

## Short Communication

# Shoreline encounter and stranding rates of cetaceans and loggerhead turtles *Caretta caretta* in North Sinai, Egypt

Basem Rabia<sup>1\*</sup> and Omar Attum<sup>a</sup>

<sup>1</sup>Nature Conservation Sector, Egyptian Environmental Affairs Agency, Cairo, Egypt

<sup>a</sup> Department of Biology, Indiana University Southeast, New Albany, IN, USA

\* Corresponding author email: bassimrabea@yahoo.com

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## ABSTRACT

Eight species of cetaceans and two species of marine turtles regularly occur in the Mediterranean Sea, with the eastern basin of the Mediterranean being considered among the least studied. The objective of this study was to carry out a shoreline cetacean and marine turtle survey in North Sinai, Egypt as part of a citizen science program between 7/2/18 – 8/30/18. We had fifty-five encounters of the common bottlenose dolphin, *Tursiops truncatus* in twenty groups with an average of 2.5 (SE + 0.32, Range 1 - 6) individuals seen per group, one striped dolphin, *Stenella coeruleoalba*, and one short beaked common dolphin, *Delphinus delphis*, from the shore. In addition, a fisherman reported an observation of a Cuvier's beaked whale, *Ziphius cavirostris*, from several kilometers from the shore. We observed six stranded common bottlenose dolphins, with a rough average of a stranding occurring every 10 days. We recorded no live observations of loggerhead turtles, *Caretta caretta* but did record nine dead, stranded turtles, for an average of a stranding occurring roughly every seven days. Our shoreline observations of rare cetaceans and the relatively frequent strandings of common bottlenose dolphins and loggerhead turtles suggests that there are resident summer populations and that the eastern basin of the Mediterranean may not be as biologically poor in sea turtle and cetaceans populations as originally thought.

Cetaceans and marine turtles face numerous threats in the Mediterranean Sea such as habitat degradation and loss, by catch, overfishing of prey, disturbance from boats, underwater noise, and chemical and debris pollution (IUCN, 2012, Pace *et al.*, 2015). Eight species of cetaceans and two

species of marine turtles regularly occur in the Mediterranean Sea, with the eastern basin being considered among the least studied (IUCN, 2012). Data on cetaceans in the coastal waters of Egypt's Mediterranean sea are especially lacking (Boisseau et al., 2010). The objective of this study was to carry out a shoreline cetacean and marine turtle survey in North Sinai, Egypt as part of a citizen science program.

Marine habitats are prohibitively large, mostly inaccessible, expensive and logistically challenging to navigate and often requiring the use of expensive equipment to conduct marine surveys (Clarke *et al.*, 2011, 2013). In addition, pelagic species can move long distances, are rare and difficult to observe, and are difficult to observe without specialized equipment as the typical sampling time during any scuba dive is limited to between 30 – 50 minutes.

Observations by enthusiasts who are already in marine habitats, provide observation data that is a low-cost alternative to more costly, standardized, scientific data collection methodologies.

This study occurred between 7/2/18 – 8/30/18 on the public beach of El-Arish (31.1453 N, 33.80297 E) along Egypt's Mediterranean coast. Lifeguards were trained on the identification of the local cetacean and marine turtle species as part of a citizen science program that incorporated volunteers for shore line surveys. Lifeguards were stationed at twenty observation posts located approximately between 200 m – 500 m apart, and from roughly 6:00 am to 6:00 pm for sixty days. In addition, author (BR) regularly visited the lifeguard stations and participated in the surveys. For each observation, we recorded the species, number, date, and time of observation.

We had fifty-five encounters of the common bottlenose dolphin, *Tursiops truncatus* in twenty groups with an average of 2.5 (SE  $\pm$  0.32, Range 1 - 6) individuals seen per group. Forty-six common bottlenose dolphins were encountered in sixteen groups in July and nine bottlenose dolphins in four groups were encountered in August. One bottlenose dolphin was observed with a calf in August. During the month of July, we also observed one striped dolphin, *Stenella coeruleoalba*, and one short beaked common dolphin, *Delphinus delphis*, from the shore. In addition, a fisherman reported an observation of a Cuvier's beaked whale, *Ziphius cavirostris*, from several kilometers from the shore off the public beach on 7/22/18. We believe that this is a reliable sighting as the individual was able to identify the species from photographs and has participated in past surveys. We observed six stranded common bottlenose dolphins, with a rough average of a stranding occurring every 10 days. Three stranded individuals were observed in July and another three in August. One of the stranded dolphins was alive and returned to sea.

We recorded no live observations of loggerhead turtles, *Caretta caretta* but did record nine dead, stranded turtles, three in July and six in August for an average of a stranding occurring roughly every seven days.

Our citizen science approach was meaningful in obtaining observations of more common and rare species. The four species of cetaceans observed in our survey are listed by the IUCN as either data deficient, vulnerable, or endangered in the Mediterranean Sea (IUCN, 2012). The common bottlenose dolphin (IUCN vulnerable) was the most frequently cetacean observed and stranded, as has been observed in other parts of the eastern Mediterranean basin (Kerem *et al.* 2012). Despite the striped dolphin (IUCN vulnerable) being considered the most abundant cetacean in the Mediterranean Sea, this species was only observed once from the shoreline likely because it is more typically found in the open ocean and is less common in the eastern Mediterranean basin (Boisseau *et al.*, 2010; IUCN 2012). Although striped dolphins can travel in large groups, single individuals are sometimes encountered like we observed (Kerem *et al.*, 2012).

Our observation of the normally open water short beaked common dolphin (IUCN endangered in the Mediterranean), from the shore is a roughly 30 km extension of its known distribution as they have been recorded off the coast of Gaza (Kerem *et al.*, 2012). Although the Cuvier's beaked whale is listed by the IUCN as data deficient and considered rare, it was observed by a fisherman nearshore. This record of Cuvier's beaked whale is the first record from North Sinai since 1968 (Kerem *et al.*, 2012).

Stranding rates usually represent just a small fraction of total mortality and it is not possible to estimate mortality rates without performing drifter experiments (Koch *et al.*, 2013; Flint *et al.*, 2015). However, the number of strandings can still be a useful form of data as strandings often occur in areas of resident or population hotspots (Casale *et al.*, 2010; Koch *et al.*, 2013; Flint *et al.*, 2015). Although we could not identify the source of mortality, relatively frequent rates of a loggerhead sea turtle strandings every seven days and common bottlenose dolphin every ten days suggest that there may be summertime resident populations of each species. Our shoreline observations of rare cetaceans and the relatively frequent strandings of common bottlenose dolphins and loggerhead turtles supports the suggestion that the eastern basin of the Mediterranean may not be as biologically poor in sea turtle and cetaceans populations as originally thought (Kerem *et al.*, 2012; Bradshaw *et al.* , 2017).

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