

On the occurrence of the Mediterranean monk seal *Monachus monachus* (Hermann, 1779) in the Lebanese waters (Eastern Mediterranean Sea)



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**On the occurrence of the Mediterranean monk seal *Monachus  
monachus* (Hermann, 1779) in the Lebanese waters (Eastern  
Mediterranean Sea)**

The Mediterranean monk seal *Monachus monachus* (Hermann, 1779) is one of the three accepted species of the genus *Monachus* Fleming, 1822 (Scheel et al., 2014). With an estimated abundance fewer than 700 individuals in the world (Sergeant et al., 1978; González, 2015 and references therein; Karamandilis et al., 2015 and references therein; Dendrinis et al., 2017), *Monachus monachus* has been listed on the verge of extinction since 1996 and on the International Union for the Conservation of Nature (IUCN) Red List as “Endangered” in 1986, 1988, 1990 and 1994, and “Critically Endangered” in 1996, 2008 and 2013 (di Sciara & Kotomatas, 2016 and references therein). Recently and after being as “Critically Endangered” status for the previous 19 years old, *Monachus monachus* was down-listed to “Endangered”, according to the IUCN Red List (Karamanlidis & Dendrinis, 2015). *Monachus monachus* is distributed as two isolated population (e.g. the Atlantic and the Mediterranean population), separated by 4,000 km from each other (Sergeant et al., 1978; González, 2015; Karamandilis et al., 2015; Dendrinis et al., 2017). The Atlantic population, composed of 150-200 individuals (González, 2015; Dendrinis et al., 2017), is more limited to two major locations (Western Sahara and Madeira) and has been monitored since 1992 (González et al., 1997). While the Mediterranean population, which is more important and counted around 400-450 individuals (González, 2015; Karamandilis et al., 2015; Dendrinis et al., 2017), is fragmented into small, and often isolated groups, predominantly in the eastern Mediterranean Sea. In the Mediterranean, *Monachus monachus* is listed since 1996 in the Annex II “List of Endangered or Threatened Species” of the Barcelona Convention Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol, UNEP/MAP-SPA/RAC, 2018) and its colonies are mainly found around the islands of Ionian (Panou et al., 1993) and Aegean Seas (Dendrinis et al., 2008, 2017) in Greece and along the mainland coasts of Greece (Dendrinis et al., 2017 and references therein), Cyprus (Gücü et al., 2004, 2009a, 2009b) and Turkey (Güçlüsoy & Savaş, 2014 and references therein; Kiraç et al., 2013). It is worth noting that the eastern Mediterranean monk seal population is currently the largest with around 250-300 individuals (González, 2015; Karamandilis et al., 2016; Dendrinis et al., 2017). Moreover, the sporadic occurrence of *Monachus monachus* individuals was reported in many countries where the species is considered extinct, such as Italy, Spain,

Croatia, Albania, Lybia (Alfaghi et al., 2013), Egypt, Palestine, Syria and Lebanon (UNEP-MAP/RAC-SPA, 2005, 2014; Mytilineou et al., 2016).

In the 19<sup>th</sup> century, Berham et al., 1975 reported the presence of around 20 individuals of Mediterranean monk seal in Lebanon. However and according to Khouzami et al., 1996, the last couple of monk seal in the Lebanese waters were observed in 1968 at Raoucheh (Beirut) and Amshit (north of Lebanon). Since this date, there were no studies concerning the Mediterranean monk seal presence, abundance and patterns of distribution performed in the Lebanese waters. However, the report of *Monachus monachus* presence in the Lebanese waters was only limited to some photos or videos taken by some divers, fishermen and experienced seamen. Therefore, between 2003 and 2016, a number of 25 monk seal sightings were reported from different localities of the Lebanese coast, (Mytilineou et al., 2016). Nowadays, *Monachus monachus* continues to be sighted from different localities of the Lebanese waters. Therefore, this note aims to continue the work done by (Mytilineou et al., 2016) and resume all the Mediterranean monk seal sightings in the Lebanese waters from 2016 until April 2020, allowing to confirm the occurrence of the Mediterranean monk seal in Lebanon. In this context, data on *Monachus monachus* observed/ or sighted in the Lebanese waters were regrouped by following all the media reports, photos/ or videos reported by fishermen, divers and experienced seamen. Also, many communication with Non-Governmental Organizations (NGOs) were done to confirm the exact location of the monk seal in the Lebanese waters.

The results confirmed 17 new sightings of the Mediterranean monk seal from 2016 until April 2020 (including video and/or photographs) along the entire Lebanese coastline (Tab. 1). Besides, 3 missing monk seal sightings (n=3, in the 2<sup>th</sup> of April 2015 at the Palm Island Marine Reserve, 34°29'33.85 N and 35°46'28.41 E) were added to the records of Mytilineou et al., 2016 (Tab. 1). Therefore, a total of 47 monk seal sightings were recorded from 2003 until April, 2020. These sightings occurred from Beirut to Tripoli in the north of Lebanon. The documentation was not sufficient to verify the total number of individuals but allow to confirm the presence of: (i) between 2 to 4 individuals around Tripoli area, especially around the Palm Island Nature Reserve of Tripoli and they are there since 1997 (Jaradi.pers.com.), (ii) few individuals at the Raoucheh cave (33°88'92.22" N, 35°46'96.15" E; Beirut, Idriss.pers.com.) and (iii) few individuals somewhere between

Selaata and Tripoli in the north (NGOs.pers.com.). However, two stranded individuals of the monk seal were reported: one female on the 8<sup>th</sup> of April 2013 near the port of Tripoli (Ballane Island) and one pregnant female on the 4<sup>th</sup> of April 2015 at Raoucheh, Beirut (Fig. 3C) (Mytilineou et al., 2016).

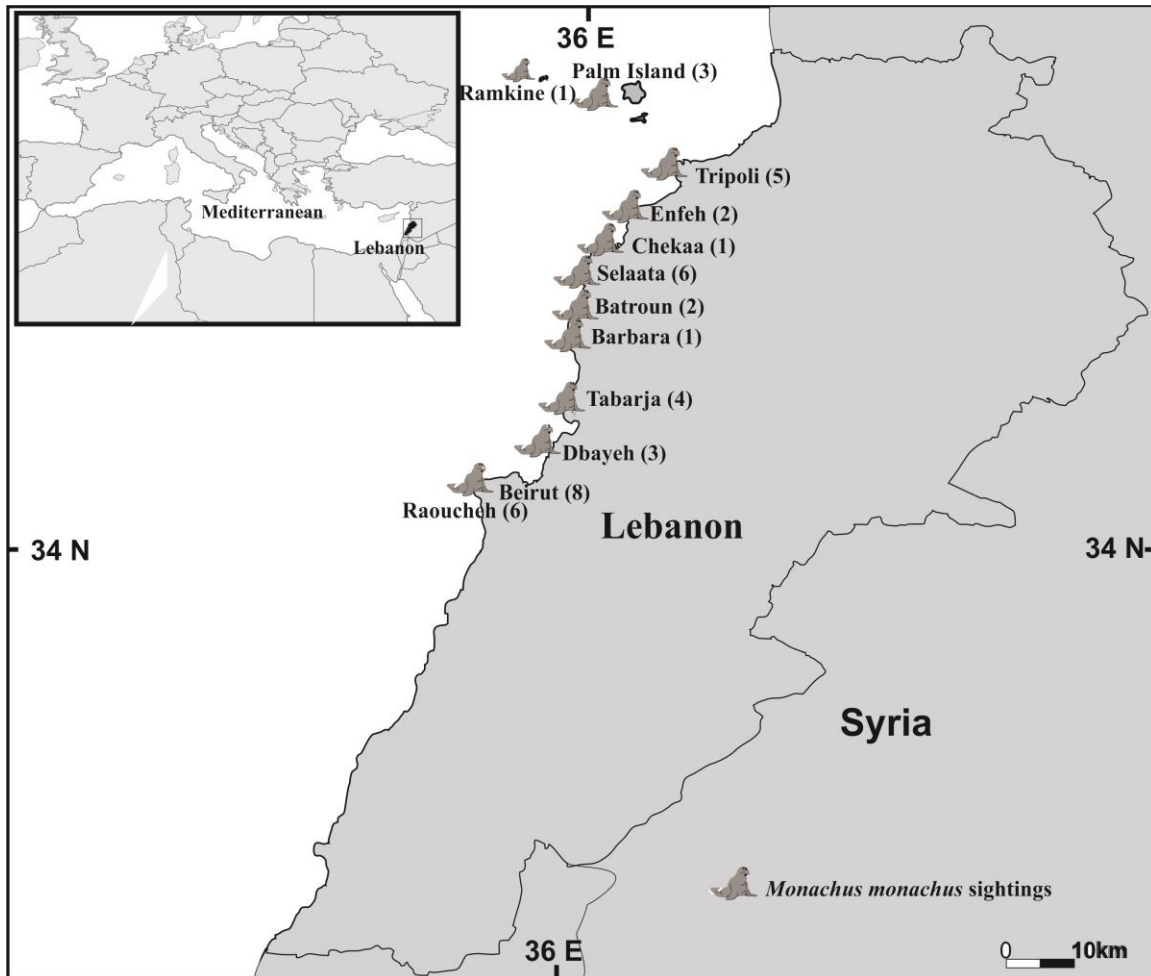


Figure 1: Map showing the Mediterranean monk seal sightings along the Lebanese coastline between 2003 until April 2020 (the numbers represent the sightings per location)

The Mediterranean monk seal is currently considered under extinction in Lebanon. However, the sightings recorded in Lebanon from 2003 on, as well as the ones reported from the Palestinians (Scheinin et al., 2011; Bundone et al., 2016) and the Syrian (Ibrahim, 2013; UNEP-MAP/RAC-SPA, 2005, 2013 and references therein) coasts over the last decades, suggest that the species is not just an occasional attendee but demonstrates a wide regional occurrence. Therefore, all the reported sightings along the Lebanese coast of the

Mediterranean monk seal might represent the remnants of an ancient bigger population/ or might be individuals attempting to recolonize this part of the eastern Mediterranean coastline moving from the easternmost known Mediterranean monk seal reproductive population (e.g. Turkey (Kıraç et al., 2013 and references therein) and Cyprus (Gücü et al., 2004, 2009a, 2009b)); in fact, this would indicate a significant expansion of the current distribution range of the species as the closest known colonies of the species are located about 250 km to the north in Turkey and 150 km to the west in Cyprus.

The entire Lebanese coastline is suffering from many supplementary sources of pollution such as illegal sewage discharge, rivers (generally characterized by the torrential regime and carrying pollutants from agricultural, industrial and urban activities) and uncontrolled urban development, especially involving coastal artificialization (e.g. about 40% of the coastline is already highly modified and artificialized (Badreddine et al., 2018).

Intensive fishing associated to the use of illegal fishing methods is another major culprit for the changes in species diversity and abundance. In fact, the existing regional legislation, banning the fishing of marine turtles, monk seal and dolphins, was not enough to reduce the number of the death of such key species: between November 2018–November 2019, a total of 32 dead sea turtles and 3 dolphins were recorded from different localities of the Lebanese coast from the south to the north (SPA/RAC–UN, Environment/MAP, 2019).

Recently, deep-water drilling for oil and gas has been started, having a potential impact on marine biodiversity. For the coming years, it is envisaged that the effects of human impacts on the Lebanese Mediterranean marine ecosystems may intensify.

In this context and from a conservation point of view, it is recommended to undertake an intensive monitoring of the Mediterranean monk seal along the Lebanese coast, allowing to (i) protect the existed population (ii) confirm the number of individuals of the species in the country, (iii) identify critical habitat for its survival or for the permanent re-establishment of a population, and (iv) promote appropriate management and conservation measures.

From a regional point of view and considering the frequent sightings recorded since 2009 in the Levantine Sea, it is strongly recommended to apply a regional approach for an effective monk seal conservation in this area of the Mediterranean Sea.

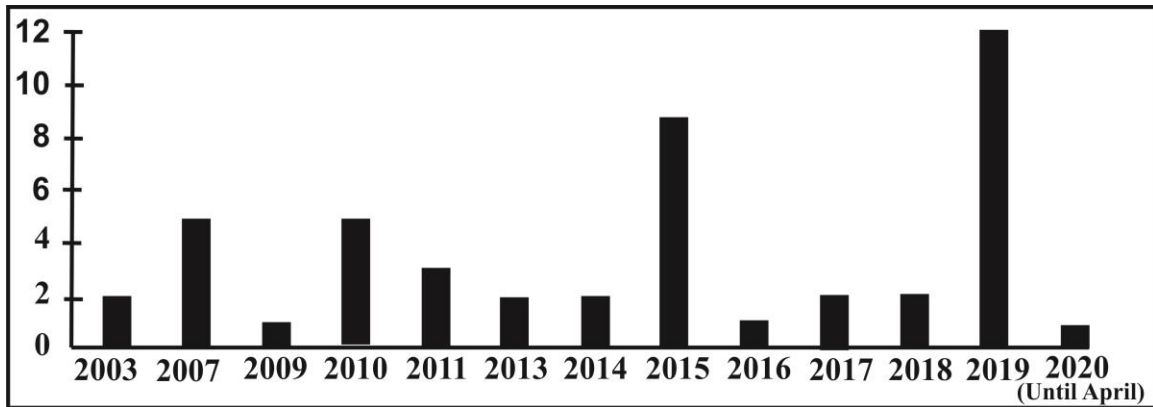


Figure 2: Number of monk seal sightings from 2003 until April 2020 in the Lebanese waters

Table 1

Summary of the records of the Mediterranean monk seal in Lebanon by year, date, number of monk seal sightings, location and references/ or proofs. The data from 2003 to 2016 were taken from Tab. 5 of Mytilineou et al., 2016 and modified by adding three monk seal sightings (in bold)

Year, Date	Nb of monk seal sightings	Location	References/ or proofs
2003, September 13	1	Beirut (Raoucheh)	Mytilineou et al., 2016
2003, September 27	1	Beirut	Mytilineou et al., 2016
2007, May 13	1	Selaata	Mytilineou et al., 2016
2007, May 25	4	Selaata	Mytilineou et al., 2016
2009, December 28	1	Beirut	Mytilineou et al., 2016
2010, May 15	1	Beirut (Raoucheh)	Mytilineou et al., 2016
2010, August 15	1	North of Lebanon	UNEP-MAP/ RAC-SPA. 2013; Mytilineou et al., 2016
2010, September 4	1	North of Lebanon	UNEP-MAP/ RAC-SPA. 2013; Mytilineou et al., 2016
2010, September 25	1	Enfeh	Mytilineou et al., 2016
2010, November 20	1	Tripoli (Ramkine Island)	Mytilineou et al., 2016
2011, March 12	1	Tabarja	Mytilineou et al., 2016
2011, June 14	1	Tabarja	Mytilineou et al., 2016
2011, October 9	1	Barbara	Mytilineou et al., 2016
2013, March 14	1	Beirut	Mytilineou et al., 2016
2013, April 7	1	Tripoli	Mytilineou et al., 2016
2014, April 12	1	Beirut	Mytilineou et al., 2016



2015, March 31	1	Beirut	Mytilineou et al., 2016
<b>2015, April 2</b>	<b>3</b>	<b>Tripoli Palm Island</b>	<b>Photos</b>
2015, April 10	1	Enfeh	Mytilineou et al., 2016
2015, April 22	1	Beirut	Mytilineou et al., 2016
2015, May 8	1	Beirut	Mytilineou et al., 2016
2015, July 25	1	Tabarja	Mytilineou et al., 2016
2015, October 12	1	Jounieh	Mytilineou et al., 2016
2016, April 19	1	Batroun	Mytilineou et al., 2016
2017, June 9	1	Beirut (Raoucheh)	Videos/Visual
2017, June 27	1	Beirut (Raoucheh)	Photos
2018, March 6	1	Beirut (Aeroport)	Video/Visual
2018, April 6	1	Beirut (Aeroport)	Videos
2019, February 6	1	Selaata	Videos
2019, March 12	3	Tripoli (Al Mina)	Photos
2019, April 2	1	Dbayeh	Videos/Visual
2019, April 3	1	Tabarja	Visual/ Videos
2019, April 4	1	Chekka	Photo
2019, April 6	1	Dbayeh	Photo
2019, April 20	1	Batroun	Photos/Media reports
2019, May 1	1	Tripoli	Photos/Media reports
2019, May 14	1	Beirut (Raoucheh)	Videos/Visual
2019, July 2	1	Beirut (Raoucheh)	Videos/Visual
2020, April 8	1	Dbayeh	Visual/ Videos



Figure 3: Individuals of *Monachus monachus* recently photographed in different localities of the Lebanese water. A: Dabyeh, 8<sup>th</sup> of April 2020. © Botros, B: Beir, 27<sup>th</sup> of May 2017. © Operation Big Blue; C: Dead pregnant monk seal of around 2.5 m on the 4<sup>th</sup> of April 2015 and after dissection, a baby of around 60 cm was found. © Nazih el Rayess, Mytilineou et al., 2016)

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