A photographic match of a western gray whale between Sakhalin Island, Russia, and Honshu, Japan: the first link between the feeding ground and a migratory corridor

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ABSTRACT

Between 2005 and 2007, four female western gray whales were accidentally entrapped and died in Japanese set nets while migrating along the Pacific coast of Honshu, Japan. Photographs of these animals were compared to a photo-identification catalogue of western gray whales from their feeding ground off Sakhalin Island, Russia, to look for matches of individuals between the two areas. Although useable quality photographs were available for only one of the four whales from Japan, a confirmed match was made to a whale photographed off Sakhalin Island. This match represents the first link between the feeding ground and a migratory corridor and highlights the importance of multinational research collaboration in the formation of range-wide conservation measures to protect this critically endangered population.

KEYWORDS: GRAY WHALE; PHOTO-IDENTIFICATION; ENTRAPMENT; BYCATCH; CONSERVATION; NORTHERN HEMISPHERE; INCIDENTAL CATCHES; FEEDING GROUNDS; MIGRATION; PACIFIC OCEAN

INTRODUCTION

The western North Pacific population of gray whales (Eschrichtius robustus) is critically endangered (Baillie et al., 2004; Weller et al., 2002). The population is estimated to contain about 130 individuals of age one or older, of which only 23 are known to be reproductive females (Cooke et al., 2008; Weller et al., 2008). The population faces a number of potential anthropogenic threats throughout its range, primarily as a result of oil and gas development on its feeding ground off Sakhalin Island (Reeves et al., 2005) and fishing activities in much of its range. These threats include: collisions with ships, exposure to underwater noise (e.g. seismic surveys); modifications to physical habitat; and entrapment or entanglement in fishing gear (Brownell et al., 2007; Reeves et al., 2005; Weller et al., 2002).

Western gray whales migrate to summer feeding grounds off the northeastern coast of Sakhalin Island, Russia, from winter breeding grounds suspected to be in the South China Sea. While the coastal waters of eastern Russia, the Korean Peninsula and Japan have all been recorded as migratory corridors historically, the current migration route(s) of the population is not well understood (e.g. see review in Weller et al., 2002). Although western gray whales were hunted centuries ago by net fishermen off the eastern shores of Japan (Omura, 1984), present-day sightings in that country are uncommon (Kato et al., 2007). Of the 17 records since 1955 that exist in Japan, 76% (n=13) were reported from the Pacific (east) coast while 24% (n=4) came from the Sea of Japan (west) coast. Eleven (65%) of these records are from the period 1990 to 2007, with none reported between 1970 and 1982, suggesting that occurrence patterns, sighting effort or both have recently increased. All occurrences took place between January and July with the highest number of records (n=11) reported between March and May. Six (35%) of the 17 observations were reported as ‘entanglements’ by Kato et al. (2007). The importance of these records is twofold in that they: (1) provide recent evidence for use of the eastern and western shores of Japan as migration corridors for at least some whales; and (2) identify and highlight the problem of interactions with coastal fishing gear during migration.

Between 2005 and 2007, four female western gray whales were unintentionally entrapped and died in Japanese set nets (i.e. trap nets) while migrating off the Pacific coast of Honshu, Japan (Kato et al., 2006; Kato et al., 2007; 2005). These four animals included: (1) a 7.8m female found in the southeastern part of Tokyo Bay on 11 May 2005; (2) a large 12.7m female and a smaller 7.7m female (considered a mother-calf pair) found about 340km northeast of Tokyo (near Enoshima, Onagawa Peninsula, Miyagi Prefecture) on 15 July 2005; and (3) a 9.1m female found approximately 430km northeast of Tokyo (in Yoshihama Bay, Ofunato City, Iwate Prefecture) on 18 January 2007 (Fig. 1). Photographs of these entrapped animals were compared to a photo-identification catalogue of western gray whales (Weller et al., 2006; 1999) from their feeding ground in the Okhotsk Sea off Sakhalin Island, Russia, to look for matches of individuals between the two areas. The results of this comparison are presented herein.

METHODS AND RESULTS

Since 1995, a collaborative Russia-US photo-identification study of western gray whales on their summer feeding ground off the northeastern coast of Sakhalin Island, Russia, has been ongoing (Weller et al., 2008; Weller et al., 1999). Through 2006, 158 individually identified whales have been catalogued, including 59 whales first identified as calves

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Omura (1984) hypothesised that gray whales occurring off the Pacific coast of Japan could comprise a distinct stock or substock of the western population and Park (2001) went on to suggest that this supposed substock might summer off the coast of southern Kamchatka and migrate along the Kuril Islands. The evidence presented herein does not support the reasoning offered by Omura (1984) and Park (2001). In a broader context, this match highlights the importance of obtaining photographs (and genetic samples) from western gray whales outside of the Sakhalin Island feeding ground whenever possible and emphasizes how multi-national research collaboration can benefit range-wide conservation measures designed to best protect this critically endangered population.

ACKNOWLEDGEMENTS

Our appreciation goes to Greg Donovan and two anonymous reviewers for helpful comments on an earlier draft of this manuscript. We would also like to thank the numerous people who have provided assistance to the Russia-US research team in the field, especially: S. Blokhin, Y. Ivashchenko, H.W. Kim, A. Lang, S. Reeve and G. Tsidulko. We gratefully acknowledge the 2006-2007 support granted to the joint Russia-US research programme from (in alphabetical order): Alaska Sea Life Center, International Fund for Animal Welfare, International Whaling Commission, Ocean Park Conservation Foundation, University of Washington, US Marine Mammal Commission and the US National Marine Fisheries Service. Fieldwork in Russia was conducted as part of the Marine Mammal Project under Area V: Protection of Nature and the Organisation of Reserves within the US-Russia Agreement on Cooperation in the Field of Environmental Protection.

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Date received: April 2008
Date accepted: August 2008