

# Proposal for a cetacean sighting survey in the Antarctic in the 2013/14 austral summer season

KOJI MATSUOKA<sup>1</sup> TAKASHI HAKAMADA<sup>1</sup> AND TOMIO MIYASHITA<sup>2</sup>

<sup>1</sup>*Institute of Cetacean Research, Toyomi 4-5, Chuo-ku Tokyo, 104-0055 JAPAN*

<sup>2</sup>*National Research Institute of Far Seas Fisheries, Fukuura 2-12-4, Kanazawa, Yokohama, Kanagawa 236-8648, JAPAN*

Contact e-mail: [matsuoka@cetacean.jp](mailto:matsuoka@cetacean.jp)

## ABSTRACT

A systematic cetacean sighting survey for abundance estimation is proposed for the 2013/2014 austral summer season in the Antarctic as a part of the Japanese Whale Research Program under special permit in the Antarctic (JARPAII). The research area comprises the Area V and western part of Area VI between 130°E and 145°W, south of 60°S. The research period is from December 2013 to March 2014. The research vessels *Yushin-maru No 2* and *Yushin-maru No 3* will be used and the survey procedures will be as in the International Whaling Commission/Southern Ocean Whale and Ecosystem Research (IWC/SOWER). Distance and angle estimation training and several other experiments will be conducted. Abundance of Antarctic minke whales will be estimated using the data collected and recent analysis methods of the IWC Scientific Committee (SC). Biopsy skin sampling of blue, fin, humpback, southern right, and sperm whales will be collected opportunistically for investigating stock structure. Photo-identification studies of large cetaceans such as blue, southern right and humpback whales will be also conducted. A cruise report will be submitted to the 2014 IWC SC meeting.

KEY WORD: ANTARCTIC MINKE WHALE, SIGHTING SURVEY, LINE-TRANSECT, SURVEY VESSEL, ABUNDANCE

## BACKGROUND

JARPAII, which began during the 2005/06 austral summer season in the Antarctic, has a dedicated sighting survey component aimed mainly to collect sighting data for abundance estimation based on the line transect method. The sighting survey research plan for the 2012/13 season was presented to the 2012 IWC SC meeting (Matsuoka *et al.*, 2012) and was endorsed by the Committee (IWC, 2012). Unfortunately this dedicated sighting survey could not be conducted at all due to external violent disturbances by an anti-whaling group (Matsuoka *et al.*, 2013).

The dedicated sighting survey of the JARPAII is very important for the work of the IWC SC as this survey is the only one focused to collect systematic sighting data for abundance estimation of whale resources in the Antarctic. The previous IWC/IDCR and SOWER programs in the Antarctic were stopped at the 2009/10 season (Matsuoka *et al.*, 2003, Sekiguchi *et al.*, 2010). Since 2010 the IWC SC started a new sighting survey program in the North Pacific, which is known as IWC/Japan POWER (Pacific Ocean Whale and Ecosystem Research).

This paper presents a research plan for a dedicated sighting survey under JARPAII for the 2013/14 season in the Antarctic.

## SURVEY PLAN

Below is a tentative research plan. This plan might be modified later based on budget decisions by the Government of Japan. As discussed in SC/62, a small group was established for the survey design (eg. Cruise track design, survey mode etc.), which taking into account of consistency of the previous JARPAII and IWC/SOWER surveys and analyses (IWC, 2010).

### Research priority

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

### Research vessels

Two dedicated sighting survey vessels, *Yushin-Maru No.2* (YS2) and *Yushin-Maru No.3* (YS3) would be engaged in this survey. Both vessels are equipped with a top barrel (TOP), IO (IOP) and upper bridge platforms. Specifications of the YS2 and YS3 are shown in Table 1.

### **Research schedule**

December 2013	Vessels leave Japan.
Late December 2013	Start survey in the research area
Early March 2014	Complete survey in the research area.
March 2014	Vessels return to Japan.

### **Research area**

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

### **Researchers on board and oversight person**

Two Japanese researchers will be onboard each vessel (to be determined). These researchers must have considerable experience conducting line transect surveys, biopsy and photo-id experiments in the Antarctic through the IWC/IDCR-SOWER and JARPA and JARPA II Programs. Koji Matsuoka (Institute of Cetacean Research) will be the responsible person for this survey, same as in the 2011/12 and 2012/13 seasons and will act as the oversight person on behalf of the IWC SC.

### **Track line design**

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 at 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 2). Track lines are decided based on the original longitude line, which was selected at random. The interval of legs and number of legs for 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) mode. 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. IO mode is used under the appropriate number of primary observers depend on the availability of the budget.

### **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 (Branch and Butterworth, 2001a, 2001b, IWC, 2008b.). 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 (Matsuoka and Pastene, 2009).

### **Data entry and analysis**

Researchers input data collected (weather, effort, sighting and experiments data) to the computer on board during the survey. These data will be stored at the Institute of Cetacean Research (ICR) and sighting data for abundance estimation will be submitted to the IWC secretariat for the RMP based on the IWC/SC Guidelines (IWC, 2005). 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).

### **Cruise report**

The cruise report will be submitted to the 66<sup>th</sup> IWC/SC.

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Table 1. Specifications of the YS2 and YS3.

	<i>Yushin-Maru No.2</i>	<i>Yushin-Maru No.3</i>
Call sign	JPPV	7JCH
Length overall [m]	69.61	69.61
Gross tonnage (GT)	720	742
Barrel height [m]	19.5	19.5
IO platform height [m]	13.5	13.5
Upper bridge height [m]	11.5	11.5
Bow height [m]	6.5	6.5
Engine power [PS / kW]	5280 / 3900	5280 / 3900

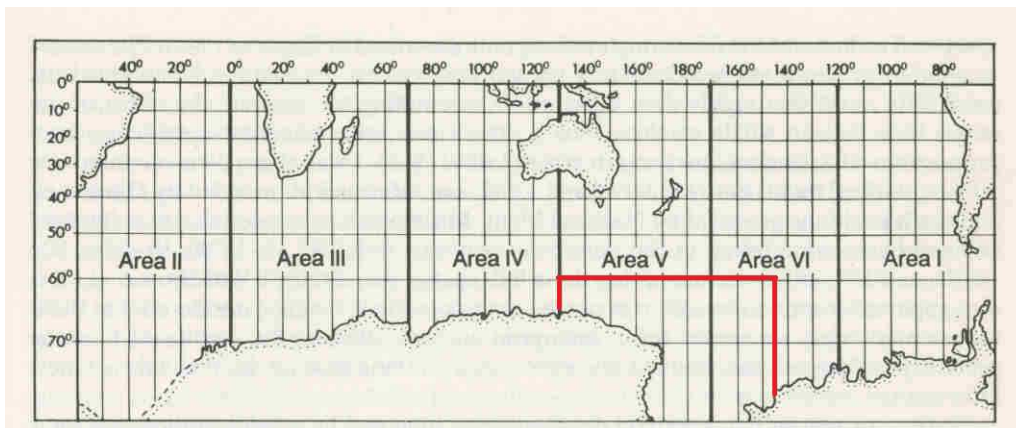


Figure. 1. Proposed research area for the 2013/14 dedicated sighting survey.

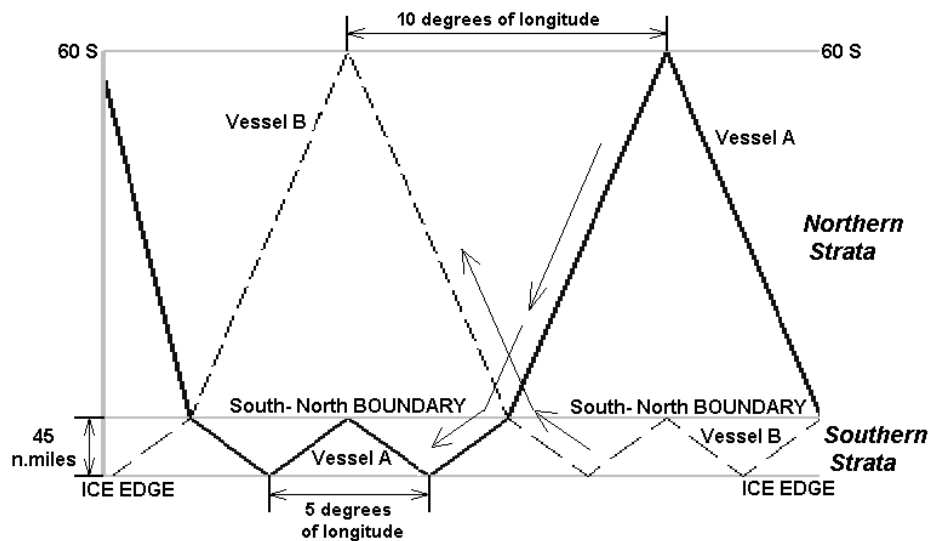


Figure. 2. Basic design of the pre-determined track line. Two vessels alternately survey the northern and southern strata each crossing the track line at the way-point between two strata.