

Area Size

17,527 km²

Qualifying Species and Criteria

Fin whale - *Balaenoptera physalus*
Criterion A; C (ii)

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

Marine Mammal Diversity

[*Delphinus delphis*, *Stenella coeruleoalba*,
Monachus monachus]

Summary

Significant ecological and biological components coexist in a relatively limited area between the island of Lampedusa and the Tunisian coast, considered a biodiversity hotspot within the Mediterranean. Vulnerable Mediterranean fin whales (*Balaenoptera physalus*) are known to congregate in late February and early March in the coastal waters of the island, in the middle of the Strait of Sicily, to feed on the euphausiid *Nyctiphanes couchii*. In addition, Vulnerable Mediterranean common bottlenose dolphins (*Tursiops truncatus*) have been recorded regularly in Lampedusa coastal waters, exhibiting strong site fidelity; they use the area for their complete life cycle, including feeding and reproduction. Many individuals of this population show a stable, well-structured interaction with local fishing gears, particularly bottom trawlers.

Lampedusa Important Marine Mammal Area - IMMA

Description

Lampedusa, a small island of the Pelagic Archipelago, is located in the Sicily Strait, a key area within the Mediterranean Sea due to its peculiar and almost unique oceanographic, ecological and biological characteristics. The complex geomorphology and water circulation schemes contribute to the high productivity reported for the Sicily Strait, making it a biodiversity hotspot within the Mediterranean region. Intense fishing operations with potentially detrimental effects on the habitat at different spatial and temporal scales and on different taxa have been reported. The most frequently documented species is the common bottlenose dolphin whose population has been studied since the late 1990s. Interaction between this species and human activities (mostly fisheries) is reported to be particularly intense. Common and striped dolphins have been also recorded in waters around the Pelagic Archipelago Islands.

Fin whale occurrence in the waters around Lampedusa Island was first hypothesised to be seasonal, most likely only occurring during the late winter/early spring (Notarbartolo di Sciarra et al., 2003; Notarbartolo di Sciarra et al., 2016). Canese et al. (2006) and Panigada et al. (2017) subsequently confirmed Lampedusa coastal waters as a winter feeding ground (the species congregates in late February and early March), mostly feeding at the surface on the abundant euphausiid species *Nyctiphanes couchii*. Nevertheless, there is limited information on the presence and habitat use for this species. They favour upwelling and frontal zones with high zooplankton concentrations (Canese et al., 2006). Data collected during a telemetry study in the Strait of Sicily in 2013 and 2015 showed that potential feeding habitat for fin whales

extends well beyond the near-shore waters of the Island of Lampedusa. Satellite tagged fin whales remained in the area between Lampedusa and the coast of Tunisia for almost a month after tagging, engaging in feeding behaviour nearly 65% of the time, prior to moving northwards. The shape of the candidate IMMA comes from the data obtained from the satellite tagged whales (Panigada et al., 2017).

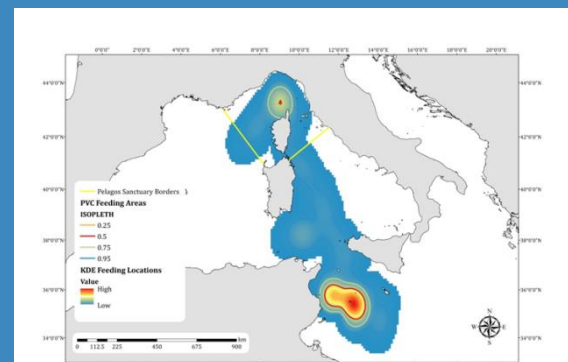
Lampedusa coastal waters are also important for common bottlenose dolphin, a species here showing regular presence and strong site-fidelity. A total of 746 encounters of bottlenose dolphins were recorded between 1996 and 2006. Group size ranged from 1 to 20 individuals. In terms of distribution, the most resident dolphins were sighted in various areas around the island, two of which showed very high densities (Pulcini et al., 2011). The preference shown by the bottlenose dolphin for the eastern coast of the island could be an 'artefact' due to the presence of an aquaculture cage during the period 1997–1999 (Pace et al., 2003, 2011; Pulcini et al., 2004). Fish-farms are known to attract bottlenose dolphins in this and other Mediterranean areas (Pace et al., 2011). Conversely, other highly used areas appear to represent important natural habitats, where feeding (some fishery-related) and social activities regularly occur (Pace et al., 2003, 2011).

Criterion A - Species or Population Vulnerability

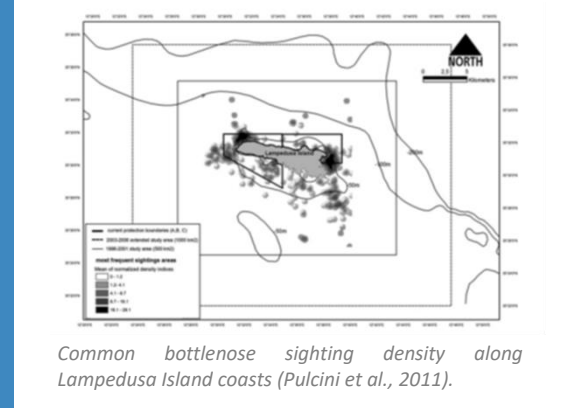
The resident and genetically isolated population of Mediterranean fin whales, presumed to number at most in the low thousands (and possibly in decline), is subject to several threats including ship strikes, disturbance, noise and chemical contaminants with several potential negative effects at the population level (Notarbartolo di Sciara et al., 2016). The Mediterranean population has been listed as VU in the IUCN Red List according to the following considerations (Panigada and Notarbartolo di Sciara, 2012): the Mediterranean subpopulation, which is genetically distinct from fin whales in the Atlantic, contains fewer than 10,000 mature

individuals; the subpopulation experiences an inferred continuing decline in number of mature individuals; all mature individuals are in one subpopulation.

In 2012, the IUCN Red List Authority classified the Mediterranean sub-population of common bottlenose dolphins as 'Vulnerable' according to the Red List criteria A2cde and based on a suspected population decline of at least 30% over the last 60 years (Bearzi et al., 2012). The species is listed in the Appendix II (Mediterranean population) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), in the Appendix II (Strictly Protected Fauna Species) of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and in the Annexes II and IV of the EU Habitats Directive (Council Directive 92/43/EEC).



Kernel Density Estimation (KDE) and isopleths (Percentage Volume Contours) for feeding locations recorded for two whales. Calculations are based on locations obtained between the 14th of March and the 28th of April 2015 (Panigada et al., 2017).



Common bottlenose sighting density along Lampedusa Island coasts (Pulcini et al., 2011).

Criterion B: Distribution and Abundance

Sub-criterion Bi: Small and Resident Populations

Photo-identification work clearly shows that common bottlenose dolphin groups are regularly present along the Lampedusa coast. The (photographic) capture histories and the distribution of sightings clearly show a number of individual dolphins regularly use the study area. The most reliable population estimate, which dates back to 1998, was of 115 (93–163) animals. No other population estimates with similar precision are available but continued work proves the regular presence of the species in the area. Confidence in evidence available is very high thanks to the list of references provided.

Criterion C: Key Life Cycle Activities

Sub-criterion Ci: Reproductive Areas

Continuous or regular presence of common bottlenose dolphins, as well as a high ratio of immature animals in respect to adults, are reported all year round. A list of references providing the evidence needed is available at the end of this document. Social and reproductive activities regularly occur (Pace et al., 2003, 2011). These observations validate previous suggestions that this population habitually uses this area for mating and calving (Pace et al., 1999; Pulcini et al., 2004). Each age class was encountered during almost all months and field years. Parturition has never been observed, although it likely occurs given the observations of extremely small individuals (classified as newborns) showing foetal folds on the flanks and lacking basic motor-coordination skills. The relative frequency of occurrence of groups containing immature animals (in relation to all groups) did not vary annually.

Criterion C: Key Life Cycle Activities

Sub-criterion Cii: Feeding Areas

This is the only known winter feeding ground in the southern part of the Mediterranean for fin whales. Visual observation of whales actively engaged in surface feeding support this criterion choice. Telemetry data analysis

have also confirmed the feeding behaviour of fin whales in the area (Panigada et al., 2017). Marine mammals exposed to high noise levels have shown different behavioural responses, such as interrupting feeding, altering vocalizations, or leaving important habitat (Gomez et al., 2016); in consideration that the Strait of Sicily is among the areas in the Mediterranean Sea with the highest naval traffic (Vaes and Druon, 2013), the potential negative effects on feeding fin whales should be further assessed and evaluated.

Dolphin focal group follows conducted in the area have allowed the frequent observation of dolphin groups actively feeding at the surface on schooling fish and cephalopods (sometimes thrown up in the air by dolphins). In addition, dolphin groups regularly associate with bottom trawlers (Pace et al. 1999; 2003; 2011). In Lampedusa, what seems more important for bottlenose dolphins is the shallowness of its feeding grounds, as they often host complex and rich food webs. Dolphins seem to spend as much time as possible close to those areas, as it increases their likelihood of finding preferential (demersal) prey (La Manna et al., 2016). Site-specific geo-morphological factors combined with the geographical segregation of Lampedusa from the rest of the continental shelf waters may provide a plausible explanation. Furthermore, the strong association of bottlenose dolphins with trawls showed that these feeding patterns may be beneficial in that they reduce time required to forage and provides the animals with an easier way to obtain food. In addition, the observation of some mother-calf pairs associated to trawling boats suggested that bottlenose dolphins could have learned the advantages of following and feeding in conjunction with trawls (Pace et al., 1999; 2011).

Supporting Information

Bearzi, G., Fortuna, C., Reeves, R. 2012. *Tursiops truncatus* (Mediterranean subpopulation). *The IUCN Red List of Threatened Species 2012*: <http://dx.doi.org/10.2305/IUCN.UK.2012-1.RLTS.T16369383A16369386.en>.

Canese, S., Cardinali, A., Fortuna, C.M., Giusti, M., Lauriano, G., Salvati, E., Greco, S., 2006. The first identified winter feeding ground of fin whales (*Balaenoptera physalus*) in the Mediterranean Sea. *Journal of the Marine Biological Association of the UK* 86(4): 903-907.

Gomez, C., Lawson, J.W., Wright, A.J., Buren, A.D., Tollit, D., Lesage, V. 2016. A systematic review on the behavioural responses of wild marine mammals to noise: the disparity between science and policy. *Canadian Journal of Zoology* 94(12): 801-819. 10.1139/cjz-2016-0098

La Manna, G., Ronchetti, F., Sarà, G. 2016. Predicting common bottlenose dolphin habitat preference to dynamically adapt management measures from a Marine Spatial Planning perspective. *Ocean and Coastal Management* 130: 317-327. doi:10.1016/j.ocecoaman.2016.07.004

Notarbartolo di Sciara, G., Castellote, M., Druon, J.N., Panigada, S. 2016. Fin whales: at home in a changing Mediterranean Sea? *Advances in Marine Biology Series* 75: 75-101.

Notarbartolo di Sciara, G., Zanardelli, M., Jahoda, M., Panigada, S., Airoldi, S. 2003. The Fin whale *Balaenoptera physalus* (L. 1758), in the Mediterranean Sea. *Mammal Review* 33(2): 105-150.

Pace, D.S., Pulcini, M., Triossi, F. 1999. *Tursiops truncatus* population at Lampedusa Island (Italy): preliminary results. *European Research on Cetaceans* 12: 165-169.

Pace, D.S., Pulcini, M., Triossi, F. 2003. Interactions with fisheries: modalities of opportunistic feeding for bottlenose dolphins at Lampedusa Island. *European Research on Cetaceans* 17: 132-135.

Pace, D.S., Pulcini, M., Triossi, F. 2011. Influence of anthropogenic food patches on the association patterns of bottlenose dolphin (*Tursiops truncatus*) at Lampedusa Island, Italy. *Behavioural Ecology* 23(2): 254-264.

Panigada, S., Donovan, G.P., Druon, J.-N., Lauriano, G., Pierantonio, N., Pirota, E., Zanardelli, M., Zerbini, A.N., Notarbartolo di Sciara, G. 2017. Satellite tagging of Mediterranean fin whales: working towards the identification of critical habitats and the focusing of mitigation measures. *Scientific Reports* 7: 3365. DOI:10.1038/s41598-017-03560-9.

Panigada, S., Notarbartolo di Sciara, G. 2012. Fin whale *Balaenoptera physalus* (Mediterranean subpopulation). IUCN (2012). *Marine Mammals and Sea Turtles of the Mediterranean and Black Seas*. Gland, Switzerland and Malaga, Spain: IUCN. 32 pages.


Pulcini, M., Triossi, F., Pace, D.S. 2004. Distribution, habitat use and behavior of bottlenose dolphin at Lampedusa Island: results of five-year survey. *European Research on Cetaceans* 15: 453-456.

Pulcini, M., Pace, D.S., Triossi, F., La Manna, G., Galante, I., Fortuna, MC. 2013. Distribution and abundance estimates of bottlenose dolphins (*Tursiops truncatus*) around Lampedusa Island (Sicily Channel, Italy)- implications for their management. *Journal of the Marine Biological Association* 94(6): 1175-1184. DOI: 10.1017/S0025315413000842


Vaes, T. and Druon, J.-N. 2013. Mapping of potential risk of ship strike with fin whales in the Western Mediterranean Sea. A scientific and technical review using the potential habitat of fin whales and the effective vessel density. EUR - Scientific and Technical Research Reports available at: <http://publications.jrc.ec.europa.eu/repository/handle/JRC79841>

Acknowledgements

The participants of the 2016 IMMA Regional Expert Workshop held in Chania, Crete, for the Identification of IMMAs in the Mediterranean Sea. Simone Panigada. Daniela Silvia Pace.



MARINE MAMMAL PROTECTED AREAS TASK FORCE

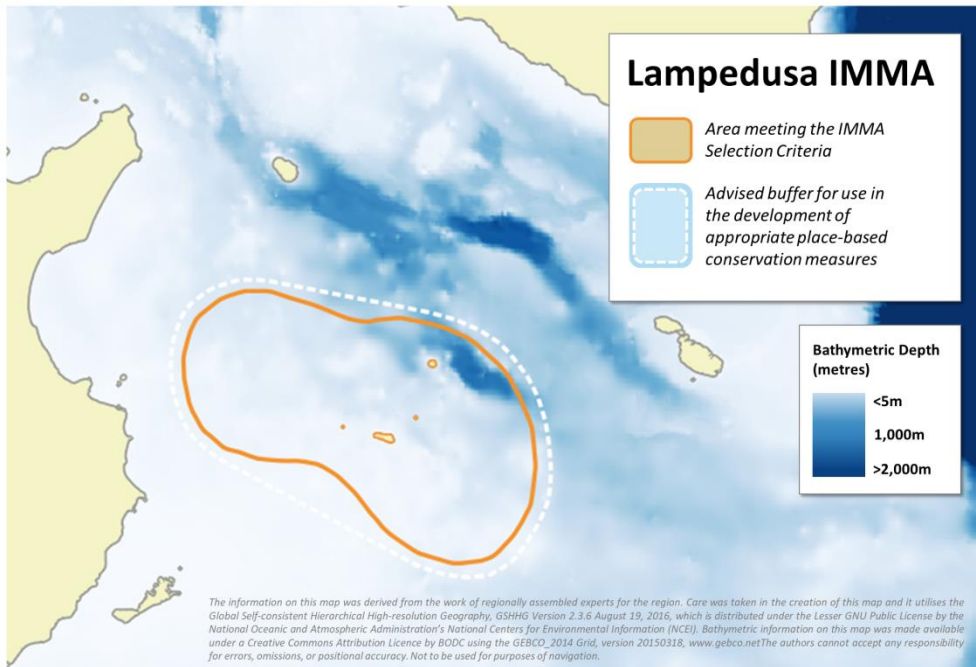
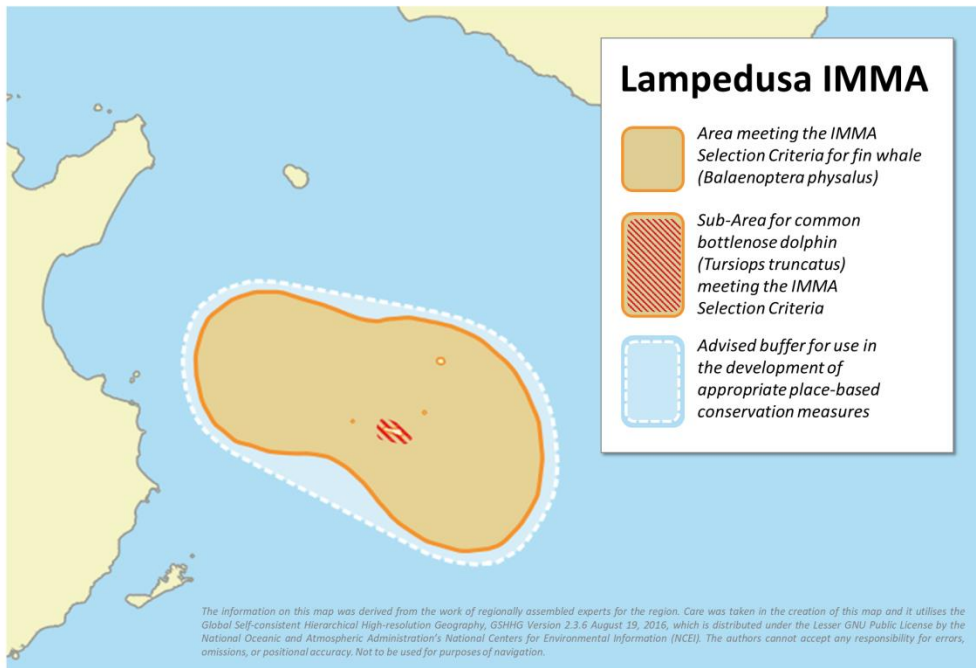


Suggested Citation: IUCN-MMPATF (2017) Lampedusa IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2017.

PDF made available for download at <https://www.marinemammalhabitat.org/portfolio-item/lampedusa/>

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
<i>Balaenoptera physalus</i>	Fin whale	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>Delphinus delphis</i>	Common dolphin	Mediterranean Subpopulation	Endangered
<i>Stenella coeruleoalba</i>	Striped dolphin	Mediterranean Subpopulation	Vulnerable
<i>Monachus monachus</i>	Mediterranean monk seal	Global	Endangered