

WESTERN GRAY WHALE ADVISORY PANEL

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SATELLITE TAGGING

**Tagging Large Whales: A Review of Benefits and Concerns with
Particular Focus on Western Gray Whales**

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Tagging Large Whales: A Review of Benefits and Concerns with Particular Focus on Western Gray Whales

Progress Report to the WGWAP - April 2007

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Rationale

Tagging of whales has been used as a research tool to track the movements and behavior of individuals and, with specialized transmitters, monitoring of basic physiological parameters and environmental conditions. Coupled with the growing use of tags to study large whales, an increased awareness and call for collection of data regarding potential negative effects of tag attachment has emerged. In all cases, especially when dealing with endangered species or populations, the balance of benefit versus risk needs to be carefully evaluated in order to ensure the well-being of the tagged individual and, in turn, the population as a whole. While recent advances in technology and design have helped to reduce tag size, follow up research to assess the health, condition and wound healing of tagged individuals has, to a large degree, been minimal.

Background – Western Gray Whales

The western gray whale population is critically endangered and its continued ability to survive is of concern. Hunted to such low numbers in the mid 20th century that some thought it to be extinct, the population remains highly depleted today (Weller *et al.*, 2002; Reeves *et al.*, 2005; IISG, 2006;). The International Whaling Commission (IWC), the World Conservation Union (IUCN) and the Marine Mammal Commission (MMC) have each expressed serious concern about the status of this population and have called for urgent measures to be taken to help ensure its protection (see Baillie *et al.*, 2004; IWC, 2004a; Marine Mammal Commission, 2005; Reeves *et al.*, 2005).

Large-scale offshore oil and gas development programs near the western gray whale summer feeding ground off northeastern Sakhalin Island pose a variety of possible threats to the future survival of the population (Reeves *et al.*, 2005; IISG, 2006). Another significant threat to the population is incidental catches in coastal net fisheries within their migratory route (Kato *et al.*, 2005). In 2005, three female western gray whales (one mother-calf pair and one yearling) were killed in fishing nets on the Pacific shore of Japan during their northward migration. In January 2007, another female yearling was killed in a fishing net off northern Japan in Yoshihama Bay, Ofunato, Iwate Pref (Iwate Nippo, 2007). Entanglements in nets may also be happening elsewhere within the range. Projections from a recent population assessment suggest that the loss of one additional female per year, over and above the levels in 2005, will likely cause the population to decline to extinction (Cooke *et al.*, 2005; 2006).

Additional threats to the western gray whale population include continued mortality from an undetermined level of suspected poaching in the central portion of the range (Brownell and Kasuya, 1999; Baker *et al.*, 2002), as well as a potential increase in the likelihood of disturbance, exposure to pollution, and probability of ship strikes due to substantial nearshore industrialization and shipping congestion throughout the migratory corridor(s).

While annual monitoring and research of western gray whales on their summer feeding ground off Sakhalin Island has been ongoing since 1995, little is known about the migratory routes and breeding areas of the population. The possibility of using satellite tags to obtain information on migration corridors and wintering areas has been under discussion for a number of years. The IWC Scientific Committee has commented that the potential risks to individual whales from the tagging process need to be weighed against the potential benefits of the results of such a study. Given the critically endangered status of the population, it was agreed that before any such attempts be made on western gray whales, the process should be tested first on gray whales from the relatively large eastern population (IWC, 2004b).

In 2006, the IWC Scientific Committee reviewed the results of satellite tagging work carried out on eastern gray whales by B. Mate in Mexico and commented on a proposal by Mate to attach satellite tags on western gray whales to better evaluate their movements and anthropogenic risks. The proposal was to attach satellite tags to whales on the feeding grounds near Sakhalin. The sub-committee considered the proposal and agreed that such tags could yield useful information. However, they were uncomfortable with applying tags to reproductive females since they number so few, and recommended that only males be tagged. As a result of its discussions, the committee recommended that telemetry work be undertaken on western gray whales provided that it be carried out by experienced investigators (e.g., B. Mate) using proven techniques and that tags only be attached to known males (IWC, 2006).

More recently, the Western Gray Whale Advisory Panel (WGWAP), convened under the auspices of the IUCN, stated the following in their 2006 report (WGWAP, 2006):

After considerable discussion, the Panel agreed that in principle, telemetry work on western gray whales should be carried out provided that:

(a) it be under the direction of Mate using his tags;

(b) it be restricted to 'non-skinny' males and take into account the occurrence of males with rare and common haplotypes when the final tagging protocol is adopted (A. Bradford of the Russia-USA programme is able to identify animals in real time in the field);

(c) Mate submits to the Panel, for review, a detailed experimental protocol including measures to be taken to minimise the possibility of accidental injury or stress to the animals, and a proposal on sample size in terms of attempts as well as successful attachments;

- (d) a formal report is submitted to the Panel by the vet who determined the cause of death of the gray whale in Mate's Mexican study (see WGWAP 1/INF.12);*
- (e) the Panel receives and considers the report of the Society for Marine Mammalogy's workshop on whale tagging;*
- (f) experience from around the world on safeguards for the process (e.g. number of approaches allowed per day or other unit of time, total time spent with a particular animal) has been reviewed by the Panel – initial collation and drafts of associated recommendations to be carried out by Weller under contract to the Panel (IUCN);*
- (g) efforts have been made by the Panel to arrange contacts with appropriate range-state scientists for possible follow-up work;*
- (h) a final recommendation on protocols, time in the season to attempt tagging and sample size is not made until after consideration of the results of (c) – (g) and taking into account the view of the IWC Scientific Committee at its forthcoming meeting in Anchorage in May 2007; and*
- (i) weekly positional updates from transmitting tags are made available to the Panel (while maintaining the usual rights of data owners).*

In view of these provisos, the Panel recommends that the tagging work not take place until the 2008 season, noting that this has the additional advantage of an anticipated lower level of industrial activity in the Sakhalin region (at least with respect to Sakhalin-II).

Review Objectives

In keeping with the above, the following objectives are designed to fulfill requirements for the WGWAP while also serving as the basis for completion of the Society for Marine Mammalogy's (SMM) workshop on whale tagging held under the auspices of the MMC:

- (a) Synthesize the SMM workshop outcome, drawing on PowerPoint presentations and rapporteur notes
- (b) Review the relevant literature including gray literature
- (c) Consult by phone or e-mail with relevant experts to get their views and suggestions
- (d) Prepare the two draft reports that meet the respective needs of WGWAP and MMC. These will include draft recommendations that could then be considered for adoption, revision, rejection, or whatever, by the WGWAP and SMM workshop participants, respectively.

In a broader context, this review will outline and summarize (1) the benefits of tagging large whales and (2) potential physiological and behavioral effects related to tagging (especially as related to endangered species/populations).

Progress to Date

- (1) All of the materials and notes from the SMM/MMC workshop on large whale tagging, with exception of the presentation by Bruce Mate (due to him being in the field at the time of request), have been obtained and reviewed. These materials include the following:
 - PPT - Review 1999 workshop on North Atlantic right whales (M. Moore)
 - PPT - Overview - Current tagging technology and methods (B. Mate and M. Johnson)
 - PPT - Overview - Potential physiological/physical (N. Gales)
 - PPT - Overview - Behavioral effects (S. Kraus)
 - Rapporteur notes
- (2) Recommendations from the MMC to NMFS/NOAA on an assortment of scientific permit applications to attach tags to large whales have been obtained and reviewed.
- (3) Two reports focused on (1) the effects of tagging and (2) assessment of wounds caused by attachment of tags on North Atlantic right whales have been obtained and reviewed. These include:

A Workshop on the effects of tagging on North Atlantic right whales 2000. Kraus, S., Quinn, C. and Slay, C. New England Aquarium, Boston, MA (unpublished)

An Assessment of wounds caused by the attachment of remote sensing tags to north Atlantic right whales (*Eubalaena glacialis*): 1988-1997. Quinn, C.A., Hamilton, P.K, Kraus, S.D. and Slay, C.K. (xxxx) New England Aquarium, Boston, MA (unpublished).
- (4) Relevant literature (published, gray and unpublished) is presently being collected and synthesized.
- (5) Collaboration and communications with Mike Simpkins and Jeanie Drevenak at the MMC are ongoing.

Literature Cited

- Baillie, J.E.M., Hilton-Taylor, C. and Stuart, S.N. (Editors) 2004. 2004 IUCN Red List of Threatened Species. A Global Species Assessment. IUCN, Gland, Switzerland and Cambridge, UK. xxiv + 191 pp.
- Baker, C.S., Dalebout, M.L. and Lento, G.M. 2002. Gray whale products sold in commercial markets along the Pacific coast of Japan. *Mar. Mamm. Sci.* 18:295-300.

Brownell, R.L., Jr. and Kasuya T. 1999. Western gray whale captured off western Hokaido, Japan. Paper SC/51/AS25 presented to the IWC Scientific Committee. 7 pp.

Brownell, R.L., Jr. and Weller, D.W. 2001. Is the carrying capacity hypothesis a plausible explanation for the skinny gray whale phenomenon? Paper SC/53/BRG/20 presented to the IWC Scientific Committee. 8pp.

Cooke, J., Weller, D.W., Bradford, A.L., Burdin, A.M. and Brownell, R.L, Jr. 2005. Estimates and projections of the western gray whale population using an individually-based population model. Paper SC/57/BRG22 presented to the IWC Scientific Committee. 14pp.

Cooke, J.G., Weller, D.W., Bradford, A.L., Burdin, A.M., Brownell, R.L., Jr. 2006. Population assessment of western gray whales in 2006. Paper SC/58/BRG30 presented to the IWC Scientific Committee. 9pp.

Interim Independent Scientists Group (IISG) 2006. Report of the Interim Independent Scientists Group (IISG) on mitigation measures to protect western gray whales during Sakhalin II construction operations in 2006, Vancouver, British Columbia, 3-5 April 2006. International Union for Conservation of Nature (IUCN), Business and Biodiversity Program, [Available from <http://www.iucn.org>].

International Whaling Commission. 2004a. Resolution on western north Pacific gray whale. *Ann. Rep. Int. Whaling Comm.* 2004.

International Whaling Commission 2004b. Report of the workshop on the western gray whale: Research and monitoring needs, 22-25 October 2002, Ulsan, Korea. *J. Cetacean Res. Manage.* (suppl.) 6:487-500. Paper SC/55/Rep4 presented to the IWC Scientific Committee, May 2003, Berlin. 26pp.

International Whaling Commission 2006. Report of the Scientific Committee. Annex F Report of the Sub-Committee on Bowhead, Right and Gray Whales. St. Kitts, May-June, 2006.

Iwate Nippo 2007. Gray whale caught in fixed net – Yoshihama Bay, Ofunato. Iwate Nippo Newspaper, 20 January 2007 [In Japanese].

Kato, H., Ishikawa, H., Mogoe, T. and Bando, T. 2005. Occurrence of a gray whale, *Eschrichtius robustus*, in Tokyo Bay, April – May 2005, with its biological information. Paper SC/57/BRG18 presented to the IWC Scientific Committee. 11pp.

Marine Mammal Commission 2005. Annual Report to Congress 2005. Bethesda, MD.

Reeves, R.R., Brownell, R.L., Burdin, A., Cooke, J.C., Darling, J.D., Donovan, G.P., Gulland, F.M.D., Moore, S.E., Nowacek, D.P., Ragen, T.J., Steiner, R.G., VanBlaricom, G.R., Vedenev, A. and Yablokov, A.V. 2005. Report of the Independent Scientific Review Panel on the Impacts of Sakhalin II Phase 2 on Western North Pacific Gray

Whales and Related Biodiversity. IUCN, Gland, Switzerland and Cambridge, UK. 123pp
[Available from <http://www.iucn.org>]

Weller, D.W., Burdin, A.M., Würsig, B., Taylor, B.L. and Brownell, R.L., Jr. 2002. The western Pacific gray whale: a review of past exploitation, current status and potential threats. *J. Cetacean Res. Manage.* 4(1):7-12.

WGWAP 2006. Report of the western gray whale advisory panel. Prangins, Switzerland, 9-11 November 2006. 42pp.