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OCCURRENCE OF STRIPED DOLPHINS (*STENELLA COERULEOALBA*) IN THE GULF OF TRIESTE

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ABSTRACT

*Although the striped dolphin (*Stenella coeruleoalba*) is occasionally reported in the Gulf of Trieste, it is not considered a regular species in the northern Adriatic Sea. Between April and October 2007, 3 different individuals were observed in the Gulf of Trieste. All three individuals were sighted in the area between April and May 2007. One of them stranded alive and died shortly after a rehabilitation attempt, while one was re-sighted in October 2007. Photo-identification data enabled the authors to distinguish between the 3 individuals.*

Key words: *Stenella coeruleoalba*, striped dolphin, cetaceans, sightings, strandings, Adriatic Sea

PRESENZA DI STENELLA STRIATA (*STENELLA COERULEOALBA*) NEL GOLFO DI TRIESTE

SINTESI

*Esemplari di *Stenella Striata* (*Stenella coeruleoalba*) vengono occasionalmente avvistati nel Golfo di Trieste, ma la specie non viene considerata quale regolare nel Nord Adriatico. Fra aprile ed ottobre 2007, 3 individui differenti sono stati avvistati nell'area in questione. Le segnalazioni primaverili dei tre individui sono quasi contemporanee, nel periodo fra aprile e maggio 2007. Uno degli esemplari si è arenato vivo ed è morto subito dopo la tentata riabilitazione, un altro invece è stato visto per la prima volta ad aprile e riavvistato nel mese di ottobre 2007. La foto-identificazione ha permesso agli autori di identificare con certezza gli individui.*

Parole chiave: *Stenella coeruleoalba*, *Stenella Striata*, cetacei, avvistamenti, arenarsi, mare Adriatico

INTRODUCTION

The striped dolphin (*Stenella coeruleoalba*) is currently the most abundant cetacean species in the Mediterranean Sea (Reeves & Notarbartolo di Sciarra, 2006). It has a worldwide distribution in tropical and temperate waters and shows preference for highly productive, pelagic waters beyond the continental shelf, although it is distributed in both inshore and offshore habitat within the Mediterranean (Gaspari *et al.*, 2007). Although the most abundant species in the region, the Mediterranean population is subject to many threats and its current IUCN status is "vulnerable" (Reeves & Notarbartolo di Sciarra, 2006). This species has occasionally been observed in the northern Adriatic Sea, where the bottlenose dolphin (*Tursiops truncatus*) is the only regularly reported cetacean species at present time (Kryštufek & Lipej, 1993; Bearzi *et al.*, 1998, 2004).

This paper presents records on 3 individual striped dolphins occurring in the Gulf of Trieste.

The Gulf of Trieste (Fig. 1), the northernmost part of the Adriatic Sea, is a semi-enclosed and shallow area of about 600 km², characterized by high variations of salinity and water temperature, high riverine output, strong stratification, occasional oxygen depletion and occasional mucous aggregate phenomena (Lipej *et al.*, 2000). Human activities, such as urbanization, maritime transport, fishery, mariculture and tourism, are very intense.

A short review of the published work

The historical data regarding sightings, strandings and captures of cetaceans in the area indicate that the occurrence of the striped dolphin in the Gulf of Trieste is in fact occasional. Therefore, sightings and strandings of

the striped dolphin in the area remain relatively rare. Table 1 summarizes the information on the records of striped dolphins in the Gulf of Trieste between 1990 and 2002.

Data in Table 1 mostly derive from three publications (Spoto & Lapini, 1995; Francese, 1997; Picciulin *et al.*, 2001). No other written reports on striped dolphins from this area have been published until this paper.

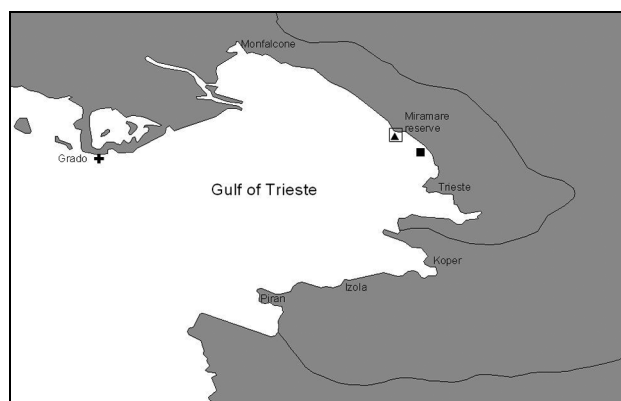


Fig. 1: Locations of sightings and strandings of striped dolphins (*Stenella coeruleoalba*) in the Gulf of Trieste in 2007. The triangle denotes several sightings (cases 1 and 4) in the Miramare Reserve. The cross indicates stranding of case 2, while the square represents the sighting of case 3.

Sl. 1: Lokacije navadnih progastih delfinov (*Stenella coeruleoalba*), opaženih in nasedlih v Tržaškem zalivu leta 2007. Trikotnik ponazarja več opažanj (primera 1 in 4) v rezervatu Miramare, križec nasedli primer 2, kvadrat pa opažanje primera 3.

Tab. 1: Sightings and strandings of the striped dolphin in the Gulf of Trieste recorded in the database of WWF – Miramare Natural Marine Reserve between 1990 and 2002.

Tab. 1: Navadni progasti delfini, opaženi in nasedli med letoma 1990 in 2002 v Tržaškem zalivu po podatkovni bazi WWF – rezervat Miramare.

Date	No. individuals	Location of sighting	Location of stranding
19/6/1990	1	Duino, Rilke, Sistiana	
6/10/1990	1	Miramare marine reserve	
11/10/1990	1	Trieste coastline (Barcola)	
12-16/11/1990	1	Miramare marine reserve	
15/4/1992	1		Fossalon di Grado (GO)
10/5/1992	1		Grado (GO)
10/6/1995	2	Barcola, Miramare	
1/12/1995	1		Grado (GO)
18/11/1996	1		Grado (GO)
11/5/1998	1	Port of S. Rocco (Muggia)	
20/5/1999	1	Canale navigabile (Trieste)	
21/07/2002	2	S. Croce (Trieste)	

As indicated in Table 1, the records of striped dolphins are not uniformly distributed in all years. Instead, 4 records were reported in 1990, 2 in 1992, 2 in 1995, 1 in 1996, 1 in 1998, 1 in 1999 and 1 in 2002. Out of 12 total recorded cases (not including the 4 cases reported in this paper) over 17 years, 4 were a result of an intervention of stranded animals. Others involved live animals, mostly reported by fishermen, tourists, locals, coast guard or officials carrying out surveillance in the Gulf of Trieste.

Sightings of striped dolphins have been reported from other parts of the northern Adriatic Sea, such as the area off the island of Lošinj in Croatia (Bearzi *et al.*, 1998) and around the island of Krk, Croatia (A. Wiermann, *pers. comm.*; T. Genov, *pers. observ.*).

MATERIALS AND METHODS

The methods in cases of sightings and particularly strandings of cetaceans are summarized in Francese *et al.* (1999). Sightings are recorded onto specifically designed sighting forms which include information on the species observed, the date and location of the sighting, group size, environmental conditions and possibly even animal characteristics, such as behaviour, size, age class, etc. Whenever possible, such data is coupled with photographic material for possible species and individual identification.

A special integrated contingency plan is designed for cases of strandings or animals in distress.

RESULTS

Case 1. On April 23, 2007, a dolphin sighting was reported to the Miramare staff by the coastguard of Trieste and the animal was later observed by scientists of Miramare (Fig. 2). The animal was probably an adult with a length of about 1.80–2 m. It was swimming slowly close to the buoy marking the limits of the Miramare Natural Marine Reserve, performing regular dives of relatively short duration. The animal was in apparently good physical condition and appeared to be chasing blue fish residing in the reserve. It appeared calm and even approached the boat. The Miramare staff, which was already involved in underwater acoustic work, attempted to record underwater vocalizations of the dolphin, however with no success.

A series of photographs of the animal's dorsal fin were taken for the purpose of photo-identification (Würsig & Jefferson, 1990), together with notes on the position and behaviour of the animal. The same individual was encountered in the Reserve on 5 consecutive days, performing leaps among other behaviours. Video footage was taken and archived.



Fig. 2: The first individual striped dolphin (*S. coeruleoalba*) observed in the Miramare Reserve in April 2007. (Photo: M. Tempesta)

Sl. 2: Prvi osebek progastega delfina (*S. coeruleoalba*), opažen aprila 2007 v rezervatu Miramare. (Foto: M. Tempesta)

Case 2. On May 15, 2007, the Grado coastguard informed the Miramare staff of a dolphin in apparent difficulty near the coast of Grado – Città Giardino. It later turned out that the animal was a male striped dolphin.



Fig. 3: The second individual striped dolphin (*S. coeruleoalba*) that stranded off Grado in May 2007. (Photo: M. Tempesta)

Sl. 3: Drugi osebek progastega delfina (*S. coeruleoalba*), ki je maja 2007 nasedel pri Gradežu. (Foto: M. Tempesta)

Tab. 2: Information on the stranded striped dolphin on May 15, 2007, Grado.**Tab. 2: Podatki o navadnem progastem delfinu, ki je 15. maja 2007 nasedel pri Gradežu.**

Time frame	Sex	Weight	Body measurements	
Sighted: May 15, 2007, 17:00 hrs Died: May 16, 2007, 02:00 hrs Necropsy: May 16, 2007, 13:00 hrs	Male	103.2 kg	Total length: 215 cm Rostrum length: 10 cm Pectoral fin – rostrum: 92 cm Pectoral fin – tail notch: 93 cm Dorsal fin height: 22 cm	Genital slit – anal slit: 32 cm Pectoral fin length: 52 cm Pectoral fin width: 30 cm

Despite the attempts to prevent the animal from stranding, it ended up in shallow water. It was weak and clearly not able to return to open sea. In order to keep the animal afloat and in the sea despite the increasingly low tide, a hole was dug under the animal and filled with sea water (Fig. 3). Vaseline was applied to the animal's skin in order to prevent it from drying out. The animal was then transported to the facility of the civil protection service in Grado, where it was placed in a small tank. Once the animal arrived, it started to show signs of fatigue and difficulty in staying afloat. The animal was therefore assisted in keeping afloat with a life-jacket, in order to enable breathing and preventing the animal from turning to its side. Despite these efforts, the dolphin died shortly afterwards.

The animal bore several external parasites (copepods of the genus *Penella*) and numerous subcutaneous cysts. The necropsy has shown a high prevalence of internal parasites in the area of abdominal muscles (presumably a cestode species *Phyllobothrium delphini*) and in the digestive system (presumably a nematode *Anisakis* sp.). Samples of muscle tissue, adipose tissue, liver, spleen, kidney, cerebellum were taken for the analysis of pollutants concentrations, biomarkers, etc.

Photographs of dorsal fin were taken for the purpose of photo-identification. The comparison with photos of the live striped dolphin sighted at Miramare (Case 1, see above) revealed that it was not the same individual.

Case 3. On May 21, 2007, the Morigenos Marine Mammal Research and Conservation Society received an e-mail sighting report by a Slovenian sailing coach. The sighting took place on May 19, 2007 at 14:00 between Trieste and the Miramare Reserve, relatively close to coast (likely less than 2 km), near a small sailing regatta. The animal swam alongside the reporter's inflatable boat for about 10 minutes and was also engaged in bowriding. The e-mail message included a photo (Fig. 4) taken by the person who reported the sighting. Morigenos researchers immediately discovered that the dolphin belonged to the species of striped dolphin and informed the Miramare staff about the sighting. The relatively good photo allowed photo-identification comparisons to be made and it was discovered that the animal was in fact a 3rd individual. Video footage was also acquired, which further corroborated the information provided.



Fig. 4: The third individual striped dolphin (*S. coeruleoalba*), observed in May 2007 between Trieste and the Miramare Reserve. (Photo: D. Poljšak)

Sl. 4: Tretji osebek progastega delfina (*S. coeruleoalba*), opažen maja 2007 med Trstom in rezervatom Miramare. (Foto: D. Poljšak)

Case 4. On October 5, 2007, another striped dolphin was observed and photographed in the Miramare Reserve (Fig. 5). Photo-identification comparisons revealed that the animal was the same individual sighted alive in April 2007 in the Miramare Reserve (Case 1, see above). The dolphin either remained in the area or returned there. At the time of the submission of this manuscript (October 23 2007), the animal was still in the area.

DISCUSSION AND CONCLUSIONS

The presence of the striped dolphin in the Gulf of Trieste is considered a rather unusual event and such cases usually involve single individuals, often in distress. The more or less contemporary presence of at least 3 individual striped dolphins in the area is an interesting phenomenon. Two of them were apparently in good health. One of the animals was re-sighted in the very same area about 5 months later. Unfortunately, the movement patterns of this animal during these months are unknown.



Fig. 5: The first individual striped dolphin (*S. coeruleoalba*), observed again in the Miramare Reserve in October 2007. (Photo: M. Tempesta)

Sl. 5: Prvi osebek progastega delfina (*S. coeruleoalba*), znova opažen oktobra 2007 v rezervatu Miramare. (Foto: M. Tempesta)

Apart from the bottlenose dolphin (*Tursiops truncatus*), which is the only regularly sighted cetacean in the northern Adriatic, some other species of cetaceans might be considered occasional in the region. These include the fin whale (*Balaenoptera physalus*) (Lipej *et al.*, 2004), Risso's dolphin (*Grampus griseus*) (Zucca *et al.*, 2005) and the striped dolphin (this paper). The once common short-beaked common dolphin (*Delphinus delphis*) is considered regionally rare or even extinct in this region (Bearzi *et al.*, 2004).

Reports on striped dolphins in the northern Adriatic Sea may simply reflect the occasional occurrence of stray individuals, but the fact that such observations have only occurred in recent times might be indicative of a progressive extension of the species' range, as has been reported for other Mediterranean areas (Notarbartolo di Sciarra & Demma cited in Bearzi *et al.*, 1998). However, the increased interest in cetaceans in the last 10–15 years may also contribute to a higher number of reports and therefore chances of documenting the occurrence of these animals (Bearzi *et al.*, 1998). The true reasons yet remain unknown. Future research should shed

more light onto the status of this species in the northern Adriatic.

Cooperation and information exchange between research groups is fundamental for continuous and effective monitoring of cetaceans in an area like the Gulf of Trieste. Furthermore, acquiring information often depends on the awareness and good will of opportunistic observers that send information to the relevant bodies. When coupled with photographic and/or video material, such information can be of high value. Even if the data are not collected by trained personnel and should therefore not always be considered reliable, the additional photo/video material adds weight to such information. In cases of animals in difficulty (or even dead stranded animals), the integrated and coordinated response actions are of great importance, both to ensure the animal's welfare and to collect valuable data.

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POJAVLJANJE NAVADNIH PROGASTIH DELFINOV (*STENELLA COERULEOALBA*)
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POVZETEK

Navadni progasti delfin (*Stenella coeruleoalba*) je danes najbolj pogosta oz. številna vrsta kitov v Sredozemlju. V severnem Jadranskem morju, kjer velika pliskavka (*Tursiops truncatus*) velja za edino stalno prisotno vrsto, so opažanja navadnega progastega delfina občasna. Med aprilom in oktobrom 2007 so bili v Tržaškem zalivu zabeleženi 3 različni posamezni navadni progasti delfini. Prvi je bil opažen v aprilu 2007 v rezervatu Miramare in ostal tam skoraj en teden. Isti primer je bil vnovič večkrat opažen oktobra 2007. Drugi je živ nasedel na obali Gradeža in kmalu poginil, kljub poskusom rehabilitacije. Tretji je bil opažen maja 2007, med rezervatom Miramare in Trstom. S foto-identifikacijo posameznih osebkov smo lahko ugotovili, da so se skoraj ob istem času v Tržaškem zalivu zadrževali vsaj trije osebki. Navadni progasti delfini niso obravnavani kot stalni del severnojadranske favne, čeprav se lahko njihova opažanja na tem območju označijo kot občasna, a ne redka. Prihodnje raziskave bi morale zagotoviti več informacij o statusu te vrste v severnem Jadranskem morju.

Ključne besede: *Stenella coeruleoalba*, navadni progasti delfin, kiti, opažanja, mrtvi delfini, Jadransko morje

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