Update on ship strikes events in Italian waters between 2002 and 2005

SIMONE PANIGADA[1], MICHELA PODESTÁ[2], SILVESTRO GRECO[3], MASSIMILIANO ROSSO[4]

[1] *Tethys Research Institute, Viale G.B. Gadio 2, 20121 Milano, Italy*
[2] *Natural History Museum of Milan, C.so Venezia 55, 20121 Milano, Italy*
[3] *ICRAM, Via di Casalotti 300, 00166 Roma, Italy*
[4] *Università di Genova, Dipartimento di Biologia, V.le Benedetto XV 5, 16132 Genova, Italy*

Contact e-mail: panigada@inwind.it

ABSTRACT

Aim of this paper is to present an update of ship strike events with large whales reported in the waters around the Italian coasts between 2002 and 2005, by presenting data both from stranded animals and photo-identified free ranging individuals. Data on stranded animals were collected through the existing Italian stranding network, while information on live whales presenting evidence of collisions were gathered by contacting research institutes involved in photo-identification projects. Animals with large wounds or propeller scars were considered as victims of a ship collision.

The fin whale (*Balaenoptera physalus*) was the only species, stranded or observed at sea, presenting evidence of a ship strike over the selected time-frame. Out of a total of 10 fin whale strandings and reported carcasses, 4 were described as being killed by a collision event, while 12 free-ranging individuals presenting ship strike evidence were observed and photographed at sea.

The data provided here represent au update on human induced mortality events on large whales in the Mediterranean Sea, plus some insights on whales that survived after a ships strike. Given the paucity of data and the high likelihood of underreporting fatal ship strikes, we recommend that appropriate mitigation measures are applied as well as a continuous monitoring effort to precisely estimate the effective magnitude of the issue.

INTRODUCTION

Since 1986 the Italian Stranding Network (Centro Studi Cetacei) has been collecting data on cetaceans stranded, accidentally caught, and possibly killed by vessel collisions for the whole Italian coasts and its nearby seas. Data are managed by the Natural History Museum of Milan, and an annual report is published yearly in the scientific journal "Atti della Società Italiana di Scienze Naturali" with a complete list of the information concerning each event. The Mediterranean Marine Mammals Tissue Bank based at the University of Padua collects and stores samples from these stranded cetaceans.

Data on live whales presenting evidence of possible collisions were gathered by contacting Institutes that run photo-identification projects and asking for occurrence and frequency of animals with scars derived from impacts with boats.

Since data from 1986 to 2001 have been analysed and presented by Laist et al. (2001) and Panigada et al. (in press), the focus of this paper was limited to the period between 2002 and 2005.

RESULTS

An analysis of this data set showed that over the study period only fin whales, either stranded or observed at sea, presented evidence of a ship strike. Out of a total of 10 fin whale strandings and reported carcasses, 4 were described as being killed by a collision event. Three whales arrived in port on the bow of a ship and one whale stranded along the coast. All the fin whales fatally struck were

reported from the Pelagos Sanctuary, a MPA characterized by high levels of naval traffic and whale abundance (Notarbartolo di Sciara et al., 2003).

Whales often do not show noticeable external lesions, confirming that such fatalities might be missed if complete necropsies are not performed regularly (Moore et al. 2004); such complete necropsies are also critical to ascertain whether the collision occurred after the whale was already dead.

Several photo-identified whales presented wounds positively or potentially attributed to a ship strike. No information on the year or the location of the collision was available in any case, as no animal was seen before and after the collision. Twelve fin whales were sighted and photo-identified in the Ligurian Sea; four of them presented propeller scars on the body, five individuals were missing half of the fluke, while the other three were missing their dorsal fin. Two more individuals, both presenting propeller scars, were observed in February 2004 in the waters surrounding the Island of Lampedusa, Sicily Channel.

CONCLUSIONS

The data provided here represent au update on human induced mortality events on large whales in the Mediterranean Sea, plus some insights on whales that survived after a ships strike. The human induced mortality rates, reported for Mediterranean fin whales (Panigada et al., in press) are unusually high for baleen whales, except for North Atlantic right whales (Kraus et al. 2005). The high likelihood of unreported fatal strikes combined with other anthropogenic threats suggests an urgent need for a comprehensive, basin-wide conservation strategy for this population, including ship strike mitigation requirements. Mitigation measures might include real-time monitoring of whale presence and distribution to re-locate ferry routes to areas of lower cetacean density, and reducing ship speed in high cetacean density areas.

In addition, since it may be difficult to assess the real cause of death for stranded or caught on the bow whales, full necropsies would be necessary to determine whether animals which showed no obvious external wounds from collisions provided internal evidence (hematomas, broken bones, etc.) of a ship strike. Moreover, internal examinations would be necessary to confirm that external strike wounds took place *pre-mortem*, and were not the result of collisions with floating carcasses. In Italy generally necropsies on dead whales are usually very difficult to carry out as the local and national authorities tend to destroy the carcass as soon as possible. The existing national stranding network could continue to act as a reference body in collecting information on these events, and a special request to the Ministry should be submitted in order to obtain more support from the Port Authorities, Coast Guards and local veterinarians.

Future research to describe the whales' behavior in relation to approaching vessels including controlled-exposure-experiments combined with passive tracking and multi-sensor recording devices would be helpful to further understand and avoid these interactions (for more information see: Panigada et al., in press (SC/58/For Info. 12); Weinrich and Panigada, 2006 (SC/58/BC3)).

ACKNOWLEDGEMENTS

Special thanks to Simone Canese, Andrea Cardinali and Giancarlo Lauriano for providing the pictures from the Sicily Channel. Special thanks also to Margherita Zanardelli for kindly reviewing this paper.

REFERENCES

Kraus S. D., M. W. Brown, H. Caswell, C. W. Clark, M. Fujiwara, P. K. Hamilton, R. D. Kenney, A. R. Knowlton, S. Landry, C. A. Mayo, W. A. McLellan, M. J. Moore, D. P. Nowacek, A. D. Pabst, A. J. Read, and R. M. Rolland. 2005. North Atlantic right whales in crisis. Science 309:561-562.

Laist, D. W., A. R. Knowlton, J. G. Mead, A. S. Collet, and M. Podestà. 2001. Collisions between ships and whales. Marine Mammal Science 17:35-75.

Moore, M. J., A. R. Knowlton, S. D. Kraus, W. A. McLellan, and R. K. Bonde. 2004. Morphometry, gross morphology and available histopathology in North Atlantic right whale (*Eubalena glacialis*) mortalities (1970-2002). Journal of Cetacean Research and Management 6:199-214.

Notarbartolo di Sciara, G., M. Zanardelli, M. Jahoda, S. Panigada, and S. Airoldi. 2003. The Fin Whale, *Balaenoptera physalus* (L. 1758), in the Mediterranean Sea. Mammal Review 33:105-150.

Panigada, S., G. Pesante, M. Zanardelli, F. Capoulade, A. Gannier, M.T. Weinrich. In press. Mediterranean fin whales at risk from fatal ship strikes. Marine Pollution Bulletin. SC/58/For Info. 12.

Weinrich, M.T., S. Panigada. 2006. ACCOBAMS Workshop on Large Whale Ship Strikes in the Mediterranean Sea, (Monaco, 14-15 November 2005). Report to the ACCOBAMS Secretariat, SC/58/BC3.