

Plan for cetacean sighting surveys in the Antarctic in the 2010/11 season

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ABSTRACT

A systematic cetacean sighting survey for abundance estimation is planned in the Antarctic in the 2010/2011 season as a part of the Japanese Whale Research Program under special permit in the Antarctic (JARPA II). The research area is south of 60°S in the Antarctic Areas V and western part of VI, between 130°E and 145°W including the Ross Sea during December 2010 to February 2011. Two dedicated sighting survey vessels, *Shonan-Maru No.2* and *Yushin-maru No.3* will be used based on the survey procedures of “the International Whaling Commission / Southern Ocean Whale and Ecosystem Research (IWC/SOWER)” using both closing (NSC) and Passing with the Independent Observer (IO) survey modes. Distance and angle estimation training as well as some experiments will be conducted. Abundance of Antarctic minke whales will be estimated using these data and recent analysis methods of the Scientific Committee (SC). Biopsy skin sampling of blue, fin, humpback, southern right, and sperm whales will be opportunistically collected for assessing stock structure. Photographs for photo-identification studies of large cetaceans such as blue, southern right and humpback whales will also be taken. The cruise report will be prepared by researchers and submitted to the 63rd IWC/SC meeting.

KEY WORD: ANTARCTIC MINKE WHALE, SIGHTING SURVEY, ABUNDANCE

BACKGROUND

In the 2003/04 season, the IWC/SOWER completed the third circumpolar survey (CPIII). From the 2004/05 season, IWC/SOWER experiment cruises have been conducted in a limited research area to get additional information for analysis methods, and collection of the “Area base population estimates data” was interrupted until the 2009/10 season (Sekiguchi *et al.*, 2010).

At the 61st (2009) IWC meeting, the Scientific Committee agreed the new research program in the North Pacific. Japan is to provide the research vessel and crew for this program instead of for the Antarctic SOWER program. Based on this situation, it becomes difficult to get new population estimates and stock structure information in the Antarctic under the SOWER program.

On the other hand JARPAII which began in the 2005/06 season in the Antarctic has a dedicated sighting survey component by the line transect survey procedure for population estimation as well as the collection of stock structure information such as biopsy and photo-id experiments. In the 2010/11 season, we will carry out the following sighting survey plan based on IWC/SOWER survey procedures using two research vessels in the research area.

SURVEY PLAN

Priority for the survey

Priority of this sighting survey should be given to the abundance estimates for Antarctic minke whales and other baleen whale species.

Research vessels

Shonan-Mar No.2 (SM2) and *Yushin-Mar* No.3 (YS3) will be used. These vessels will work in close cooperation with JARPA II vessels in refueling and getting weather and sea ice information.

SM2 has been used for the IWC/IDCR and SOWER for over 25 years. YS3 is a recently-built vessel which is an improvement from SM2. Both vessels are equipped with a top barrel (TOP) and IO (IOP) platforms. Specifications and photographs of the SM2 and YS3 are shown in Table 1.

Research schedule

November 2010	Vessels leave Japan.
Late December 2010	Vessels start survey in the research area (approximately 80days in the Antarctic).
Early March 2011	Vessels end survey in the research area.
April 2011	Vessels return to Japan.

Research area

This survey will be conducted south of 60° S in the IWC management Area V (130°E-170°W) and the western part of Area VI (170°W-145°W) in a longitudinal span of 85° on the eastern side of the JARPA II research area including the Ross Sea in this season (Figure.1). The research area is divided into a northern strata and a southern strata in each Area.

Researchers on board

Two Japanese researchers will be onboard each vessel (personnel not determined). These researchers must have considerable experience conducting line transect surveys, biopsys and photo-id experiments in the Antarctic through the IWC/IDCR-SOWER and JARPA and JARPA II Programs.

Survey track line design

An improved type of survey trackline will be employed. The survey track line for each vessel will consist of two legs in the northern stratum at 5° longitudinal degree intervals and four legs in the southern stratum for 2°30' longitudinal degree intervals (Nishiwaki *et al.*, 2009). Two vessels alternately survey the northern and southern strata each crossing the track line at the way-point between two strata (Figure.3).

Track lines were decided based on the origin longitude line which was selected at random and the interval of legs and number of legs for the each stratum can be changed according to progress of the survey.

Primary searching activity

The survey is to be conducted 12 hours per day between 06:00 a.m. and 07:00 p.m. basically when the weather conditions are suitable for observations: visibility better than 1.5 n. miles and the wind speed less than 20 knots (northern strata) or 25 knots (southern strata). The vessel speed is planned to be 11.5 knots with slight adjustment to avoid vibration of the vessel.

The sighting survey will be conducted using (1) Closing mode (NSC) and (2) Passing with Independent Observer (IO) modes. Both survey modes follow the protocol endorsed for the IWC/SOWER surveys (Matsuoka *et al.*, 2003, IWC, 2008a and 2008b). There are two observer platforms in each vessels (a top barrel (TOP) and an independent observer platform (IOP)). On each platform, two primary observers conduct searching for cetaceans by using angle board and binoculars (7x), which include the distance estimate scales. Members of the two observer teams are fixed and operate in shifts of one hour. The observers report information to the upper bridge observers and researchers to record data.

Experiments

Distance and angle measurement training is to be conducted at the first stage of the survey. The experiment to evaluate measurement error is to be conducted twice around the middle of the survey and at the last stage of the survey following the protocol in 1998 (IWC, 2009b). When large cetaceans such as blue, humpback and southern right whales are found, photographs are to be taken for the photo-identification, and biopsy samples are to be collected.

Data entry and analysis

Researchers input data collected (weather, effort, sighting and experiments data) to the computer on board during survey. These data will be stored at the Institute of Cetacean Research (ICR) and submitted to the IWC secretariat based on the IWC/SC Guidelines (Hammond and Donovan, 2004). Scientists at the ICR also will analyze these data using the methods developed and modified by Hakamada *et al.*, (2006) and by Okamura *et al.* (2004).

Report

The cruise report will be prepared by researchers and submitted to the 63rd IWC/SC.

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Table 1. Specifications of the SM2 and YS3.

	<i>Shonan-Maru No.2</i>	<i>Yushin-Maru No.3</i>
Call sign	JFCF	7JCH
Length overall [m]	70.55	69.61
Molded breadth [m]	10.20	10.80
Molded draft [m]	5.2	5.3
Gross tonnage (GT)	712	742
Barrel height [m]	20.0	19.5
IO platform height [m]	14.0	13.5
Upper bridge height [m]	12.0	11.5
Bow height [m]	6.5	6.5
Engine power [PS / kW]	5500 / 4045	5280 / 3900
Max. sea speed [knots]	15.0	17.0
Max. trial speed [knots]	18.8	18.6

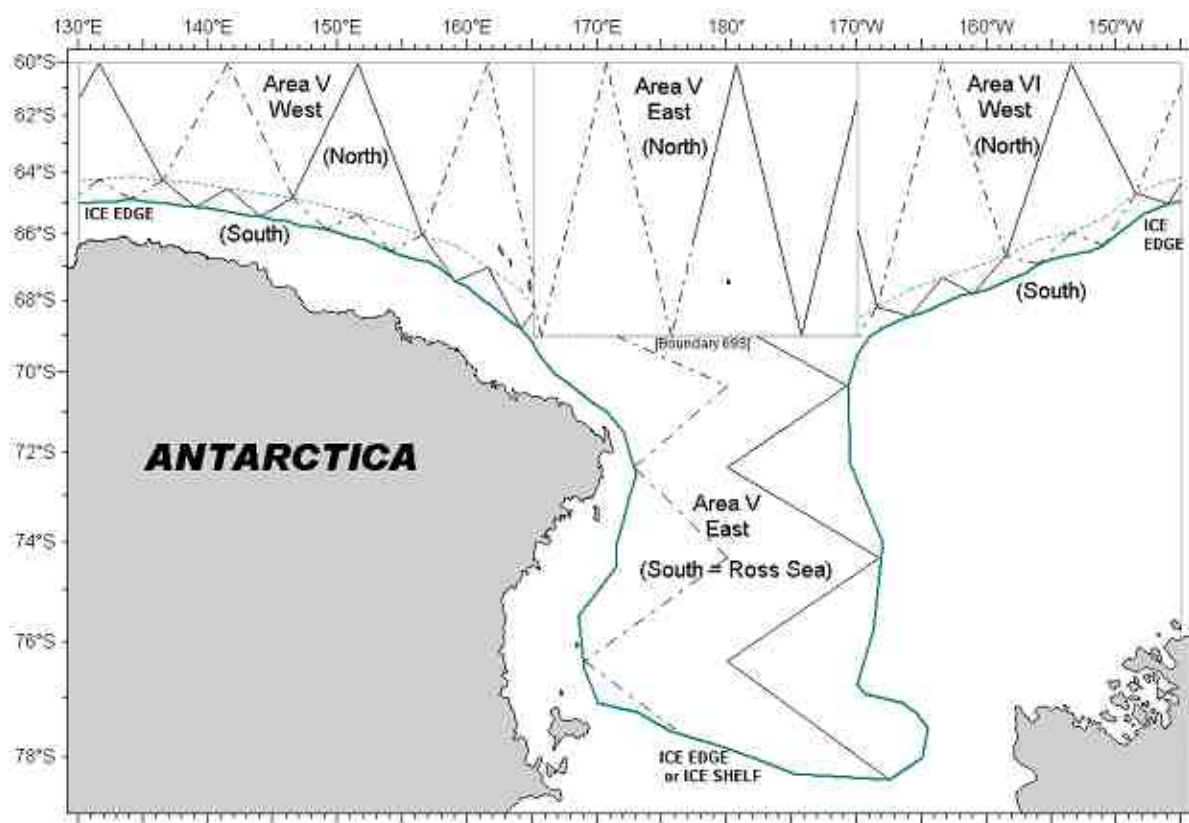


Figure.1. Research area and stratifications with pre-determined track line for this survey in 2010/11 season.

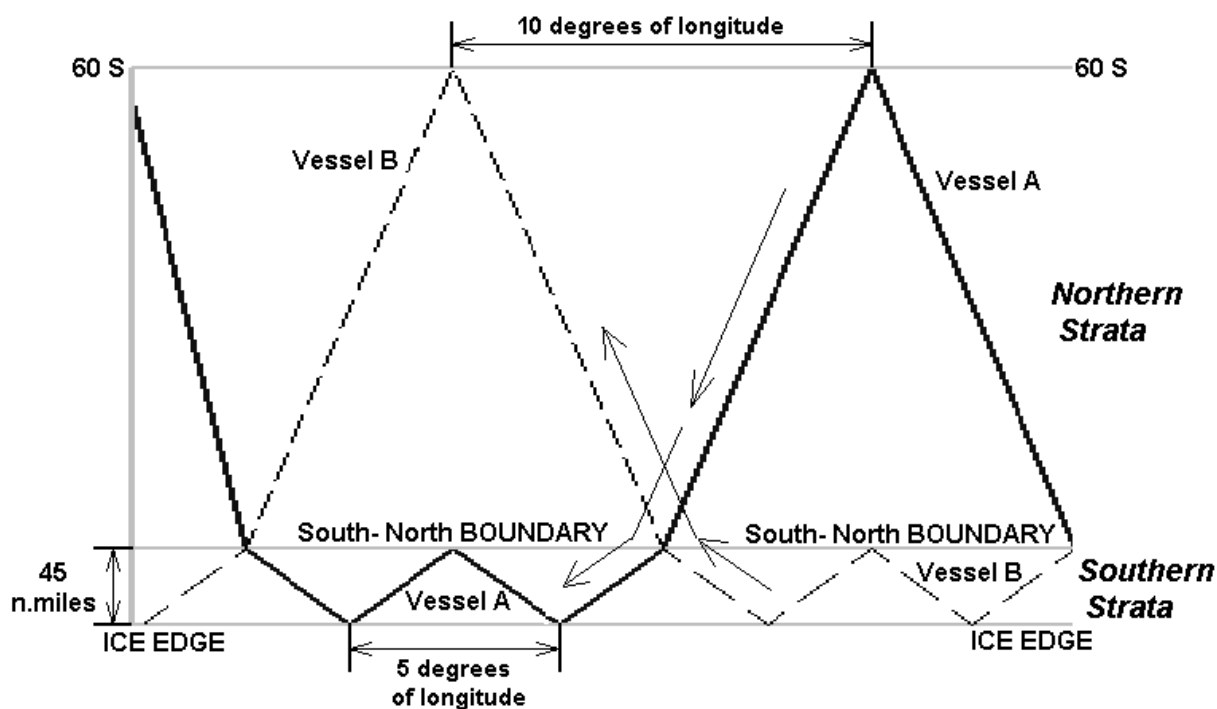


Figure. 2. Basic design of the pre-determined track line. Two vessels alternately survey the northern and southern strata each crossing the track line at the way-point between two strata.