Published by Associazione Teriologica Italiana
Hystrix, the Italian Journal of Mammalogy
Volume 27 (2): 219–221, 2016
OPEN ACCESS
Available online at:
http://www.italian-journal-of-mammalogy.it
doi:10.4404/hystrix-11737

Short Note

# First sighting of the humpback whale *Megaptera novaeangliae* in the Tyrrhenian Sea and a mini-review of Mediterranean records

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*Keywords:*
Cetaceans
Gulf of Naples
Marine protected areas
Mysticetes

*Article history:*
Received: 24 February 2016
Accepted: 10 May 2016

*Acknowledgements*
We are grateful to the staff of the Sea Point Baia diving centre and Monica Blasi for the information provided. We also thank an anonymous reviewer for the valuable comments.

## Abstract

We report on the sighting of a humpback whale *Megaptera novaeangliae* for the Tyrrhenian Sea, where the species had not been observed previously. Since the 1980s the species has become an increasingly frequent visitor of the Mediterranean Sea, where the mean observation rate is ca. 0.1 subjects/year. The sighting was made on December 10, 2015 at 10 a.m. local time, in the shallow waters of Baia, in the Gulf of Naples (Campania Region, Southern Italy, 40°49′0″ N, 14°4′0″ E). The increased sighting frequency of humpback whales suggests that in the near future this species will become more common in the Mediterranean. We remark that Marine Protected Areas might play an important role in protecting the species but appropriate management and effective mitigation of potential threats are essential.

The humpback whale *Megaptera novaeangliae* (Borowski, 1781) is a highly mobile mysticete occurring in all major ocean basins with distinct populations, well known for undertaking exceptionally long migrations (up to 8461 km; Rasmussen et al., 2007; Robbins et al., 2011). After fasting throughout the breeding season in oligotrophic wintering breeding grounds, typically found in warm, shallow tropical waters, humpback whales move to subpolar feeding areas in summer (Rizzo and Shulte, 2009). Although breeding grounds are generally located around the 20$^{th}$ parallels in both hemispheres, their selection is not made according to latitude *per se* but is driven by water temperature, probably because warm waters allow calves to save energy otherwise needed for thermoregulation and allocate it to body growth. In this way, adults may attain a larger size and reproduce more successfully (Clapham, 2001).Water temperature might thus represent the ecological factor behind humpback whales' outstanding migrations, making them energetically viable despite the long distance travelled seasonally (Rasmussen et al., 2007). Due to the importance of water temperature for humpback whales, climate change could affect considerably the geographical range of these mysticetes.

Half of the 22 cetacean species recorded for the Mediterranean are not regularly present in the Basin but occur there occasionally, either very rarely, as vagrant (8 species) or somewhat more frequently, as visitors (3 species) — yet sightings of the latter also remain rare and irregular (Notarbartolo di Sciara and Birkun, 2010). The humpback whale is one of such visitors, along with the common minke whale *Balaenoptera acutorostrata* Lacépède, 1804 and the false killer whale *Pseudorca crassidens* (Owen, 1846). Of such species, the humpback whale is the least frequently recorded one, with ca. 0.1 sightings/year over the last 120 years. Moreover, records have increased in frequency since the 1980s — only a single record dates back to before 1986 (Aguilar, 1989; Notarbartolo di Sciara and Birkun, 2010).

In this short communication we report on a new Mediterranean record of the humpback whale for the Tyrrhenian Sea, where the species had not been observed previously. The sighting took place on December 10, 2015 at 10 a.m. local time, in the shallow (approx. 10–15 m deep) waters of the NW coast of the Gulf of Naples, along the shoreline of the Baia harbour (Campania Region, Southern Italy, 40°49′0″ N, 14°4′0″ E). The whale was observed, photographed and filmed by one of us (RS) from a vantage point (the terrace of the Baia castle) for ca. 30 minutes, during which it came as close as 10 m from the coast. The species was easily identified from the small, nubby dorsal fin with a broad base and the long, white pectoral fins (Fig. 1). Visual contact was lost once the whale moved south towards Capo Miseno Promontory and the islands of Procida and Ischia.

Once considered exceptionally rare in the Mediterranean, in the last 15 years the sighting frequency of humpback whales has increased considerably. In all, 26 records (Fig. 2, Tab. 1; this study) — also including multiple observations of the same subject — have been obtained for the Mediterranean (Frantzis et al., 2004; Centro Studi Cetacei, 2006; Genov et al., 2009; Notarbartolo di Sciara and Birkun, 2010; Panigada et al., 2014; Cagnolaro et al., 2015; our study). Our observation offers further evidence that humpback whales systematically visit the Mediterranean Sea and that the frequency of sightings is increasing. The proximity to the coast of all recent records and the casual nature of observations such as ours show that the species is easy to spot and rules out that its increased observation frequency may result from an intensification of survey efforts. More probably, we might be witnessing the first steps of a colonization process due to a combination of factors such as changing climatic conditions, the associated removal of oceanographic barriers and the documented increase of Atlantic populations (Frantzis et al., 2004). Given the latter recovery, it cannot be ruled out that humpback whales will soon be a commoner, perhaps regular presence in the Mediterranean.

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**Table 1** – Known records of humpback whales in the Mediterranean Sea. **SACs**: Special Areas of Conservation, **SPAs**: Special Protection Areas and **MPAs**: Marine Protected Areas.

| Date | Location | Nation | Protected area (within 10 km) | SACs | SPAs | MPAs | Note | References |
|---|---|---|---|---|---|---|---|---|
| 1885 | Toulon | France | Port Cros; Embiez – Cap Sicie; Rade d'Hyères; The Embiez Archipelago – Six Fours; Iles d'Hyères; Cap Sicie – Six Fours | 3 | 2 | 1 | By-caught | Aguilar (1989) |
| 1986 | Majorca | Spain | Espacio marino del poniente de Mallorca; Espacio marino del norte de Mallorca; Badies de Pollença i Alcúdia; Arxipèlag de Cabrera; Espacio marino del sur de Mallorca y Cabrera; Canal de Menorca; Reserva Marina de Levande te Mallorca – Cala Ratjada | 4 | 4 | 2 | Sighting | Aguilar (1989) |
| 1990 | Bay of Aiguablava | Spain | Espacio marino de l'Empordà; Litoral del Baix Empordà | 1 | 2 | - | Sighting | Notarbartolo di Sciara and Birkun (2010) |
| 1992 | Gulf of Gabés | Tunisia | - | - | - | - | By-caught | Chakroun (1994) |
| 1993 | Toulon | France | Port Cros; Embiez – Cap Sicie; Rade d'Hyères; The Embiez Archipelago – Six Fours; Iles d'Hyères; Cap Sicie – Six Fours | 3 | 2 | 1 | Sighting | Frantzis et al. (2004) |
| 1993 | Cavalaire | France | Corniche Varoise; Port Cros; Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean; Cap lardier | 1 | 1 | 2 | By-caught | Bompar (2000) |
| 1998 | Gulf of Oristano | Italy | Marine Protected Area of Penisola del Sinis – Isola di Mal di Ventre; Isola di Mal di Ventre e Catalano; Area marina protetta Penisola del Sinis – Isola Mal di Ventre | 1 | 1 | 1 | Sighting | Frantzis et al. (2004) |
| 2001 | Bay of Tolo | Greece | - | - | - | - | Sighting | Frantzis et al. (2004) |
| 2002 | Lefkada Island | Greece | Esoteriko Archipelagos Ioniou (Meganisi, Arkoudi, Atokos, Vromonas) | 1 | - | - | Sighting | Frantzis et al. (2004) |
| 2002 | Senigallia | Italy | - | - | - | - | Sighting | Affronte et al. (2003) |
| 2003 | Tartous | Syria | - | - | - | - | Stranded dead | Saad (2004) |
| 2004 | Corfu Island | Greece | Paraktia Thalassia Zoni Apo Kanoni Eos Mesongi (Kerkyra); Diapontia Nisia (Othonoi, Ereikousa, Mathraki Kai Vrachonisides) | 1 | 1 | - | By-caught | Frantzis et al. (2004) |
| 2004 | Siracusa | Italy | Area marina protetta Plemmirio; Fondali del Plemmirio; Plemmirio Protected area | 1 | 1 | 1 | Sighting | Centro Studi Cetacei (2006) |
| 2009 | Gulf of Trieste | Italy | Laguna di Marano e Grado; Morje in morsko obrežje; Riserva naturale della Foce dell'Isonzo; Trezze San pietro e Bardelli; Foce dell'Isonzo – Isola della Cona | 3 | 2 | 2 | Sighting | Genov et al. (2009) |
| 2010 | Bay of Algeciras | Spain | Estrecho Oriental; Southern Waters of Gibraltar | 2 | 1 | - | Sighting | Notarbartolo di Sciara and Birkun (2010) |
| 2010 | Eastern Ligurian Sea | Italy | Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean; Santuario per i mammiferi marini | - | 1 | 1 | Sighting | Notarbartolo di Sciara and Birkun (2010) |
| 2010 | Cape San Antonio, Denia | Spain | Espacio marino de Tabarca-Cabo de Palos; Reserva Marina de Isla de Tabarca; Espacio marino de Tabarca; Marine Reserve of Cape San Antonio | 1 | 2 | 2 | Sighting | Notarbartolo di Sciara and Birkun (2010) |
| 2011 | Savona | Italy | Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean; Santuario per i mammiferi marini | - | 1 | 1 | Sighting | Cagnolaro et al. (2015) |
| 2011 | Carry le Rouet | France | Camargue; Côte Bleue Marine; The Blue Coast Marine Park; Calanques | 2 | 2 | 1 | Stranding | Cagnolaro et al. (2015) |
| 2012 | Nice | France | Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean | - | 1 | - | Sighting | Cagnolaro et al. (2015) |
| 2012 | Cerbère | France | Golfe du Lion; Sistema de cañones submarinos occidentales del Golfo de León; Cap Bear- cap Cerbère; Espacio marino de l'Empordà | 1 | 2 | 1 | Sighting | Cagnolaro et al. (2015) |
| 2012 | Ligurian Sea | Italy | Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean; Santuario per i mammiferi marini | - | 1 | 1 | Sighting | Panigada et al. (2014) |
| 2013 | Lampedusa Island | Italy | Arcipelago delle Pelagie – area marina e terrestre; Isola di Lampedusa e Lampione; Fondali delle Isole Pelagie; Riserva naturale orientata Isola di Lampedusa; Area marina protetta Isole Pelagie | 2 | 1 | 2 | Sighting | Panigada et al. (2014) |
| 2013 | Ligurian Sea | Italy | Pelagos Sanctuary for the Conservation of Marine Mammals in the Mediterranean; Santuario per i mammiferi marini | - | 1 | 1 | Sighting | Panigada et al. (2014) |
| 2013 | Sirte | Libya | - | - | - | - | Stranding | Cagnolaro et al. (2015) |
| 2015 | Baia | Italy | Parco sommerso di Baia; Fondali marini di Baia | 1 | - | 1 | Sighting | This study |


**Figure 1** – Photographs of the humpback whale observed in the Gulf of Naples: a) detail of dorsal fin; b) image showing the diagnostic shape and colour of pectoral fins.

Although humpback whales are now safe from commercial whaling, they are seriously threatened by entanglement in nets or fishing gears, collision with boats, shortage of food due to intensive commercial fisheries, pollution and human-produced undersea noise (Reilly et al., 2008; Risch et al., 2012). These threats also largely occur in the Mediterranean, whose waters may therefore act as an attractive sink (Battin, 2004) and put the newcomers at risk (Frantzis et al., 2004).

Noticeably, 81% of all Mediterranean humpback whale records fall within the boundaries of marine protected areas (MPAs) or close to them (i.e. within 10 km from the sighting locations, often too approximate to allow a more detailed analysis) (Tab. 1). In our case too, the humpback whale was observed within the MPA of Baia or in its surroundings. In general, MPAs cover only a small part of cetacean geographic distributions so they cannot solve the conservation problems of these mammals (Notarbartolo di Sciara, 2007). However, humpback whales often get close to coasts so that the MPA network located along the Mediterranean shores might play an important management role. The Gulf of Naples seems to be gaining increasing value for the presence of cetaceans despite the ever growing human pressure affecting the area (Tornero and Ribera d'Alcalà, 2014). Unfortunately in the Gulf, as elsewhere (de Castro et al., 2014), the conservation potential of MPAs is often impaired by insufficient surveillance, management or enforcement of regulations. We urge MPA authorities to take into careful account the presence of cetaceans in such areas, including that of humpback whales, likely to increase further in the future. We also highlight the importance of improving monitoring for the correct management of whale presence along the coasts of the Tyrrhenian Sea.

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*Associate Editor:* D.G. Preatoni

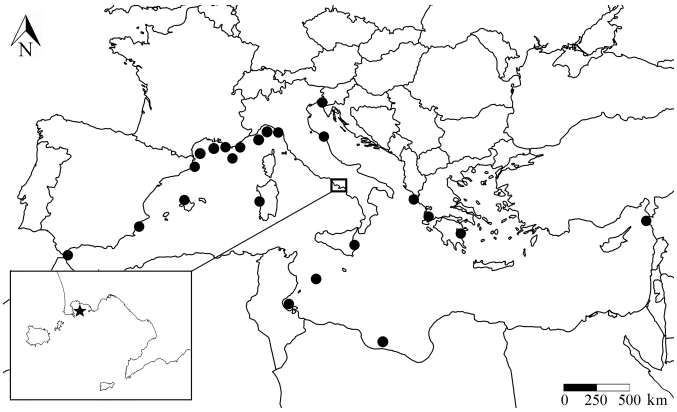


**Figure 2** – Distribution of records of *Megaptera novaeangliae* in the Mediterranean Sea. Filled circles show published data, the star indicates the new observation for the Gulf of Naples.