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Stranded Cetaceans on the Syrian coast of the Mediterranean Sea

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Abstract - In this study, twenty-two cases of cetacean strandings were recorded along the Syrian coast from 2000 to 2020. The recorded species are: one individual of *Megaptera movaeangliae*, 4 individuals of *Ziphius* cavirostris, one individual of Physeter macrocephalus, nine individuals of Tursiops truncatus, two individuals of Balaenoptera physalus, one individual of Grampus griseus, three individuals of Delphinus delphis, And one individual of Balaenoptera acutorostrata. The location and cause of each stranding were registered and are presented and discussed in this paper.

الحوتيات الجانحة في سوريا

معينة بدران
قسم الثروة السمكية- المعهد العالي للبحوث البحرية- جامعة تشرين- سوريا

المستخلص - في هذه الدراسة، تم تسجيل اثنين وعشرين حالة جنوح للحيتان على طول الساحل السوري من عام 2000 إلى عام 2020.وكانت الأنواع المسجلة هي: فرد واحد من *Megaptera movaeangliae* ، وأربعة أفراد من Ziphius cavirostris ، وفرد واحد من Physeter macrocephalus، وتسعة أفراد من Tursiops truncatus ، وفردان من Balaenoptera physalus ، وفرد واحد من Grampus griseus ، وثلاثة أفراد من Delphinus delphis ، وفرد واحد من Balaenoptera acutorostrata. تم تسجيل موقع وسبب كل جنوح وتم تقديمه ومناقشته في هذه الورقة.

الكلمات المفتاحية: HIMR ، حوتيات ، جانحة ،ساحل ، سوريا

Introduction

The Eastern Mediterranean Sea has been considered to have a low cetacean diversity and abundance because of unfavorably warm, highly saline and oligotrophic oceanic conditions (Kerem *et al*., 2012). This remained an unchallenged assumption due to the absence of dedicated survey efforts within the region up until the early 2000s (Ryan *et al*., 2013).

In 2023, a total of 24 cetacean species has been recorded in the Mediterranean Sea, 10 of which are considered to be resident (IUCN, 2023).

The Syrian coast is located in the eastern basin of Mediterranean between the two parallels of latitude 34 and 36 north, with a total length of 183 km; the area is 900 km^2 and ranges from Turkish borders at north in the Al-bassit area in Lattakia city, to the Lebanese borders in south

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Tartous city, near Al-arida area. There are 4 main coastal cities on the Syrian coast: Tartous in the south, Banias, Jableh in the middle, and Lattakia in the north (Figure 1).

The information about cetaceans in Syrian Mediterranean coast are rare and confined to reports of sightings from researchers, people and fisherman. Data for stranded cetaceans are sometimes the only source of biological information on a given species.

Considerable human activities such as fishing, pollution of the marine environment, and an increase in commercial ship traffic, which leads to decreased in cetaceans populations (Cavanagh and Gibson, 2007), and this is the situation in Syrian marine waters. In most cases, sewage and other discards are dumped into the sea without treatment. Industrial development is also causing increasing pollution: the Banias oil refinery, the Tartous cement plant, the phosphate loading dock, the two oil terminals of Banias and Tartous, and the thermal power station in Banias. High concentrations of Heavy metals, organochlorines and other contaminants were found along the Syrian coast. Ship strikes represent one of the main anthropogenic threats for Mediterranean fin whales (Panigada *et al*., 2006), on the other hand, the pollution of ships, which related to the illegal oil spillage due to the heavy traffic of oil tankers that threats the whales' life by the oil patches and Using the dynamite and other explosive materials in illegal fishing due to the death of whales directly.

Figure1. Map of Syria and the Syrian coast

Cetaceans stranding has been registered in Syria since 1991 by the German scientist Max Kasparek, During a survey of the entire Syrian coast for marine turtle nesting (Kasparek, 1997), a skull of a false killer whale *Pseudorca crassidens* found on the Syrian coast, south of Lattakia on 22.6.1991.

Syria has ratified the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area agreement in 2001. In 2006, a group of ACCOBAMS and The Regional Activity Centre for Specially Protected Areas (SPA/RAC) and The International Union for Conservation of Nature (IUCN) researchers reported that 7 of 8 Mediterranean Cetacean species are present in Syrian water. In 2008 a national plan for the

Conservation the cetacean species in Syrian waters was prepared in cooperation with ACCOBAMS and several Syrian governmental and non-governmental institutions were concerned with environmental affairs. However, this plan has not been adopted from corresponding authorities up to now (Gonzalvo and Bearzi, 2008).

This research aims to count and classify stranded cetaceans in the Syrian coast from 2000 to 2020, in addition to clarifying the expected cause of stranding and their locations.

The family Batrachoididae comprises of three subfamilies (Batrachoidinae, Porichthyinae, and Thalassophryninae) with 23 genera and 83 species distributed in the warmer waters of coastal regions of the Atlantic, Indian and Pacific oceans (Froese and Pauly, 2024). Toadfishes frequently conceal themselves in sand, mud, beneath rocks, coral heads, and debris, taking shelter in crevices and burrows; they operate as ambush predators, preying on crabs, shrimps, mollusks, sea urchins, and fish (Roja, 2011). Batrachoididae is characterized by head broad and flattened; eyes on top of head; mouth wide; gill openings restricted to sides; two dorsal fins, the first consisting of two or three strong, sharp spines; pelvic fins jugular, inserted well in advance of pectoral fins; one to several lateral lines on head and body (Greenfield *et al*., 2008).

The genus *Colletteichthys* includes three species: *C. dussumieri* (Valenciennes, 1837), *C. occidentalis* and *C. flavipinnis* Greenfield, Bineesh and Akhilesh, 2012. It was previously believed that one species *C. dussumieri*, spread from Arabian Gulf to India and Sri Lanka (Randall, 1995; Greenfield *et al.*, 2008), until Greenfield (2012) stated that the toadfish found in the Arabian Peninsula and Northern Arabian Sea differs from *C. dussumieri* in some morphological characteristics, thus *C. occidentalis* is considered the second species in the genus *Colletteichthys* which described from the area. The aim of present study is to confirm the presence of *C. occidentalis* in the northern Arabian Gulf off Iraq.

Materials and Methods

The Syrian coast was monitored from 2000 to 2020, through a combination of boat-based surveys, shore-based observations. Researchers from the Higher Institute for Marine Research and the Faculty of Agriculture at Tishreen University conducted systematic surveys, while local fishermen and residents provided opportunistic sighting reports of live, dead, or stranded cetaceans, and environmental associations concerned with environmental affairs present in the coastal region of Syria, such as the Syrian Society for the Conservation of Wildlife SSCW and the Syrian Society for the Conservation of the Aquatic Environment SSAEP. Local fishermen and some residents helped with data collection for all sightings of marine mammals, whether live, dead, or stranded on the beach Cetaceans were identified using ACCOBAMS identification sheets (Folkens and Reeves, 2002; Franzosini et al., 2013), supplemented by photographic documentation and expert verification through ACCOBAMS networks. The study period was divided into two phases (2000–2010 and 2011–2020) to reflect potential changes in cetacean distribution and threats over time.

Results and Discussion

"Before the year 2000, there was little to no interest in the cases of cetaceans in Syrian waters or stranded whales, due to limited awareness and a lack of specialists in marine mammals in general and cetaceans in particular. After 2000, the Higher Institute for Marine Research started paying greater attention to cetaceans, beginning with Syria’s ratification of the ACCOBAMS Agreement in 2001. Since then, the researchers began monitoring stranding incidents.

According to fishermen's observations, we were occasionally informed of the presence of dolphin gatherings of approximately 50-100 individuals each of the common dolphin *Tursiops truncates*, *Ziphius cavirostris*, and *Delphinus delphis* swimming in groups, near fishing boats. The reported numbers of these individuals then decreased gradually to 5-15 dolphins in a group in 2012. This situation applies to several areas along the Syrian coast such as Al-basit, Om al-tuyour, Borj islam, Al-badrusiyah, and Banias.

Al-Badrosiyah (Al-Samra), located north of the coastal city of Lattakia and on the Syrian-Turkish border, was proposed as an area of special importance for preserving cetaceans. As groups of dolphins have been observed several times there, and since this area is almost protected due to its border status, this gives greater encouragement to turn it into a reserve, and the area south of the city of Banias (Al-kharab) is considered a natural habitat for dolphins (Ibrahim, 2008).

All stranded cetaceans' cases from 2000 to 2010 on the Syrian coast were 20 individuals, 12 of them were classified as belonging to four endangered species according to Appendix No. 2, List of Threatened Species (UNEP, MAP, RAC SPA, 2013, 2018).

2- On 12-3-2003, a stranded dead whale was found on the beach of Tartous city. The whale was classified as a humpback whale *Megaptera movaeangliae* by Higher institute of Marine Researches Researchers. It was a male with a length of 785 cm (Figure 2).

Figure 2. Stranded dead *Megaptera movaeangliae* in Tartous beach in12-3-2003

The whale was buried for two years and then the skeleton was recovered and kept in the Higher Institute for Marine Research Museum. Figure 3.

Figure 3. the skeleton of *Megaptera movaeangliae* in the Higher Institute for Marine Research Museum.

3- On 11-3-2005, a 495 cm male *Ziphius cavirostris* (Cuvier's beaked whale) has been stranded in Om Attoyour beach in Lattakia city, which is an area rich in Cetaceans.

4- On 18-4-2005, a 1045 cm male *Physeter macrocephalus* Sperm whale was stranded on the coast of Tartous city, Figure4.

Figure 4. Stranded dead *Physeter macrocephalus.*

Several stranding cases were linked to anthropogenic factors, including entanglement in fishing gear and ship strikes. These findings align with broader regional studies indicating that Mediterranean cetaceans face increasing threats from maritime traffic and fisheries bycatch (Canadas et al., 2018). The whale was buried for four years, then the skeleton was cleaned and exposed in the Museum of the Higher Institute for Marine Research. Figure 5.

Figure 5. Exhuming the skeleton of a sperm whale *Physeter microcephalu*s after burial for four years

The sperm whale is widespread in all oceans, during the period from the early eighteenth century until the late twentieth century, the sperm whale was subjected to great pressure to obtain spermaceti and other products, such as ambergris oil and ambergris perfume (Tailor *et al*., 2008).

5- In May 2005, a *Ziphius cavirostris* was stranded in Bourg slam area in Lattakia city. The cause of death is either strokes from ship propellers or being attacked by another predator. Figure 6

Figure 6. Stranded dead *Ziphius cavirostris in* Borg slam area in may 2005.

The Cuvieŕs beaked whale *Ziphius cavirostris* is the only member of the Ziphiidae family with a regular occurrence in the Mediterranean Sea, inhabiting both the western and eastern basins (Podestà *et al*., 2016).

6- On 24-7-2006, a female of *Tursiops truncatus* (bottlenose dolphin) was stranded in Jableh city beach. The cause of death is entanglement in nets, it ate a piece of the net, which likely caused o suffocate. Bottlenose dolphin is one of the most frequently encountered species in Syrian marine water. (figure 7.)

Figure 7. Stranded dead *Tursiops truncates* in Jableh city beach in24-7-2006.

They may be found in all coastal waters throughout the world, except for the polar seas. Bottlenose dolphins sometimes live to over fifty years old, but most do not reach this age. Bottlenose Dolphins are the most familiar dolphins to most people as they are the most common species to be kept in captivity and to be trained to perform tricks for the amusement of audiences.
7- On 8-10-2006, a dead stranded male of *Tursiops truncatus* was found floating on the surface of the sea in Ibn-Hany area in Lattakia governorate, it was tied with a rope, possibly the result of by catch. (figure 8)

Figure 8. floating *stranded dead Tursiops truncates* in Ibn hany area in 8-10-2006.

8- On 16-4-2007, a male *Tursiops truncatus* was dead in Alhamidia area in Tartous governorate.

9- In May 2007, a 315cm *Tursiops truncatus* was dead in Banias harbor.
It was mummified by the dry method and placed in the museum of the Higher Institute for Marine Research. Figure 9.

Figure 9. Mummified *Tursiops truncatus* stranded in May 2007 on Banias harbor.

10- On 4-5-2007, a 223cm dead male of *Tursiops truncatus* in Ibn Hany area in Lattakia governorate, It was probably killed by a large ship's propeller (deep parallel wounds on the body, half of the tail fluke was cut off. (Figure 10).

Figure10. stranded dead *Tursiops truncates* in Ibn Hany area in 4-5-2007.

11- On 3-3-2008, a 290cm young female of *Ziphius cavirostris* Cuvier's beaked whale stranded in Rmielah area in Jableh city. The cause of death was likely due to bites from a shark. (Figure11)

Figure 11. *Ziphius cavirostris* in Rmielah area on 3-3-2008.

12- On 10-5-2009 a Stranded dead *Ziphius cavirostris.* Figiure 12.

Figure 12. Stranded dead *Ziphius cavirostris* in Banias city beach in 10-5-2009.

13- On 15-12-2009, a *Balaenoptera physalus* (Linnaeus, 1758) (Fin whale) was dead and stranded in Alhamidia area in Tartous governorate. Figure 13.

Figure 13. Stranded dead *Balaenoptera physalus* in Alhamidia area in 15-12-2009.

Stranded Cetaceans after 2010

After the start of the war on Syria in 2011, and the country's situation with ensuring security, safety, food and medicine, some fishermen did not inform us about cases of cetaceans strandings along the Syrian coast. This gave them the opportunity to sell the living creatures at public auctions, and we were unable to obtain significant information about the species - we did receive pictures to classify the species. In addition, some stranded cases were located in places that are difficult to reach due to security situation. 10 Cases of stranding of Cetaceans were recorded during this period. Figure 14,15,16,17.

The status of Risso's dolphins *Grampus griseus* (Cuvier, 1812), is not well known and their subpopulations in the Mediterranean region are classified as data deficient (Azzellino *et al.*, 2012), is a common odontocete in the Mediterranean Sea.

Figure 14. Dead stranded *Grampus griseus* in Tartous coast in 9-6-2011.

Bottlenose dolphins in the Mediterranean are classified as Vulnerable due to declines as a result of culling, overfishing of their prey, mortality in fishing gear, and health effects caused by pollution (Bearzi *et al*., 2021).

7- In 2019, we were informed that two live individuals of *Delphinus delphis* (common dolphins- Linnaeus, 1758) approached the beach of Lattakia in August 2019. They were returned to the sea.

At a global level, the short-beaked common dolphin (*Delphinus delphis*, Linnaeus, 1758) is listed as Least Concern by IUCN Red List (Hammond *et al*., 2008) owing to its widespread and abundant distribution in tropical and cool temperate waters (Perrin, 2018). However, at a regional level, the IUCN status for the Mediterranean subpopulation has been listed as Endangered since 2003 due to its decline since the 1960s (Milani *et al*., 2021).

8- On 2-9- 2019, a dead stranded *Tursiops truncatus*, was identified in the Ibn Hany area near The High Institute of Marine Researches (HIMR). It was found that there were deep scratches resulting from strikes by fishermen after it fell into the fishing nets, (Figure 15).

Figure 15. Dead stranded *Tursiops truncates* near HIMR - Lattakia governorate Followed by Dr. Malek Ali

9- On 8-3-2020, we were informed that a dead female whale in the Almahgour beach area in the Al-kharab area in Banias city. It was classified as a minke whale (*Balaenoptera acutorostrata*, (Lacépède ،1804). Very little is known about its distribution in the Mediterranean where it is considered merely a visitor, (Öztürk *et al*., 2015). It is the first time it has been spotted in Syria. It is one of the whale that inhabit cold waters, and it is a baleen whale and from Mysticeti. This whale calf was entangled in his trammel net which was setup at ~15 m water depth and ~300 m off the shoreline (Ibrahim *et al*., 2020). Figure 16).

Figure 16. *Dead stranded* Minke whale *Palaenoptera acutorostata* in Banias beach Followed by Dr. Alaa Alcheikh Ahmad

10- The whale *Balaenoptera physalus* was also seen **alive**, with its caudal fin cut off, swimming in the marine waters opposite the coastal city of Jableh. The depth of the water was about 180 meters and the distance from the shore was 5 miles on May 2020 at 7:30 in the morning. The Secretariat of ACCOBAMS had been monitoring it for 6 months, and after that On 11-6- 2020, the animal moved from the Calabria coast in southern Italy towards the northern Mediterranean along the Ligurian and Tuscan coasts, according to the latest information. It is noteworthy that this whale was photographed several times, and was weak after losing its caudal fin in the fall of 2019 (Ministry of Local Administration and Environment, 2020). Figure 17.

Figure 17. *Balaenoptera physalus* caudal fin cut off in Jableh city in 5/20/2020 - Followed by Dr. Mouina Badran

Sightings of fin whales in the eastern Mediterranean are negligible relative to the central and western basins which eludes to the impression that the eastern Mediterranean provides a less favorable habitat for these cetaceans (Stephens *et al*., 2021). Extant & Vagrant (seasonality uncertain): Croatia; Cyprus; Egypt (Egypt (African part), Sinai); Greece (East Aegean Is., Kriti); Lebanon; Libya; Slovenia; Syrian Arab Republic; Turkey (Panigada *et al*., 2021).

Note: The above-mentioned stranding cases are the ones that were reported to us, and it is possible that there are other stranding cases that were not reported to us.

Considering the above, it is recommended to take the highest precautions.Mediterranean whales should be treated as a high regional priority for conservation, and their status on the IUCN Red List should be re-evaluated. (Notarbartolo di Sciara *et al*., 2016).

Mediterranean countries should set up national stranding networks which take advantage of their human and material resources appropriate to consider their own particular circumstances. In addition, it is important to consider the possibility of organising subregional courses for training of personnel, particularly from the regions mentioned above. This would build a critical mass of experts who would support the national stranding networks.

Conclusions

The Syrian coast has been monitored for 20years, and twenty-two species of Cetaceans (whales and dolphins) have been recorded stranded along the shores of Syrian marine waters. This requires a great effort to protect the Mediterranean Sea in general and Syrian marine waters in particular from the threats that destroy marine life.

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