Stranding of a humpback whale *(Megaptera novaeangliae)* on the Belgian coast

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Abstract

On March 1st, 2006, a large cetacean, estimated 10 m long, was observed dead, drifting at 2 nautical miles off Calais (France). Computer models predicted a north–eastwards drift of the carcass and a stranding within two days or less. Five days later, on March 5, a humpback whale was found dead on the Belgian coast (Lombarsijde). It was presumably the same animal. The later reprocessing of the observations at sea resulted in a better definition of the parameters used for predicting the drift of such large bodies. The animal was necropsied. It was a juvenile female of 10.5 m. The blubber thickness was 11.5 cm and the body weight was 15 tons. External examination of the left pectoral flipper revealed multiple ante-mortem fractures of the radius and the ulna. Internal observations revealed various intramuscular hemorrhages in the head and neck area. Otherwise the muscles were red pinkish. There was evidence of intraperitoneal hemorrhage. The whale had been in good health with a good nutritional status (normal blubber thickness) and fresh preys were present in the stomach. Both observations suggested that the cause of death was an acute process. The observed lesions (bones fractures, intramuscular and intraperitoneal hemorrhages) suggested a severe trauma, almost certainly a ship collision. Large cetacean deaths related to ship strike and net

entanglement are reported with increasing frequency in the North Sea. Only the necropsy of all stranded animals could help evaluate the actual impact of such accidents.

Introduction

Since 1990, the multidisciplinary research group MARIN (Marine Animals Research & Intervention Network) investigates the health status of marine mammals stranded along the Belgian and northern French coastline. The aim of MARIN is to evaluate the health status of marine mammals through systematic necropsy of stranded animals and associated post-mortem investigations (toxicology, microbiology, genetics…). Such an evaluation allows to identify most frequent lesions, their origin, main mortality processes, and finally help to highlight specific theories to explain marine mammals strandings on the continental coastlines of the southern North Sea. Most frequent species investigated are harbour porpoises *Phocoena phocoena* and harbour seal *Phoca vitulina* while large cetaceans such sperm whales *Physeter macrocephalus* and fin whales *Balaenoptera physalus* strand rarely (Jauniaux et al., 1998; 2000; 2001; 2002).

The aim of the present paper is to report on the stranding of a humpback whale *Megaptera novaeangliae* washed ashore along the Belgian coast in March 2006.

Materials and methods

On Wednesday March 1st., 2006, a large cetacean, estimated to 10 m. was observed dead drifting at 2 nautical miles off Sangatte, near Calais, France (time and location:???). Computer models predicted a north–eastwards drift of the carcass with the stranding occurring within two days or less (time and location:???). On March 4, probably the same animal was observed along the Belgian coast, xxx nautical miles of the first observation area. Finally, the whale stranded on March 5, on the Lombardsijde beach (51°09'N, 02°43'E). The later reprocessing of the observations at sea resulted in a better definition of the parameters used for predicting the drift of such large bodies.

The animal was stranded on latero-dorsal recumbency (figure 1) making easier the post-mortem examination. The necropsy took place on the beach between 12.00 and 5.00 pm (high tide :ca 4.00 pm). Complete head and thorax, including pectoral flippers were transported on

Monday 6 (12.00) to the University of Liege where final examination was organized on March 7, 8 and 9.

The animal was dissected and sampled following a standard procedure (Jauniaux et al., 2002). Samples were collected for histopathology (skin, mammary gland, muscle, ulna, eye, optic nerve), for toxicology (blubber, muscle, liver), virology (mammary gland, eye), genetics (skin) and for collection (baleens, pectoral flipper, skull and lower jaw). Finally, pictures of the fluke tail were taken.

Results

That was a juvenile female humpback whale. The total body length was 10,5 m and the body weight was 15 tons; externally, the body condition was good but internally, it was poor. Large numbers of whale-lice were attached to the skin on the head, fins and the fluke tail and some barnacles were also observed around the genital split and on the flukes.

On the left pectoral flipper, a deep laceration, 40 cm length on 20 cm wide with skin loss was observed. The conjonctive sheath around the radius was also lacerated, revealing a radius fracture, characterized by multiple bone fragments, some being absent. In addition, dissection of the tissue around the ulna revealed that the conjonctive sheath was intact but the bone was also fractured (single bone fracture) with large numerous haemorrhages in the surrounding tissues, in the ulna and in the conjonctive sheath (Figure). Additionally, on the dorsal side of the left pectoral flipper, 3 deep, parallel (10 cm length on 2 cm wide) white scars were identified. The nutritional status was good with a blubber thickness (dorso-lateral) of 11,5 cm. Numerous intramuscular hemorrhages were observed in the muscle mass surrounding the head and neck area while other muscles were red pinkish. Profuse haemorrhagic fluid, without clots, was present in the abdomen. Most of the organs could not be identified due to the poor body conservation. Nevertheless, abundant and recent feeding remains were observed in the gastric cavity. No other observations were made.

Discussion and conclusion

The humpback whale was a female, juvenile, length at sexual maturity in females being 12 m for an age of 4-5 years old (Evans, 1987). At the end of lactation, lasting 5 months, the calves are between 7,5 and 9 m long (Ridgway and Harrison, 1985). The present animal was estimated between 1 and 3 years old.

The whale had a good the nutritional status, the average blubber thickness of 11,5 to 12 cm being normal in humpbacks (Ridgway and Harrison, 1985) and abundant and recent feeding was present in the stomach. Both observations suggest that the whale was in good health and that the cause of death was a fast, acute process. Both observations are also an indication that the animal had found enough food to survive in an area where the species is infrequently observed. Northridge (1985) reported that in the north-east Atlantic, the humpback whale is eating on fish, some being commercial such as the capelin *Mallotus villosus*. The most recent observation in the southern North Sea was a female with a calf (November-December 2003), the calf was ashore after being trapped in a fishing net. The last stranding of a humpback whale along the Belgian coast occurring in 18xx.

The presence of disseminated intramuscular haemorrhages and large amount of hemorrhagic fluid in the abdominal cavity are suggesting of a trauma and the very pale colour of the muscle is suggestive of a severe blood loss. The presence of the ulna and radius multiple fractures (Figure 2 and 3) are suggesting of severe trauma, most certainly a ship collision. Large cetacean deaths related to ship strike and net entanglement are reported with increasing frequency in the North Sea. The present whale was firstly observed dead near Calais, in the Channel where the maritime traffic is very crowded with a large number of fast ferries, cargos, tankers.... but the necropsy could not help to determine the ship category. The presence of scars, on the dorsal side of the pectoral flipper, are certainly due to a previous impact by a boat propeller.

Genetics and photo-identification will help us to identify the animal, more precisely date and place of previous samplings (if any!).

Last but not least, present post-mortem investigations strengthen the importance of necropsy and sampling of all stranded animals, including large whales in poor body conservation.

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Figure 1a: General view of pectoral flipper

Figure 1b: Fracture of the ulna

(b)