

## Chapter

# Marine Mammals in Syria

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## Abstract

The Syrian marine water is one of the least studied areas for cetaceans in the Mediterranean Sea. Lack of basic knowledge, such as species composition and habitat, makes it impossible to develop effective conservation measures. The survey carried out along the Syrian coast by monitoring the stranding individuals on the shore since 2002 showed that there were 11 species of marine mammals living in/or visiting the Syrian marine waters at present of which 10 species belonging to the cetacean order and one belonging to pinnipeds order. The following species have been recorded: *Pseudorca crassidens*, *Megaptera novaeangliae*, *Physeter macrocephalus*, *Tursiops truncatus*, *Stenella coeruleoalba*, *Delphinus delphis*, *Ziphius cavirostris*, *Grampus griseus*, *Balaenoptera physalus*, *Balaenoptera acutorostrata*, and *Manchus manchus*. On the other hand, there are four species whose presence in the Syrian marine waters was mentioned a century ago by the researcher Gruvel and his team during three missions (1929–1931), but neither alive nor dead have been seen in this area during the surveys that were carried out since 1996 until the present, these species are: *Phocoena phocoena*, *Globicephalus melas*, *Phocoena communis*, *Hyperoodon rostratus*, *Balaenoptera musculus*. These observations reflect the vulnerability of marine mammals to anthropogenic activities, such as fishing operations, shipping, seismic activities, and climate change.

**Keywords:** marine mammals, cetaceans, stranding, climatic changes, Mediterranean Sea, Syria

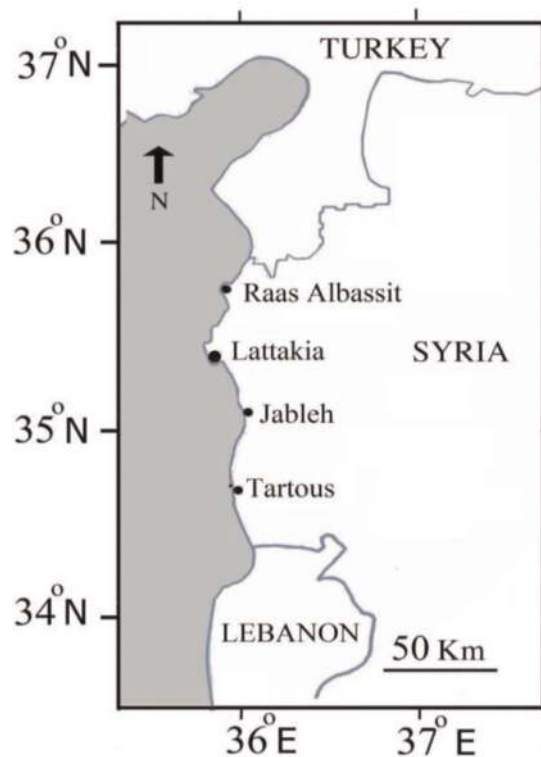
## 1. Introduction

Although the Mediterranean constitutes only less than 1% of the total area of the world's oceans and seas, it contains 18% of the world's marine biodiversity and contains 28 species of marine mammals (resident, visiting, or roving) that have occurred in the Mediterranean. The species that studies and surveys have proven to be endemic to the Mediterranean are: 11 species of cetaceans: fin whale (*Balaenoptera physalus*); sperm whale (*Physeter macrocephalus*); Cuvier's beaked whale (*Ziphius cavirostris*); short-beaked common dolphin (*Delphinus delphis*); long-finned pilot whale (*Globicephala melas*); Risso's dolphin (*Grampus griseus*); killer whale (*Orcinus orca*); striped dolphin (*Stenella coeruleoalba*) rough-toothed dolphin (*Steno bredanensis*); common bottlenose dolphin (*Tursiops truncatus*); harbor porpoise (*Phocoena phocoena relicta*) and the Mediterranean monk seal (*Monachus monachus*) have adapted well to the region's environmental conditions, but their coexistence with humans is problematic. All the regular species are represented in the Mediterranean by populations genetically distinct from their North Atlantic relatives. Seventeen

other species (3 fins and 14 cetaceans) are considered non-endemic, but rather visitors to the Mediterranean heat coming from adjacent regions for various reasons [1]. The Mediterranean is experiencing severe changes as a result of high levels of human activity pressure and its synergistic interaction with the effects of climate change which has affected marine biodiversity [2].

Interactions between marine mammals and commercial fisheries have occurred for centuries and the interactions do not seem to decline. Bycatch, i.e., the unwanted or incidental catch of species other than the target species, is a severe problem in conservation biology and a potential threat to the future survival of marine mammal populations. Marine mammal's populations decline is considered to be an important issue in terms of the biodiversity of vulnerable species and numerous cases of stranding have been documented in the Mediterranean Sea were particularly in the eastern part of the basin [3].

This chapter includes: (1) A review of the available information and data about marine mammals in Syria a century ago; (2) Presentation of the results of the continuous monitoring that we started implementing in 2002 on the stranding of individuals of marine mammals on the Syrian coast; (3) Results of a field survey study at sea onboard research ships Yunis S for a week during August 2008 in partnership with a team from the Faculty of Fisheries at Istanbul University, within the framework of a joint Syrian-Turkish-Lebanese research program; (4) Results of a field survey study at sea that was carried out onboard an Okeanos boat during the month of September 2019; (5) Presentation of the threats that threaten marine mammals in Syria; (6) Presentation of laws and regulations related to the protection of marine mammals in Syria.



**Figure 1.** Map of the Syrian coast on which the most important cities and ports are located, near which the strandings of cetaceans and seals have been recorded during the last 20 years.

We have included below the map of the Syrian coast (**Figure 1**) to clarify the approximate geographical locations that are mentioned when talking about the stranding sites of cetaceans and monk seals on the Syrian coast.

## 2. The results of Gruvel's work 1929–1931

### 2.1 Pinnipeds

There is only one pinniped on the coasts of Syria and even then, it is quite rare—it is the monk seal (*Monachus albiventer*, Bodd.) = *Monachus monachus* (Hermann, 1779) which is found sporadically [4]. It has been seen, from time to time, some representatives frolicking more or less offshore. Since that date, monk seals have been in conflict with humans, because they feed on fish and compete with them in the catch. The fishermen hit it with spears to keep it away from the fish in the fishing nets. Since that date, monk seals have been in conflict with humans, because they feed on fish and compete with them in the catch. Thus, the monk seal has been subjected to disturbance and threat since that time, and other types of problems have been added to these threats that threaten the monk seal populations, such as urban expansion and investment of beaches, the increase in the density of tourists at sea, and the increase in marine transportation and fishing vessels. The natives, moreover, hunt these animals relentlessly when they see them, for they are extremely fond of their meats.

### 2.2 Cetaceans

All those who have traveled in the Mediterranean know the common dolphins *Delphinus delphis* (L., 1758) which ships, by making regular leaps out of the water, either while hunting, or simply, while playing. Among the other Delphinidae, he cites a number of forms that are only found sporadically on the Syrian coast, such as the “Blowers” (*Tursiops tursio*, 5 m long; the Grampus *Grampus griseus* Cuvier) fairly common throughout the Mediterranean and, finally, the *Globicephalus melas* (Flower) Greater Porpoise 7–8 m long. *Porpoises Phocoena communis* Cuv. are not uncommon either.

Among the Physeteridae, we can point out as making rare appearances in this part of the eastern Mediterranean [4], the largest of all—the Sperm whale (*Physeter macrocephalus* L.) which can reach 20–25 m in length and which is, in sum, fairly common in the Mediterranean. It is, moreover, one of the most cosmopolitan species and it is found everywhere, on all the seas. We know that it is through the large intestine of these large mammals that ambergris is secreted, under repeated excitation, produced on the intestinal walls, by the bites of the many beaks of Octopuses and other cephalopods, which these animals make their customary food.

A few years ago (before 1931), a Hispano-Norwegian cetacean hunting company was established near Algeciras (Spain). It hunted both sperm whales and, above all, whales, in the proportion of one of the former against 20 of the latter.

However, these large marine mammals are not confined to the approaches to the Strait of Gibraltar; they penetrate widely into the Mediterranean and have been observed fairly often in the eastern Mediterranean, off Port Said, and even beyond, on the coasts of Palestine and Syria, sporadically, however.

Among the other Physeteridae, he notes, in the Mediterranean, *Hyperoodon rostratus*, whose habitat is rather northern and its size does not exceed 10 m, another

species *Zyphius cavirostris*, this is belonging to the Zyphidae family which is barely as long as the previous one and which like all the Physeteridae, feeds on octopuses and other cephalopods which it most often hunts in the deep sea. Homeric struggles occur between these large animals and octopuses of good size, from which the sperm whales emerge victoriously, it is true, but not without injuries, sometimes enormous, produced by the terrible hooks of the suction cups of the arms of certain large species abysmal.

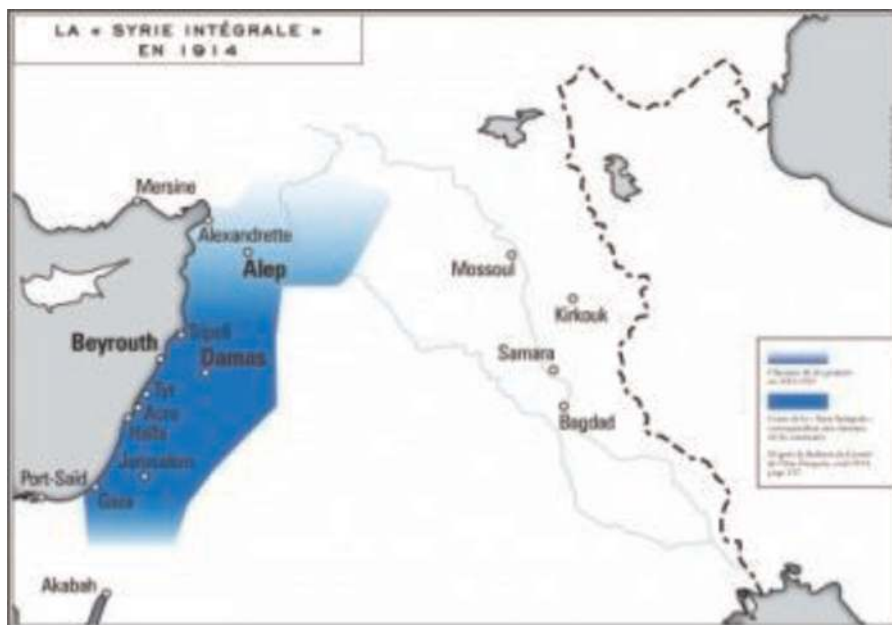
The Baleinidae family is also represented, at least by two species. The largest in size is *Balœnoptera musculus* (Comp.) which the Norwegians designate under the name of “Finhval” which sometimes reaches up to 25 m in length and can weigh from 20 to 25,000 kg. Baleen can be nearly a meter long. This animal gives 60–70 hl of oil and 120–130 kg of baleen.

A much smaller species, often referred to as the dwarf whale, has also been reported in the Mediterranean—it is *Balœnoptera rostrata*, “waagehval” as called by the Norwegians, also referred to as the sharp-nosed whale, which normally lives in arctic regions, but often descends into the Bay of Biscay and, sometimes, into the Mediterranean.

These are the main species of Cetaceans that frequent the Mediterranean in general and which are found, sporadically, on the coasts of Syria. Their number is completely insufficient to justify the industrial exploitation of these mammals [4].

### 3. Results of stranding monitoring of marine mammals during 1991–2021

Data on stranding marine mammals have been collected in different areas along the Syrian coast (Figure 2). In each case, the site was documented, the stranding individual described and the taxonomic position determined using scientifically



**Figure 2.** The Integral Syrian coast where Gruvel made a survey of marine mammals during the period 1929–1931 (Source of the map: Andurain [5]).

Species	Sex	Date	Location	Fate	Source/note
<i>Pseudorca crassidens</i>		20/06/1991	South of Latakia	D	Skull found on the beach [8]
<i>Stenella coeruleoalba</i>	–	25/9/02	Albasit	D	Saad [10]
<i>Tursiops truncatus</i>	–	02/10/02	North Latakia	Live	Filmed by Saad [10]
<i>Tursiops truncatus</i>	F	03/03/03	Albasit	D	Saad [10]
<i>Tursiops truncatus</i>		16/3/03	Latakia	D	Saad [10]
<i>Ziphius cavirostris</i>	M	11/3/2005	Om Altiour 50 km North of Latakia	D	495 cm, SSAEP
<i>Megaptera novaeangliae</i>	M	5/04/03	North Tartous	D	Male, 785 cm [9]
<i>Tursiops truncatus</i>	–	25/11/2003	Tartous	D	Saad [10]
<i>Delphinus delphi</i>	–	17/03/2004	Banias	D	Saad [10]
<i>Tursiops truncatus</i>	–	24/07/2004	Banias	D	Saad [10]
<i>Physeter macrocephalus</i>	M	25/4/2005	Tartous	D	1045 cm [10]
<i>Delphinus delphie</i>	–	16/9/2005	North Latakia	D	Saad [10]
<i>Tursiops truncatus</i>	–	18/12/2005	Albasit	D	Saad [10]
<i>Ziphius cavirostris</i>	–	9/3/2006	Ibn Hani	D	Saad [10]
<i>Tursiops truncatus</i>	M	8/10/2006	Ibn Hani	D	Floating adrift, male, tied with a rope, possibly after bycatch
<i>Delphinus delphie</i>	–	8/4/2007	Ibn Hani	D	A. Saad SSAEP
<i>Tursiops truncatus</i>	–	12/4/2007	Harbor of Banias	D	Stranded dead, 315 cm, old age (based on worn-out teeth)
<i>Tursiops truncatus</i>	–	4/05/2007	Ibn Hani 10 km N of Latakia	D	223 cm, likely killed by a large propeller (deep parallel cuts on the body)
<i>Ziphius cavirostris</i>	–	14/5/07	Jable	D	Stranding [10]
<i>Grampus griseus</i>	–	12/7/2007	South of Tartus	D	A long-decomposed corpse on land near the shore
<i>Stenella coeruleoalba</i>	F	8/9/07	Jable	Live	Recorded by A. Saad and SSAEP [10]
<i>Stenella coeruleoalba</i>	M	11/9/07	Jable	D	Stranding [10]
<i>Stenella coeruleoalba</i>	–	28/11/07	Albasit	D	Stranding [10]
<i>Stenella coeruleoalba</i>	–	16/12/07	Banias	D	Stranding [10]
<i>Delphinus delphie</i>	–	3/2/08	Albasit	D	Stranding, SAAEP
<i>Stenella coeruleoalba</i>	–	11/2/08	North Latakia	D	A. Saad SSAEP
<i>Ziphius cavirostris</i>	F	3/03/2008	South Jable (Rmielah)	D	SSAEP 290 cm (very young female)
<i>Stenella coeruleoalba</i>		15/4/08	Tartous	D	Saad [10]

Species	Sex	Date	Location	Fate	Source/note
<i>Triosups Trincatus</i>	–	18/10/2019	North of Latakia (Debjeat)	Live was returned to the sea $L = 3$ m	Informations provide by SSAEP
<i>Balaenoptera acutorostrata</i>	F	7/03/2020	North of Tartus (Alkhrab)	D	Str. $L = 3$ m, SSAEP

**Table 1.**  
Cetacean records along the Syrian coast (1991–2021).

Species	Scientific name	Number of sighting	Mean group size	Max group size
Bottlenose dolphin	<i>Tursiops truncatus</i>	1	1	1
Common dolphin	<i>Delphinus delphis</i>	8	1	5
Risso’s dolphin	<i>Grampus griseus</i>	1	1	2
Striped dolphin	<i>Stenella coeruleoalba</i>	2	1	1
Sperm whale	<i>Physeter macrocephalus</i>	1	1	1
Unidentified whale		1	1	2

**Table 2.**  
A summary of all cetacean sightings made during the ASI Okeanos in Syrian waters.

approved identification keys [6, 7]. This survey of cetaceans stranded along the Syrian coastline (2002–2021) and a review of the literature allowed us to record a total number of 30 stranding events from 1991 to 2021. They included three species of Balaenopteridae, one species of Physeteridae, one species of Ziphiidae, five species of Delphinidae, and one species of Phocidae (**Tables 1** and **2**).

Recently, many marine mammal species have been observed along the Syrian coast may be for feeding or breeding, or migration behavior, but the most realistic reason, from our point of view, is to increase scientific monitoring along the Syrian coast, as well as to raise awareness of fishermen about the importance of reporting their sightings to the research team at the Syrian Society for the Protection of the Aquatic Environment and at Tishreen University, Which allowed the recorded of several stranding every year in different areas on the Syrian coast [8–12], as summarized them in **Table 1**, bearing in mind that there may be a few stranding that was not monitored, perhaps because of the remoteness of the area or the lack of reporting. Hence, our objective in this work is to compile and review the records and strandings of marine mammals along the Syrian coast and to provide further suggestions to protect these vulnerable species.

#### 4. Results of a field survey onboard research ships Yunis S in August 2008

In partnership with a team from the Faculty of Fisheries—Istanbul University, within the framework of a joint Syrian–Turkish–Lebanese research program.

To determine the species composition, size, and distribution of the cetacean population, sighting data were collected during a research cruise carried out in summer (July 11–24, 2008) in the international water of the Eastern Mediterranean Sea, as well as the Turkish, Lebanese and Syrian territorial waters. This research cruise was conducted with a 32-m research vessel YUNUS—from the faculty of fisheries—at Istanbul University. The average speed of the vessel was 8–10 nautical miles/h. At each cetacean sighting, date and time, species, the group size of animals, location (coordinates), depth, sea state, and the behavior of animals were recorded by a single observer placed on the bridge deck.

Totally 860 nautical miles of survey effort were made and 16 sightings (108 animals) were recorded. During the study, 5 *Physeter macrocephalus* in one sighting, 72 *Stenella coeruleoalba* in five sightings, 2 *Grampus griseus* in one sighting (associated with *S. coeruleoalba* individuals), and 2 *Delphinus delphis* in one sighting, and 27 *Tursiops truncatus* in nine sightings were recorded. The overall encounter rate was 0.18 sightings/10 nm [13].



**Figure 3.** Scheme of the field survey of marine mammals in the Syrian territorial waters (the tracks of the Okeanos boat along the Syrian coast) which was implemented within the ASI-ACCOBAMS project during the period from July 27 to August 8, 2019.

## 5. Results of a field survey on abundance and distribution of cetaceans in the Syrian waters of the ACCOBAMS Agreement

In the framework of participating in the work of the ASI<sup>1</sup> project launched at the Sixth Meeting of the Parties in ACCOBAMS<sup>2</sup> (Monaco, 22–25 November 2016), with the aim of creating an integrated, collaborative, and coordinated monitoring system of the state of cetaceans within the ACCOBAMS region (Black Sea, Mediterranean Sea, and Contiguous Atlantic Area), which was developed and implemented by the permanent secretariat of ACCOBAMS, in coordination and with the support of the riparian countries of the Mediterranean and local scientists, the author led a team of local experts. Researchers and trainees conducted visual surveys in Syrian territorial waters [14], where surveys were conducted onboard a ship chartered by the ASI Project called Okeanos, on two sets of perpendicular tracks on the coast (**Figure 3**) during the period: July 27 until August 8, and included 431 km of effort on track. The tracks cut a few miles from the Lebanese and Turkish borders. During the survey, five cetacean species were documented by sightings (**Table 2**) (**Figure 4**) [14, 15].

## 6. Monk seal

The Mediterranean monk seal (*Monachus monachus*) is a common mammal in the Syrian coastal water, especially in the northern parts of the Syrian coast near the Syrian–Turkish border. These animals live up to 45 years and their length is approximately 2.5 m. Male and female Mediterranean monk seals can be easily distinguished since the first ones have black color, while the second ones have brown fur. After



**Figure 4.** Pictures of five dolphins (*T. truncatus*) in front of the beach of Wadi Qandil, about 30 km north of Latakia, during the field survey process by direct viewing onboard the boat Okeanos within the framework of the ASI–ACCOBAMS project: 2 August 2019 [14].

<sup>1</sup> Accobams Survey Initiative.

<sup>2</sup> Agreement on the Conservation of Cetaceans of the Black Sea, the Mediterranean Sea, and Contiguous Atlantic Area.





**Figure 5.**  
*A female Mediterranean monk seal was found carrying a full fetus that had mistakenly been killed (Port of Latakia, Syrian coast, 7/22/2013).*



**Figure 6.**  
*An individual monk seal was seen swimming near the beach of Burj Islam, 20 km north of Latakia, 12 December 2021.*

being considered “critically endangered” for the previous 19 years, the Mediterranean monk seal *Monachus monachus* (Hermann, 1779) has been classified as “Endangered,” according to the IUCN Red List. Although the population is doing better in the Mediterranean, the monk seal remains a relatively rare species and difficult to observe with large consumption of fish per day, the animal has long been the bane of fishermen in the archipelago because they regularly tore their nets. Gradually, he succeeded in escaping their radars and by the same to those of the scientists who deplore the insufficiency of information. Hunted for a long time, we are now trying to get to know the animal better. Hope today lies in the development of new tools for the preservation of marine biodiversity.

These species are threatened by human activity and environmental pollution. More than 32 sightings of this animal have been recorded in the waters of the Syrian coast between 1996 and 2021. On July 22, 2013, a female Mediterranean monk seal was found carrying a full fetus (**Figure 5**), who had mistakenly killed someone who had infiltrated the main port with the aim of sabotaging. The victim’s mother and her chick were placed in two fiberglass basins filled with formalin. On December 12, 2021,

Suborder	Family	Species	Scientific name	Reg/ vis	Gruvel 1931	2002– 2020
Order Cetartiodactyla, Infraorder: Cetacea						
Odontocet	Delphinidae	Bottlenose dolphin	<i>Tursiops truncatus</i>	Regular	+	+
	=	Common dolphin	<i>Delphinus delphis</i>	Regular	+	+
	=	Risso's dolphin	<i>Grampeus griseus</i>	Regular	+	+
	=	Striped dolphin	<i>Stenella coeruleoalba</i>	Regular	+	+
	=	Long-finned pilot whale	<i>Globicephala melas</i>	Absent	+	–
	=	False killer whale	<i>Pseudorca crassidens</i>	Visitor	–	+
	Physteridae	Sperm whale	<i>Physeter macrocephalus</i>	Regular	+	+
Mysticeti	Balaenopteridae	Humpback whale	<i>Megaptera novaeangliae</i>	Visitor	+	+
	Balaenopteridae	Fin whale	<i>Balaenoptera physalus</i>	Visitor	+	+
	Balaenopteridae	Minke whale	<i>Balaenoptera acutorostrata</i>	Visitor	+	+
	Balaenopteridae	Blue whale	<i>Balaenoptera musculus</i>	Absent	+	–
	Balaenidae	North Atlantic right whale, is	<i>Eubalaena glacialis</i>	Absent	+	–
	Ziphiidae	Cuvier's beaked whales	<i>Ziphius cavirostris</i>	Regular	+	+
Order carnivorous						
Pinnipedia	Phocidae	Mediterranean monk seal	<i>Monachus Monachus</i>	Regular	+	+

**Table 3.**

Comparison between the marine mammal species that were previously documented nearly a century ago and those whose existence has been documented in Syrian waters during the last two decades.

the presence of two seals was documented in a cave on the seashore in the Samra region on the Syrian–Turkish border, and one individual was seen swimming near the beach of Burj Islam, 20 km north of Latakia, where there are several caves believed that seals take refuge in them to rest or take care of their young (**Figure 6**). It is worth noting that the author recorded sounds of monk seals in a rocky cave south of Burj Islam on July 16, 2020, and these sounds indicate the presence of more than one individual. A seal swimming in the same place was previously documented in 2005 [16].

In addition, according to local residents and fishermen, there are eight seals that were seen intermittently roaming the waters between Burj Islam, Wadi Qandil (20 km north of Latakia), and Samra, on the Turkish–Syrian border.

Before the end of this chapter, we have compiled the results of previous and current work in **Table 3**, which shows a comparison between the species of marine that were previously documented nearly a century ago and those whose existence has been documented in Syrian waters during the last two decades.

## 7. Conclusion

In this work, marine mammals in the Syrian waters (the Levant Basin) and the changes that have occurred in their qualitative composition have been

documented for about a hundred years now. Hence, it is of great importance, and the results showed that the Syrian waters and those of the neighboring countries have become a visiting area for many marine mammals that have not been previously observed, and more cases of stranding have been observed and documented, as this is attributed to the fragility of marine mammals in front of various human activities, such as increasing fishing operations associated with the diversity and efficiency of fishing gear, and the rise in commercial shipping and seismic activities. There are four species whose presence in the Syrian marine waters was mentioned a century ago, but neither alive nor dead have been seen in this area since 1996. The repeated sightings of many species (Lives or strandings) may be due to climatic changes which affect their migration and mobility from one place to another. Stakeholders should pay more attention to marine mammals in Syria through increased awareness, and the continuous monitoring, documentation, and mapping of recorded strandings to further suggest measures on how to protect such important and vulnerable species.

## **Acknowledgements**

We thank the members of the Syrian Society for the Aquatic Protection who have made and are still exerting great efforts in monitoring stranded marine mammals on the Syrian coast, as well as the fishermen who cooperated with us by reporting many individuals of stranded whales and dolphins.

## **Conflict of interest**

The authors declare no conflict of interest.

## **A. Annex: documentation of some stranding and sighting events**



Humpback whale stranded in Tartous, March 12th, 2003.



Bottlenose dolphin in the sea 15 km North of Latakia, 1 October 2002.



Sperm whale stranded in Tartuous Beach, April 18th, 2005.



Bottlenose dolphin in Ibn Hani, 10 km North of Latakia, April 2006.



Striped dolphin in Shkaifat beach, 15 km South of Latakia, 9 September 2007. He was returned alive to the sea, and 2 days later he was seen dead on the beach 2 km north.



Bottlenose dolphin. At the port of catch landing in Latakia by-catch with nets, it was returned to the sea. 28 October 2019.



Risso's dolphin on the beach 12 km South of Tartus city July 2012.



Cuvier's beaked whales. In Ibn Hani Bay (10 km North of Latakia), 9 March 2006.



Cuvier's beaked whales in Alhamidea beach (20 km South of Tartus) July, 2010.



Minke whell. On Alkhrab beach (15 km North of Tartus city) 7 March 2020.

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