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Kuwait Marine Mammal Strandings for 2014

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Kuwait Marine Mammal Strandings for 2014

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Abstract

An unprecedented stranding of marine mammals in the early part of 2014 occurred on the Kuwaiti shoreline. The verified reports include 8 *Neophocaena phocaenoides*, a female *Balaenoptera brydei* and a male *Tursiops aduncus*. The cause of mortality could not be determined in all cases due to advanced decomposition. Circumstantial evidence elucidates that *B. brydei* mortality was caused by shipping rope obstruction in the throat, causing starvation.

Introduction:

Kuwait's coastline is unique amongst the Gulf countries as it contains the most diverse ecosystems in a very small area. The silty brackish waters emanating from the Shatt Al Arab delta are breeding grounds for some of the most valuable commercial fish stocks in the area, further south, Kuwait Bay, and its innermost portion, Sulaibikhat Bay are nursery grounds for many species of fish, migrating seabirds, and elasmobranchs that feed on the mudflats and sea grass beds. 50 km south the ecosystem changes once again and the islands of Garo, Kubbar, Um Al Maradem and the Kheiran coastline all contain soft and hard coral reefs. Kuwait's ecosystems are

exposed to extremes in sea temperature (12C-45C) and salinity (14ppt to 45 ppt)(Wright 1988) throughout the year. Kuwait is unique in the biodiversity it contains considering these extreme conditions.

Amongst the large marine animals that have been reported in the area are whale sharks (*Rhincodon typus*) (Bishop *et al* 2005), green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricate*), Loggerhead (*Caretta caretta*), and Leatherback sea turtle (*Dermochelys coriacea*)(Al-Mohenna *et al* 2000), Brydes whale (*Balaenoptera brydei*), Blue whale (*Balaenoptera musculus*), dugong (*Dugong dugon*), Finless porpoise (*Neophocaena phocaenoides*), Indopacific dolphin (*Tursiops aduncus*) and pacific dolphin (*Lagenorhynchus obliquidens*) . The presence of these creatures warrants further scientific investigation and assessment. Turtles have been documented to nest in the islands of Garo and Um Al Maradem)(Al-Mohenna *et al* 2000).

Historically there have been few mammal strandings, the most famous are *B.musculus* (Al-Robaae 1971) that beached in 1963 and 1976 and a third in 1980 (Cowan 2013) and most recently *B. brydei* that washed ashore on Failaka Island in Feb 2014.

Following the *B. brydei* whale event marine mammals washed ashore throughout the Kuwait coastline for another two weeks. The primary species reported was *N. phocaenoides*, an *T. aduncus* dolphin was amongst the list. There were many reports but the following list only includes what has been scientifically documented and are verifiable.

Table 1: Field location of mammal strandings

Species	Date found	Deterioration	Location
<i>B. brydei</i>	Mar-01	Severe	Failaka
<i>N. phocaenoides</i>	Mar-05	Severe	Kheiran
<i>N. phocaenoides</i>	Mar-07	Moderate	Fintas
<i>N. phocaenoides</i>	Mar-08	Severe	Green Island
<i>N. phocaenoides</i>	Mar-08	Moderate	Sharq Marina
<i>N. phocaenoides</i>	Mar-08	Extreme	In waters outside Sharq marina
<i>N. phocaenoides</i>	Mar-11	Extreme	Fintas
<i>N. phocaenoides</i>	Mar-13	Severe	Bidaa
<i>T. aduncus</i>	Mar-15	Severe	Sulaibikhat bay
<i>N. phocaenoides</i>	Nov-11	Extreme	Sulaibikhat bay

Moderate: Bloating, tongue swelling, eyes still intact

Severe deterioration: Bloated, tongue swelled, skin missing, eyes decomposed, bones exposed in fins.

Extreme: Thoracic cavity ruptured, skin missing, skin missing, muscles decomposed, bones exposed.

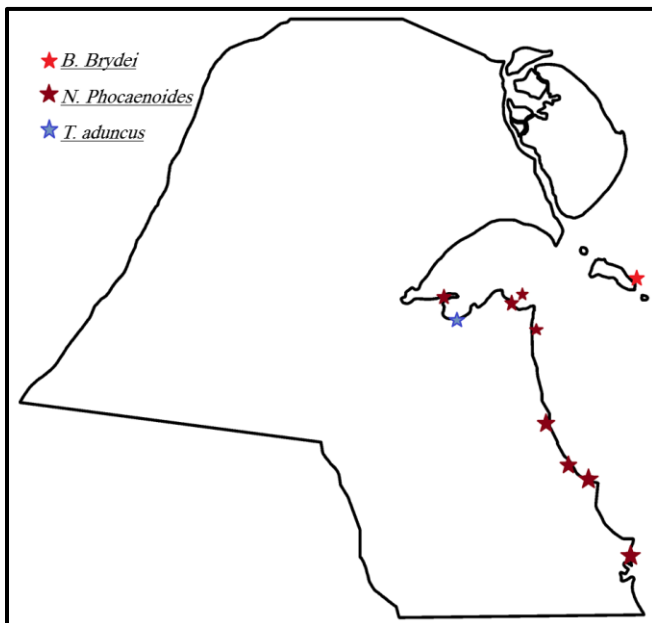


Figure 1: Distribution of strandings

Methods:

Due to the unprecedented scale and distribution of the mammals, volunteer organizations were deputized to help in logging and verifying the stranding. The Right Whale Protocol (McLellan et al 2006) was utilized as the standard reference for reporting. The samples were received at the Central Labs at the Public Authority for Agriculture and Fisheries, marine labs division for analysis.

The *B. brydei* was too large to be removed from Failaka island, so a field assessment was performed and samples of the dermal layer, the baleen and gum tissue were taken. Necropsies were performed on the most viable porpoises in the lab. Histopathology was attempted on various tissue from the porpoises, but putrefied during preparation, unfortunately all samples proved too decomposed for any available analysis.

Results:

Table 2: Field observations of mammal strandings

Species	Date found	FL	Sex	Field Observation
<i>B. brydei</i>	Mar-01	13.9 m	FM	thin layer of blubber, visible anchor rope in throat
<i>N. phocaenoides</i>	Mar-05	1.47	M	post mortem sunburn
<i>N. phocaenoides</i>	Mar-07	1.5	M	post mortem skin abrasion
<i>N. phocaenoides</i>	Mar-08	1.64	M	not in the area 24 hours prior, bloating caused cavity to burst
<i>N. phocaenoides</i>	Mar-08	1.42*	FM	Sighted 48 hours prior, tail was removed post mortem
<i>N. phocaenoides</i>	Mar-08	1.56	FM	Very decayed, could not be collected
<i>N. phocaenoides</i>	Mar-11	1.66	FM	Very decayed, could not be collected
<i>N. phocaenoides</i>	Mar-13	1.46	M	Very decayed, could not be collected
<i>T. aduncus</i>	Mar-15	2.2	M	Very decayed, teeth samples taken
<i>N. phocaenoides</i>	Nov-11	1.3*	U	Very decayed, could not be collected

*Estimate of fork length.

B. brydei:

The dermal section removed from an area 0.75 m from the dorsal side of the back of the dorsal fin and 0.5 m down from the dorsal side showed a blubber layer approximately 1.5 cm thick before reaching connective and muscular tissue, indicating the animal may have lost most of its fat reserves. The gum tissue removed was fixed in 10% formalin in saltwater and gradually dehydrated to 70% ETOH in the lab, the decomposition of the sample prevented any histopathological analysis. The presence of shipping anchor rope approximately 10 cm in diameter was observed at the base of the throat, however due to the location of the mouth at the tide line it was not possible to retrieve a sample. The baleen was removed prior to arrival of the field team by spectators, however was retrieved and was fixed in 10% formalin, then subsequently washed and dried.

N. phocaenoides:

The animals retrieved during March 5- 13 were severely decomposed, necropsies performed on three males and one female indicated that the stomachs were empty, and absence of water in the lungs. There was no apparent sign of internal infection or tumors. It is worth noting that the samples were relatively decomposed and therefore histopathology was not successful. The last specimen discovered was severely decayed, suggesting that it was present for many months, an estimate of its total fork length is provided.

T. aduncus:

The specimen was too decayed to be transported to the lab, and was removed by biohazard crew. Four of the teeth were removed and are stored at the Fisheries lab at OC for any future analysis.

Conclusion:

B. brydei: The circumstantial evidence of thin blubber layer, along with the observed rope in the throat suggests that the animal might have accidentally ingested discarded shipping rope whilst feeding in the area, and may have led to the starvation observed. The rope was not recovered, the following day the tide had shifted the animal perpendicular to the shoreline with the mouth in the water, clearing the insides. This is therefore a circumstantial conclusion.

N. phocaenoides and T. aduncus: The absence of any visible trauma, wounds or fishing gear marks, along with any internal infection, hemorrhage or tumors in the necropsies performed lead us to remain inconclusive as to the cause of death.

Discussion:

The primary hypothesis was that these animals were caught in fishing gear, however the absence of lesions or abrasions on the animals, along with the absence of water in the lungs leads us to conclude that their cause of death was undetermined. A screening of the local fish was performed to investigate any environmental contaminants that could have led to these mortalities, this was also eliminated as a cause.

The N. phocaenoides and T. aduncus were all average lengths (Hale *et al* 2000, Amano *et al* 1992), suggesting that they were healthy until their mortality. This, along with the even distribution of sexes suggests something unnatural caused their mortalities. There were no further strandings after these two weeks apart from one N. phocaenoides found in November, however it's advanced decomposition leads us to conclude that it perished during the mortality event in March.

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