north to south, from the Pyrenees to Marseille. It consists of a semi-circular shelf occupying about 14,000 square kilometres, with a width of 70 km from Sète and an average depth of fifty meters. It is a recognised biogeographic entity as its own. A great part is under national jurisdiction (12 NM) and the other part lies under the French EEZ. The existing complex of currents in the Gulf of Lion and his countenance make a regularly enriched region in nutrients conducive to the development of marine life. The Gulf of Lion is an area rich in marine biodiversity and widely exploited by human resources as the main French Mediterranean fishing ground.

The Gulf of Lion appears to host the most important number of common bottlenose dolphins along this stretch of coast. A study of two years, all seasons, investigated the whole French Mediterranean coastline focusing on this species (GDEGeM, GIS3M). The photo-ID study identified 834 different individuals within the Gulf, with a 53% recapture success. A mark-recapture analysis provides a global population of at least 655 ind. (95% IC: 385 - 1,095) *Tursiops* living in that area year-round, among them 53,2% are resident (Di-Méglio et al., 2015). The numbers reached a maximum in the summer and a minimum in winter with a mean density of 0,047 ind./km<sup>2</sup>. These numbers are coherent with the results of the French aerial survey that occur in 2011-2012 (Laran et al., 2016) which cover among other French EEZ areas, the Gulf of Lion, and give almost the same densities as the precedent study for the same seasons (0,07 ind./km<sup>2</sup> in summer and 0,01 ind./km<sup>2</sup> in winter). The social structure show that three different groups use the Gulf of Lion and some

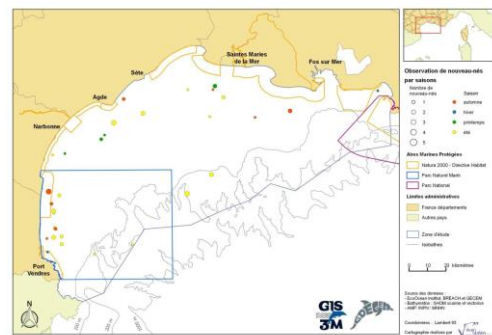
individuals have also been seen along the neighbouring Provençal coast (Labach et al., 2015).



Relative abundance of common bottlenose dolphins in the Gulf of Lion - 2013-2015



Feeding common bottlenose dolphin groups in the Gulf of Lion - 2013-2015



Seasonal distribution of new born common bottlenose dolphins in the Gulf of Lion 2013-2015

## Criterion C: Key Life Cycle Activities

### Sub-criterion Ci: Reproductive Areas

During the two years of study we saw new-borns all year round, from 5.3% of individuals in summer to 0.7% in winter (from 92 sightings and 1,545 individuals). Female and young use the shelf as a whole, having been seen from one side to the other within a

month or more (photo-ID recaptures; Di-Méglio et al., 2015).

## Criterion C: Key Life Cycle Activities

### Sub-criterion Cii: Feeding Areas

38,5% of 92 sightings were animals engaged in feeding activities, and animals feeding have been seen during all seasons. Also, they are known to interact with bottom trawlers (Di-Méglio et al., 2015).

## Supporting Information

*Di-Méglio, N., Roul, M., David, L., Gimenez, O., Azzinari, C., Jourdan, J., Barbier, M. et Labach, H. 2015. Abondance et répartition spatio-temporelle et fonctionnelle du Grand dauphin dans le Golfe du Lion. Projet GDEGeM Grand Dauphin Etude et Gestion en Méditerranée 2013-2015. Rapport GIS3M, fait par EcoOcéan Institut, BREACH et le GECEM. 79 p.+ 9p annexes*

*Labach, H., Gimenez, O., Barbier, M., Jourdan, J., David, L., Di-Méglio, N., Roul, M., Azzinari, C., Robert, N. et Tomasi, N., 2015. Etude de la population et de la conservation du Grand Dauphin en Méditerranée française. Projet GDEGeM Grand Dauphin Etude et Gestion en*

*Méditerranée 2013-2015. Rapport GIS3M. 54 p. + annexes*

*Laran, S., Pettex, E., Authier, M., Blanck, A., David, L., Doremus, G., Falchetto, H., Monestiez, P., Van Canneyt, O. at Ridoux, V. 2016. Seasonal distribution and abundance of cetaceans within French waters: Part I: How many they are in the northwestern Mediterranean Sea (including the Pelagos Sanctuary)? Deep Sea Research. Part II, <http://dx.doi.org/10.1016/j.dsr2.2016.12.012>*

## Acknowledgements

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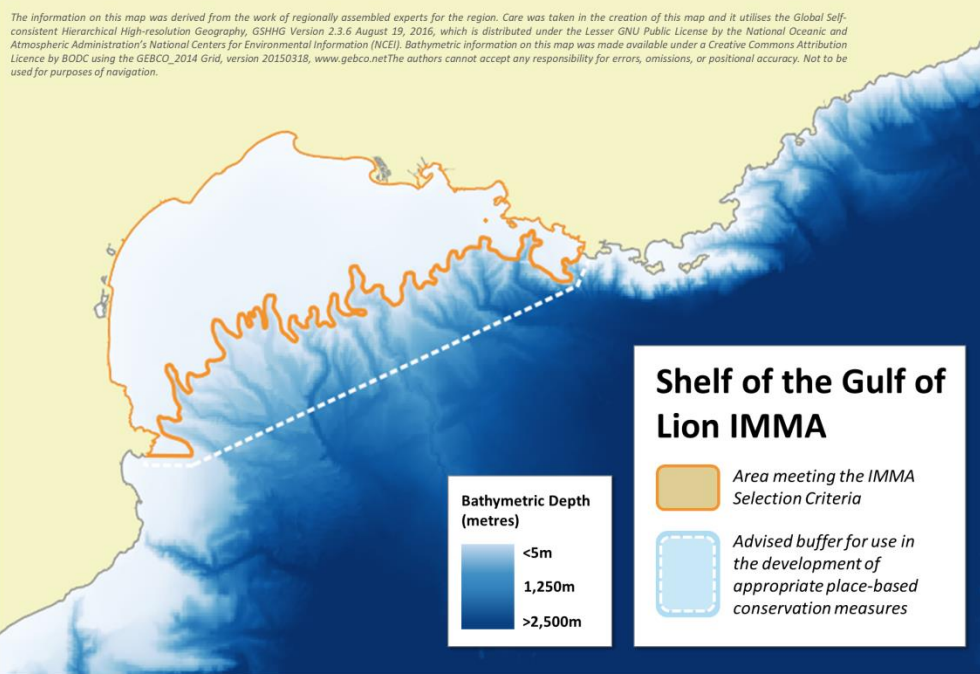


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PDF made available for download at <https://www.marinemammalhabitat.org/portfolio-item/shelf-gulf-of-lion/>

# 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
<i>Tursiops truncatus</i>	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
<i>Balaenoptera physalus</i>	Fin whale	Mediterranean Subpopulation	Vulnerable
<i>Tursiops truncatus</i>	Common bottlenose dolphin	Mediterranean Subpopulation	Vulnerable
<i>Stenella coeruleoalba</i>	Striped dolphin	Mediterranean Subpopulation	Vulnerable
<i>Grampus griseus</i>	Risso's dolphin	Mediterranean Subpopulation	Data Deficient
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	Mediterranean Subpopulation	Data Deficient
<i>Physeter macrocephalus</i>	Sperm whale	Mediterranean Subpopulation	Endangered