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INTERNATIONAL WHALING COMMISSION

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## ABSTRACT

A systematic large-scale and vessel-based sighting survey was conducted in 2015 by Japan to examine the distribution and abundance of large whales in the western North Pacific. The research area was set between 35° N and 52° N and between 157° E and 170° E. The research area was divided into eastern and western strata by 163°30'E longitude. The survey was conducted between 23 April and 6 June. The research vessels *Yushin-Maru* and *Yushin-Maru No.2* were engaged for this survey. A total of 2,660.2 n.miles was searched in the research area. Successful coverage of the searching efforts of the planned cruise track line was 87.8% for the eastern stratum and 87.4% for the western stratum, respectively. In total, seven large whale species including blue (10 schools / 15 individuals), fin (19/25), sei (40/56), common minke (2/2), humpback (10/12), North Pacific right (2/3) and sperm (34/113) whales were sighted in the research area. Photo-ID images were collected from blue (12 individuals), humpback (9) and North Pacific right whales, respectively. Biopsy skin samples using a Larsen gun system were successfully collected from blue (6 individuals), fin (3), common minke (1), humpback (5) and North Pacific right (2) whales, respectively. These sighting data including 17 biopsy samples will contribute to the work on management and conservation of large whales by the IWC SC.

KEY WORD: BLUE WHALE, FIN WHALE, SEI WHALE, RIGHT WHALE, SPERM WHALES, SURVEY VESSEL, NORTH PACIFIC

## INTRODUCTION

In the western North Pacific dedicated cetacean sighting surveys based on the survey procedures of the International Whaling Commission/Southern Ocean Whale and Ecosystem Research (IWC/SOWER) have been conducted since 1995 as a part of the Japanese Whale Research Program under Special Permit in the Western North Pacific (JARPN/JARPNII). Based on the collected data the distribution patterns of large whales such as blue, fin, sei, Bryde's, common minke, humpback, North Pacific right and sperm whales, and abundance estimates of common minke, sei and Bryde's whales were investigated and reported to the IWC SC (IWC, 2001, 2010, 2016, Pastene *et al*., 2009, Hakamada *et al.*, 2009, Matsuoka *et al*., 2009, Murase *et al*., 2009). The National Research Institute of Far Seas Fisheries (NRIFSF) has also conducted dedicated sighting survey for cetaceans in the North Pacific since the 1980s (Buckland *et al.,* 1992; Miyashita *et al.*, 1995., Miyashita and Kato, 2004; 2005, Shimada, 2004, Kanaji, 2012). In 2015 the Government of Japan planned to continue the sighting surveys in the North Pacific. The collection of sighting data to estimate abundance and biopsy/photo-identification data to examine stock structure will contribute to the work on management and conservation of large whales by the IWC SC (IWC, 2010, 2015a, 2016). This paper reports the result of the Japanese dedicated sighting surveys conducted in 2015. The plan for this survey had been presented to the 2015 IWC/SC meeting (Matsuoka *et al*., 2015) and endorsed by the SC (IWC, 2015b).

## MATERIALS AND METHODS

The surveys were conducted in 2015 in the western North Pacific by the research vessel *Yushin-Maru* (YS1) and *Yushin-Maru No.2* (YS2). The vessels were equipped with a top barrel platform (TOP) and upper bridge. Specifications of these vessels are shown in Appendix A.

### Research area and period

The research area was set between 35° N and 52° N and between 157° E and 170° E, during 23 April to 6 June (Table 1). The research area was divided into eastern and western strata by 163°30'N longitude (Figures 1).

**Track line design**
The Survey blocks and pre-determined track lines are shown in Table 2 and Figure 1. The start point of the track lines are decided at random using the "Distance program (ver.6.2)" and the number of the line (width in the longitude) is decided by the research schedule based on the IWC survey guideline (IWC, 2012).

**Sighting procedure**
Passing mode with abeam closing was used, which followed the protocol endorsed for the IWC/SOWER cruise (IWC, 2008). There were two primary observers in the top barrel (TOP) and the upper bridge (captain and helmsman), respectively. On the TOP, two observers conducted searching for cetaceans by using scaled binoculars (7x). On the upper bridge, two primary observers also searched for cetaceans and recorded sighting information. The survey was conducted 12 hours per day from 6:00 a.m. to 6:00 p.m. basically when the weather conditions were suitable for observations: visibility better than 2.0 n.miles and wind speed less than 21 knots. The vessel searching speed was planned to be 11.5 knots with slight adjustment to avoid vibration of vessel.

**Research personnel**
One researcher was on board of each research vessel. The researchers had considerable experience on whale line transect surveys in the North Pacific and Antarctic as well as experience conducting photo-id and biopsy experiments through participation in the IWC/IDCR-SOWER and JARPN II Programs.

*Yushin-Maru* (YS1)
Masahiro Yamazaki (Japan) – sighting data, photo-ID, biopsy
*Yushin-Maru No.2* (YS2)
Hideto Honma (Japan)– sighting data, photo-ID, biopsy

**Experiments**
Distance and angle experiments were conducted earlier in the Surveys. The experiment to evaluate measurement error was conducted late in the survey following the protocol of the IWC/SOWER cruise (IWC, 2008). When large cetaceans such as blue, humpback and North Pacific right whales were found, photo-id experiments were conducted. Biopsy skin samples of blue, fin, sei, humpback, North Pacific right and sperm whales were opportunistically collected.

## RESULTS AND DISCUSSION

**Brief narrative of the Surveys**
Research vessels (YS1 and YS2) departed from Shimonoseki, Japan on 23 April and started the survey in the research area on 30 April (Table 1). The YS1 surveyed in the western stratum and YS2 surveyed in the eastern stratum. They surveyed on the pre-determined trackline from north to the south in each stratum (Table 2 and Figure 1). The vessels left the research area on 30 May and arrived at Tokyo on 6 June.

**Searching effort**
A summary of the period covered and sighting effort in each Survey block is shown in Table 3. A total of 1,524.2 n.miles (planned cruise track was 1,735.5 n.miles, 87.8 % covered) in the eastern strata, and 1,136.0 n.miles (planned cruise track was 1,299.7 n.miles, 87.4% covered) in the western strata were searched. A total of 2,660.2 n.miles were searched in the whole research area.

**Sightings**
Sightings made are summarized by the whole research period (Table 4) and sighting location of each species in the research area are shown in Figures 2a to 2f.

*Estimated Angle and Distance*
The Estimated Angle and Distance Training Exercise were conducted early in the Surveys. During the exercise the observers familiarized themselves with distance estimates from the TOP and Upper Bridge. The Estimated Angle and Distance Experiment were conducted on 16 May by YS1 and 29 May by YS2, respectively.

*Blue Whale*
10 schools and 15 individuals including 2 mother and calf pairs of blue whales were sighted in the research area (Table 4 and Figure 2a). Observed mean school size was 1.50 (n=10). Estimated body lengths of blue whales were between 19.1 and 26.3 meters except calves. The sea temperatures of the sighting position of these whales were 2.6°C and 17.4 °C, respectively. It was known that there were some sightings of this species in this area

during May to June between 1964 and 1990 (Miyashita *et al*., 1995). It is recognized that this area is still important area of this species in May. These information are important and useful for the future sighting survey planning in the North Pacific.

*Fin Whale*
Fin whales were mainly sighted in the northern part of the research area (Figure 2b). A total of 19 schools (20 individuals) including 2 mother and calf pairs of this species were sighted (Table 4). High density was observed between 165°E- 170°E (45°N-50°N). Observed mean school size was 1.32 (n=19). Range of the estimated body length confirmed was 17.2 – 21.8 meters except calves. Range of the sea temperature of the sighting position was 3.2°C – 17.2°C. All mother and calf pairs were sighted in the western part of the research area.

*Sei Whale*
Sei whales were mainly sighted (38 schools, 54 individuals) including 4 mother and calf pairs in the in the southern part of the research area (Table 4 and Figure 2c). Observed mean school size was 1.42 (n=38). Range of the estimated body length was 8.2 -15.4 meters except calves. Range of the sea temperature of the sighting position was 9.8°C - 15.3°C.

*Common minke whale*
Common minke whales were sighted (2 schools and 2 individuals) in the southern part of the research area (Figures 2c). No mother and calf pair was observed. Range of the estimated body length was 5.5-5.5 meters. Range of the sea temperature of the sighting position was 12.9°C – 15.9°C. In general, common minke whales were tended to distribute in the coastal area as surveyed in 2012 surveys (42 schools and 52 individuals sighted during 44 days coastal survey area, Matsuoka *et al*., 2012).

*North Pacific right whale*
North Pacific right whale was most rare species for baleen whales in the research area (2 school and 3 individual) and in the transit survey (a solitary school). They were sighted in the northern part of the research area (Figure 2d). No mother and calf pair was observed. Range of estimated body length was 13.0-15.0 meters. Range of the sea temperature of the sighting position was 2.3- 4.0°C. Head of this animal was photographed as Photo-ID data and 2 biopsy sampling was also collected (see Experiments).

*Humpback whale*
Humpback whales were most sighted frequently for baleen whales in the research area (66 schools and 88 individuals). They were mainly sighted in the western part of sub-area 8 (Figure 2). Observed mean school size was 1.33 (n=66). Five mother and calf pairs were observed. Range of the estimated body length was 11.2 – 14.3 meters except calves. Range of the sea temperature of the sighting position was 5.6°C – 16.7 °C.

*Sperm Whale*
Sperm whales were most frequently sighted and widely distributed in the whole research area (Tables 4 and Figure 4f). A total of 34 schools (113 individuals) were observed in the research area. Observed mean school size was 3.32 (n=34). There were no mother and calf pair was recorded. Because of limited closing to the schools, there was no information for body length and calves. Range of the sea temperature of the sighting position was 2.1°C - 21.6°C.

**Experiments**
*Photo-ID experiments*
Photographs were taken from 12 blue individuals, 6 fin, 9 humpback and 2 north Pacific right whales (Table 4 and 5). All photographs were stored at the ICR catalogue such as North Pacific right whale database (Matsuoka *et al*., 2014) and will be used for investigating their stock structure in the future.

*Biopsy*
All of the biopsy attempts were made using the Larsen gun system. Allocation of research time to biopsy attempts was initially restricted with the aim of maximizing the searching effort to cover the research area. A total of 17 biopsy samples were collected from 6 blue, 3 fin, 1 common minke, 5 humpback and 2 North Pacific right whale individuals (Table 6a). All samples were stored at the ICR laboratory and will be used for investigating their stock structure in the future.

**Report of the IWC oversight and data submission to the IWC**

Detailed report of the IWC oversight was shown in Appendix B. All equipment and the survey method were the same as in the past sighting surveys. The design of the survey blocks and track lines was improved to cover each survey block based on the IWC guidelines. The planned sighting procedure was in accordance with the guidelines agreed by the SC (IWC, 2012). Objectives and procedure of the survey were explained to the captains, officers, crew and researcher in advance. Sighting data was sent to the IWC secretary and confirmed on 28 September 2015.

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Table 1. Cruise itinerary of this survey.

| Date | Event |
|---|---|
| 23-April-2015 | Vessels depart Shimonoseki, Japan |
| 30-April | Vessels arrive at the starting point in the research area |
| 30-May | Vessels complete the research at 35º00'N (30 days in the research area) |
| 6-June | Vessels arrive Shiogama, Japan |

Table 2. Waypoint (WP) in the research area.

| West | WP | Lat. | | | | Long. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 101 | 47 | - | 43.7 | N | 159 | - | 28.9 | E |
| | 102 | 44 | - | 29.0 | N | 163 | - | 30.0 | E |
| | 103 | 41 | - | 14.0 | N | 157 | - | 0.0 | E |
| | 104 | 37 | - | 59.0 | N | 163 | - | 30.0 | E |
| | 105 | 35 | - | 0.0 | N | 157 | - | 32.0 | E |
| | | | | | | | | | |
| | | | | | | | | | |

| East | WP | Lat. | | | | Long. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 201 | 35 | - | 0.0 | N | 168 | - | 1.3 | E |
| | 202 | 35 | - | 59.3 | N | 170 | - | 0.0 | E |
| | 203 | 39 | - | 14.3 | N | 163 | - | 30.0 | E |
| | 204 | 42 | - | 29.3 | N | 170 | - | 0.0 | E |
| | 205 | 45 | - | 44.3 | N | 163 | - | 30.0 | E |
| | 206 | 48 | - | 59.3 | N | 170 | - | 0.0 | E |
| | 207 | 51 | - | 22.9 | N | 165 | - | 12.9 | E |

Table 3. Summary of the survey periods and searching effort (n.miles).

| Research vessels | Cruise period (y/m/d) | Research area period | Planned cruise track (n.miles) | Searching effort (n.miles) | Coverage of effort (n.miles) |
|---|---|---|---|---|---|
| Eastern (YS2) | 2015/4/23-6/6 | 2015/4/29- 5/30 | 1735.5 | 1,524.2 | 87.8% |
| Western (YS1) | 2015/4/23-6/6 | 2015/4/29- 5/30 | 1,299.7 | 1,136.0 | 87.4% |
| Total | 2015/4/23-6/6 | 2015/4/29- 5/30 | 3,035.2 | 2,660.2 | 87.6% |

Table 4. Number of sightings by species and stratum in the research area including transit survey between port and the research area.

| Species | Transit to R.A. | | Western stratum | | Eastern stratum | | Transit from R.A | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | sch. | Ind. | sch. | Ind. | sch. | Ind. | sch. | Ind. | sch. | Ind. |
| Blue whale | 0 | 0 | 5 | 7 | 5 | 8 | 0 | 0 | 10 | 15 |
| Fin whale | 0 | 0 | 5 | 6 | 14 | 19 | 0 | 0 | 19 | 25 |
| Sei whale | 0 | 0 | 22 | 29 | 16 | 25 | 0 | 0 | 38 | 54 |
| Bryde's whale | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 39 | 27 | 39 |
| Common minke whale | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 4 | 4 |
| Like minke | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| Humpback whale | 0 | 0 | 2 | 3 | 7 | 8 | 0 | 0 | 9 | 11 |
| North Pacific right whale | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 3 | 4 |
| Sperm whale | 0 | 0 | 15 | 60 | 19 | 53 | 5 | 7 | 39 | 120 |
| Unid. Large whale | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 3 | 4 | 6 |

Table 5. Number of photo-ID individuals photographed, by each stratum.

| Photo-ID | Western (YS1) | Eastern (YS2) | Total |
|---|---|---|---|
| Blue whale | 4 | 8 | 12 |
| Fin whale | 0 | 6 | 6 |
| Humpback whale | 3 | 6 | 9 |
| North Pacific right whale | 0 | 2 | 2 |

Table 6a. Number of biopsy samples collected, by each stratum.

| Biopsy | Western (YS1) | Eastern (YS2) | Total |
|---|---|---|---|
| Blue whale | 2 | 4 | 6 |
| Fin whale | 2 | 1 | 3 |
| Common minke whale | 0 | 1 | 1 |
| Humpback whale | 2 | 3 | 5 |
| North Pacific right whale | 1 | 1 | 2 |

Table 6b. Number of biopsy samples collected, by each stratum. Including one mother and calf pair in the Southern strata.

| Vesl. | Form | Date | Sight | Species | Scl. | Sighted Position | | | | Start time | End time | Experiment | Est. body length | number | number | number | Sample | Shooting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | number | yyyymmdd | No. | | size | Lat. | [min.] | Long. | [min.] | of BX | of BX | duration | of target ind. [m] | of shoot | of hit | of sample | No. | equipment | Notes. |
| YS1 | BY101 | 20150429 | 2 | N.P. Right | 1 | 47 | 1815 | 159 | 5986 | 09:48:16 | 10:02:31 | 00:14:15 | 13.0 | 1 | 1 | 1 | J15NYS1R001 | Larsen | |
| YS1 | BY102 | 20150429 | 4 | Blue | 1 | 46 | 3611 | 161 | 120 | 16:13:29 | 16:26:22 | 00:12:53 | 22.0 | 1 | 1 | 1 | J15NYS1B001 | Larsen | |
| YS1 | BY103 | 20150501 | 1 | Humpback | 2 | 44 | 4846 | 163 | 623 | 07:37:53 | 07:53:54 | 00:16:01 | 12.5 | 1 | 1 | 1 | J15NYS1H001 | Larsen | |
| YS1 | BY104 | 20150504 | 1 | Fin | 1 | 43 | 5299 | 162 | 1204 | 11:41:33 | 12:40:35 | 00:59:02 | 18.5 | 2 | 0 | 0 | - | Larsen | |
| YS1 | BY105 | 20150504 | 3 | Humpback | 1 | 43 | 4306 | 161 | 4976 | 14:26:40 | 14:39:36 | 00:12:56 | 13.1 | 1 | 1 | 1 | J15NYS1H002 | Larsen | |
| YS1 | BY106 | 20150504 | 5 | Fin | 2 | 43 | 3957 | 161 | 4404 | 16:25:01 | 17:12:30 | 00:47:29 | 20.0 8.8 | 5 | 2 | 2 | J15NYS1F001<br>J15NYS1F002 | Larsen | Mother & calf |
| YS1 | BY107 | 20150513 | 2 | C.minke | 1 | 40 | 3000 | 158 | 2795 | 16:55:10 | 17:10:17 | 00:15:07 | 5.5 | 1 | 1 | 0 | - | Larsen | |
| YS1 | BY108 | 20150518 | 2 | Blue | 1 | 39 | 2854 | 160 | 3162 | 08:28:09 | 09:00:44 | 00:32:35 | 25.0 | 1 | 0 | 0 | - | Larsen | |
| YS1 | BY109 | 20150524 | 11 | C.minke | 1 | 37 | 1852 | 167 | 2549 | 14:05:54 | 14:11:22 | 00:05:28 | 5.5 | 1 | 1 | 1 | J15NYS1M001 | Larsen | |
| YS1 | BY110 | 20150525 | 1 | Blue | 2 | 36 | 5228 | 168 | 1821 | 12:08:00 | 12:56:03 | 00:48:03 | 15.5 25.2 | 3 | 2 | 2 | J15NYS1B002<br>J15NYS1B003 | Larsen | Mother & calf |
| YS1 | BY111 | 20150525 | 2 | Fin | 1 | 36 | 4469 | 168 | 2556 | 14:18:56 | 14:50:11 | 00:31:15 | 20.8 | 2 | 0 | 0 | - | Larsen | |
| YS1 | BY112 | 20150527 | 1 | Blue | 1 | 36 | 3250 | 169 | 4229 | 08:48:12 | 09:24:22 | 00:36:10 | 19.1 | 4 | 1 | 1 | J15NYS1B004 | Larsen | |
| YS2 | BY201 | 20150430 | 1 | Humpback | 1 | 51 | 1899 | 165 | 2487 | 06:50:24 | 07:06:49 | 00:16:25 | 12.8 | 0 | 0 | 0 | - | Larsen | |
| YS2 | BY202 | 20150430 | 2 | Humpback | 2 | 51 | 1535 | 165 | 3355 | 08:00:34 | 08:16:50 | 00:16:16 | 12.8 12.6 | 6 | 1 | 1 | J15NYS2H01 | Larsen | |
| YS2 | BY203 | 20150430 | 3 | Blue | 2 | 51 | 532 | 165 | 4850 | 09:39:32 | 10:20:59 | 00:41:27 | 25.5 22.8 | 3 | 2 | 1 | J15NYS2B01 | Larsen | |
| YS2 | BY204 | 20150430 | 5 | Blue | 1 | 50 | 5401 | 166 | 970 | 12:32:08 | 12:49:10 | 00:17:02 | 22.5 | 0 | 0 | 0 | - | Larsen | |
| YS2 | BY205 | 20150430 | 6 | Humpback | 1 | 50 | 4935 | 166 | 2046 | 13:39:08 | 14:14:52 | 00:35:44 | 11.2 | 1 | 0 | 0 | - | Larsen | |
| YS2 | BY206 | 20150430 | 9 | Fin | 2 | 50 | 3453 | 166 | 5423 | 16:55:40 | 17:20:57 | 00:25:17 | 17.2 | 1 | 1 | 1 | J15NYS2F01 | Larsen | |
| YS2 | BY207 | 20150501 | 2 | Humpback | 1 | 50 | 1985 | 167 | 2132 | 07:56:26 | 08:25:39 | 00:29:13 | 12.7 | 1 | 0 | 0 | - | Larsen | |
| YS2 | BY208 | 20150501 | 5 | Humpback | 1 | 49 | 1892 | 169 | 1861 | 17:03:04 | 18:08:04 | 01:05:00 | 11.8 | 5 | 1 | 1 | J15NYS2H02 | Larsen | |
| YS2 | BY209 | 20150506 | 9 | Fin | 2 | 48 | 1008 | 168 | 1923 | 17:09:31 | 18:00:00 | 00:50:29 | 21.8 | 1 | 0 | 0 | - | Larsen | |
| YS2 | BY210 | 20150508 | 1 | Humpback | 1 | 47 | 751 | 166 | 1344 | 10:05:12 | 10:18:51 | 00:13:39 | 10.2 | 1 | 1 | 1 | J15NYS2H03 | Larsen | |
| YS2 | BY211 | 20150509 | 3 | N.P. Right | 1 | 46 | 1202 | 164 | 2411 | 10:28:20 | 10:47:54 | 00:19:34 | 13.1 | 3 | 1 | 1 | J15NYS2R01 | Larsen | |
| YS2 | BY212 | 20150509 | 4 | Fin | 1 | 45 | 5180 | 163 | 4449 | 15:45:04 | 15:54:55 | 00:09:51 | 20.8 | 0 | 0 | 0 | - | Larsen | |
| YS2 | BY213 | 20150526 | 5 | Blue | 2 | 37 | 4692 | 163 | 531 | 17:24:32 | 18:48:36 | 01:24:04 | 26.3 12.5 | 5 | 2 | 1 | J15NYS2B02 | Larsen | |
| YS2 | BY214 | 20150528 | 1 | Blue | 2 | 37 | 1220 | 161 | 5486 | 15:28:25 | 15:53:29 | 00:25:04 | 26.3 23.5 | 2 | 0 | 0 | - | Larsen | |
| YS2 | BY215 | 20150528 | 2 | Blue | 1 | 37 | 437 | 161 | 3911 | 17:42:27 | 18:01:16 | 00:18:49 | 22.6 | 1 | 0 | 0 | - | Larsen | |

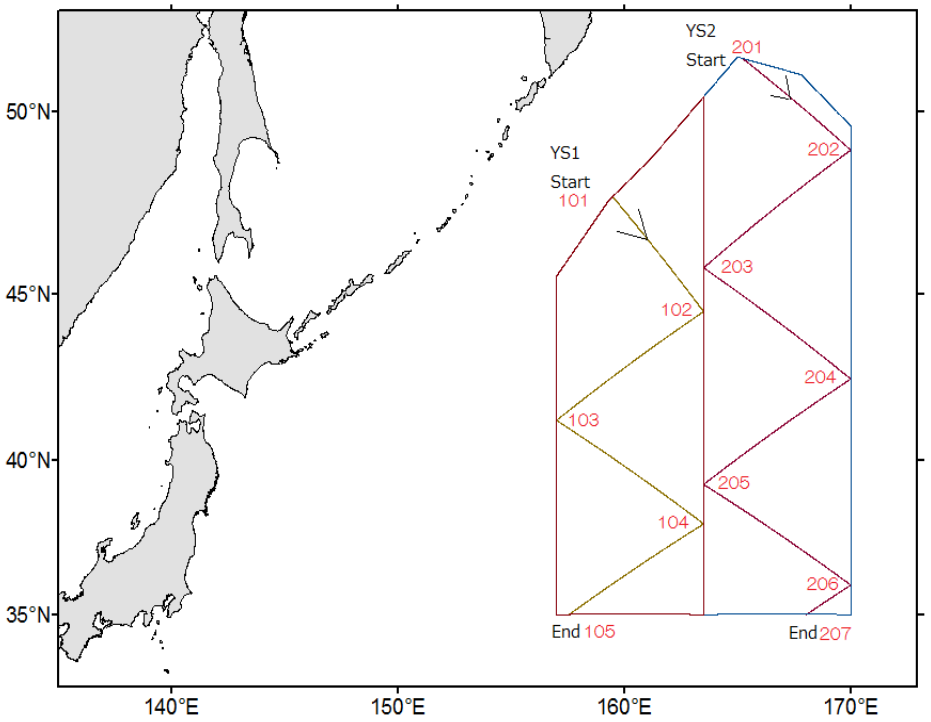


Figure 1. The 2015 research area and the track lines with their order for the western and eastern strata.

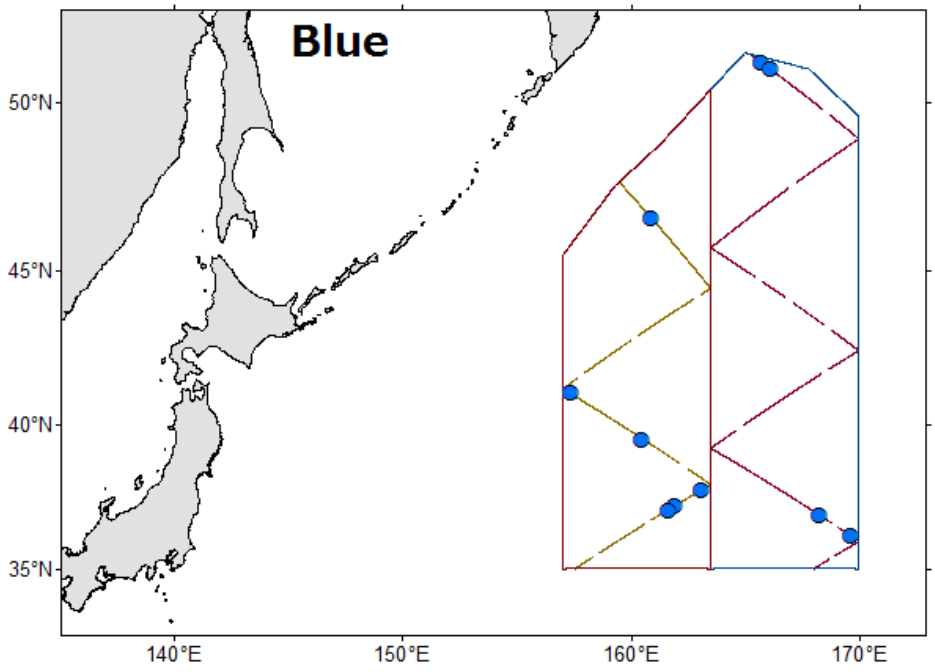


Figure 2a. Sighting locations of blue whales in the research area.

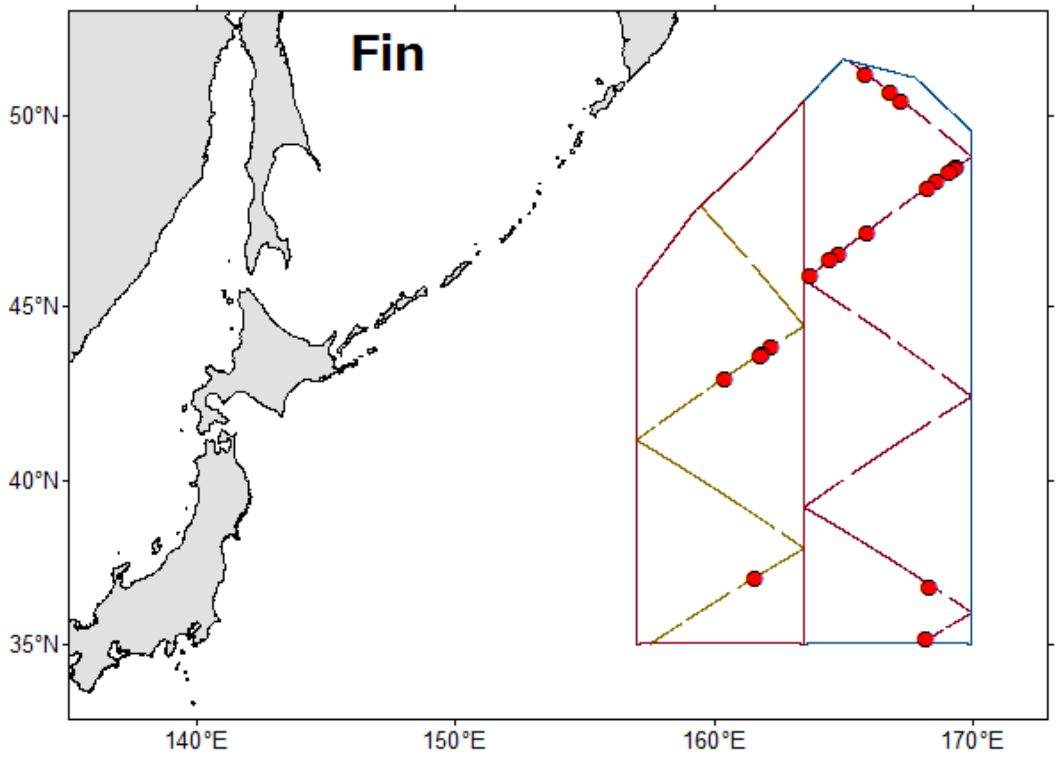


Figure 2b. Sighting locations of fin whales in the research area.

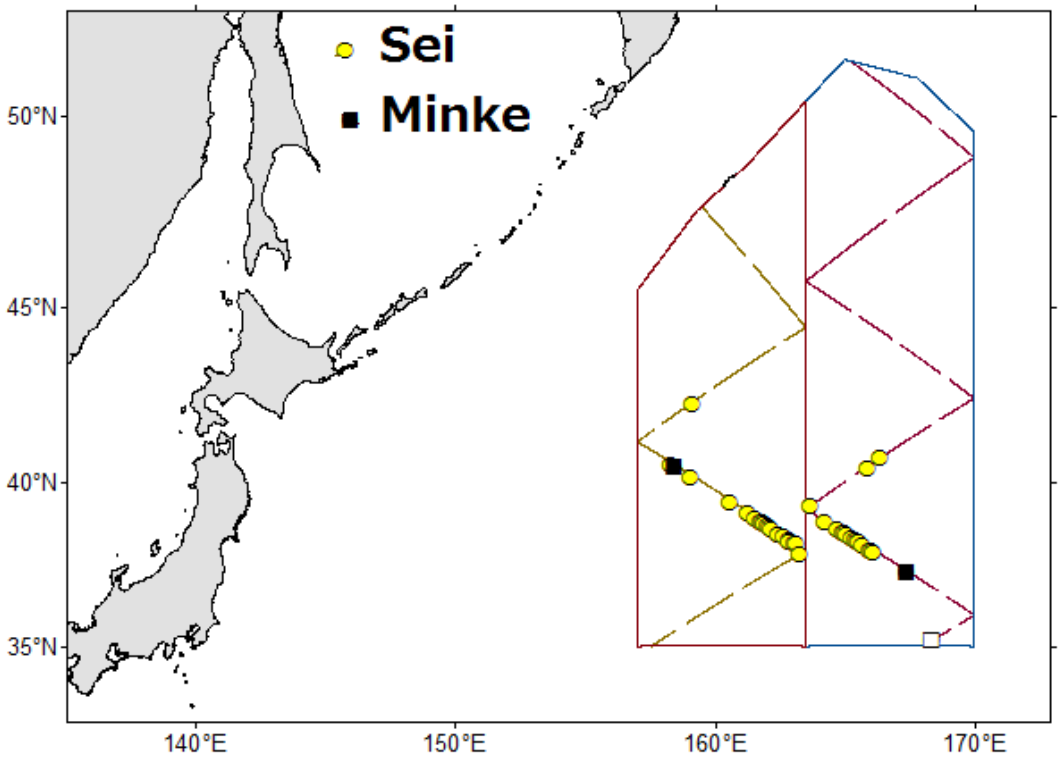


Figure 2c. Sighting locations of sei (yellow circle), common minke (black square) and 'like minke' (white square) whales in the research area.

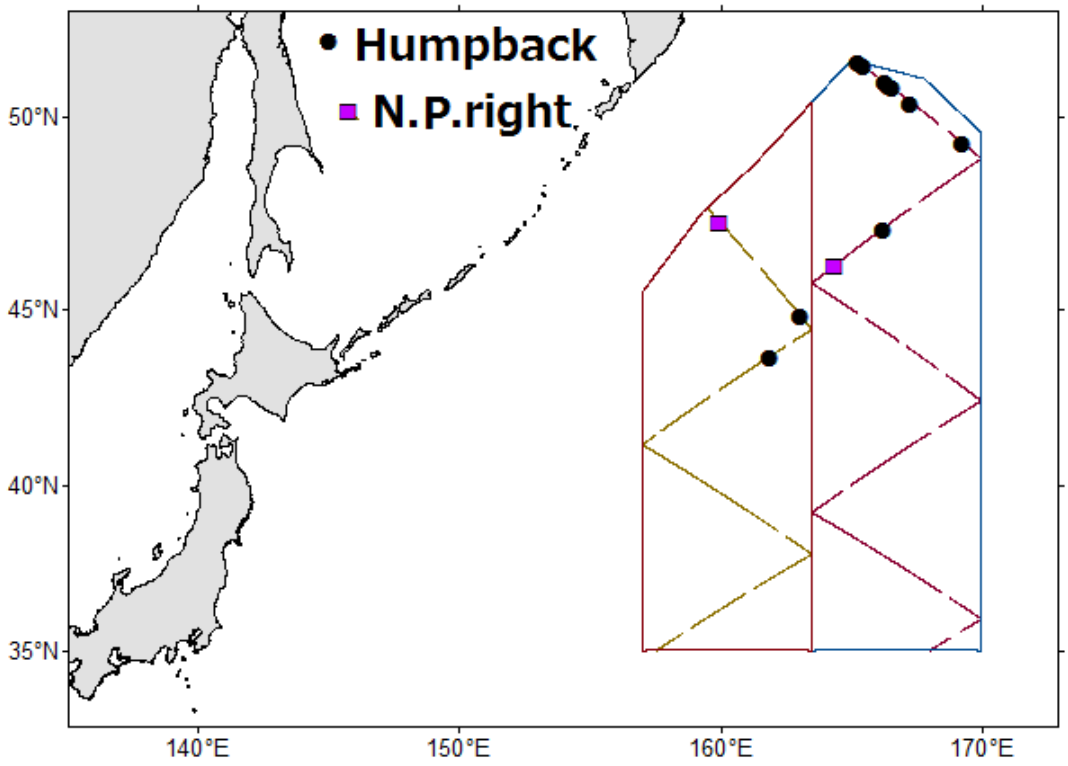


Figure 2d. Sighting locations of humpback (black circle) and North Pacific right (purple square) whales in the research area.

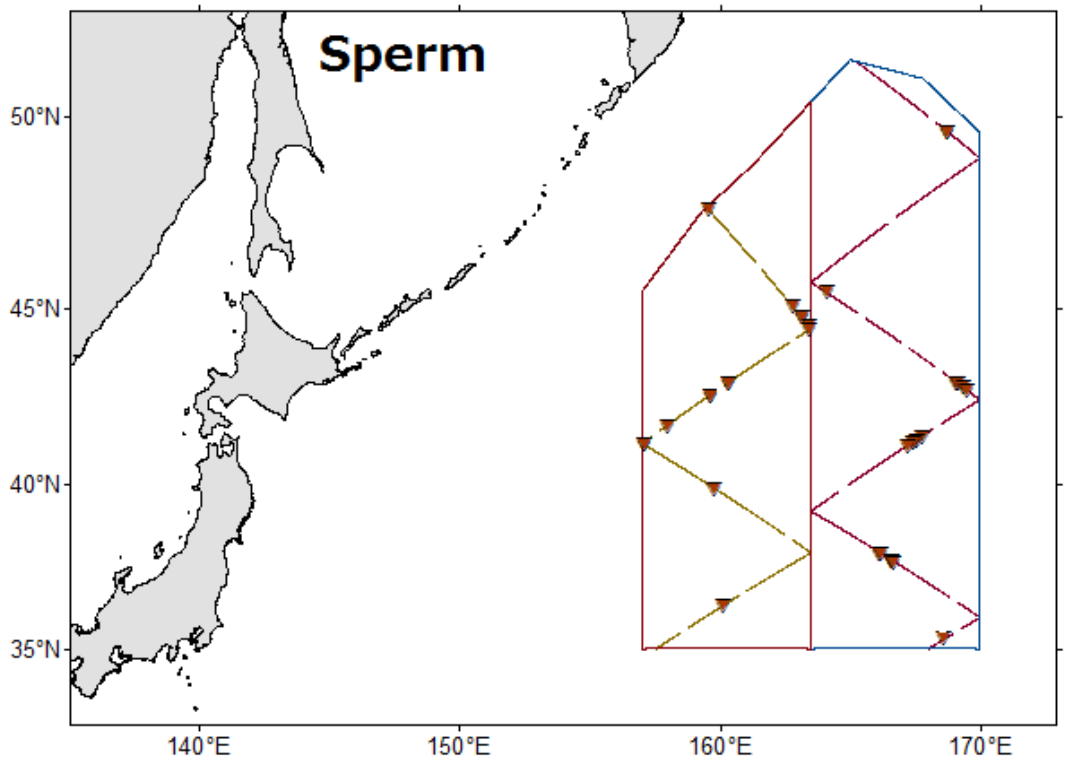


Figure 2f. Sighting locations of sperm (triangle) whales in the research area.

## APPENDIX A. SHIP SPECIFICATIONS AND CREW LIST OF *YUSHIN-MARU AND YUSHIN-MARU NO.2*.

Ship photo:


Ship specifications:

| | *Yushin-Maru* | *Yushin-Maru No.2* |
|---|---|---|
| Call sign | JLZS | JPPV |
| Length overall [m] | 69.61 | 69.61 |
| Gross tonnage (GT) | 724 | 747 |
| TOP barrel height [m] | 19.5 | 19.5 |
| IO barrel 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 |

Crew list:

| | *Yushin-Maru* | *Yushin-Maru No.2* |
|---|---|---|
| Researcher | Masahiro Yamazaki | Hideto Honma |
| Captain | Sasaki Yasuaki | Atsuo Abe |
| Chief Officer | Motonori Aki | Koji Maki |
| Second Officer | Takehiro Konagai | Ryuichi Moriyama |
| Junior Second Officer | Chikara Ohmukai | - |
| Third Officer | Hiroya Mure | - |
| Chief Engineer | Hidetoshi Saito | Ikuo Narasaki |
| First Engineer | Shigeki Miyamoto | Keisuke Mizofuchi |
| Second Engineer | Koji Takamatsu | Yoshimasa Koga |
| Third Engineer | Takashi Matsubara | Yoshiaki Kimura |
| Chief Operator | Semii Takeshi | Jun Kuwaoka |
| Second Operator | Hisaji Suzuki | Kenji Tsuda |
| Boatswain | Takuitsu Abe | Kenji Wakatsuki |
| Quartermaster | Kazuyuki Sugiyama | Takashi Kurogi |
| Quartermaster | Kazumitsu Kurisu | Takahiro Nagai |
| Quartermaster | Yamato Sekine | Akihiko Tsuji |
| Quartermaster | Atsuo Yamasaki | - |
| Sailor | Naoto Suzuki | Kaimu Sato |
| Sailor | Yuto Yamagata | - |
| Chief Steward | Seichi Hamashita | Yoshiki Namiguchi |
| Steward | Tadashi Abe | Kosuke Kato |

Appendix B. **Oversight for the 2015 Japanese dedicated sighting survey in the western North Pacific**

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The plan of this survey was presented to the 2015 IWC/SC meeting (Matsuoka *et al*., 2015) and endorsed by the Scientific Committee (IWC, 2015). On behalf of the IWC Scientific Committee I carried out the oversight work during the 2015 Japanese dedicated sighting survey in the western North Pacific. This is a brief report of the oversight activities conducted on that survey.

**Preparatory work**

The pre-cruise meeting carried out at Tokyo and at Shimonoseki on 22 April 2015. The survey organizers, researchers and crewmembers also participated in that meeting. During the meeting the organizes explained the objective of the survey and the procedure to be used for both sightings and experiments. The planned sighting procedure was in order with that agreed by the Scientific Committee. The research vessels *Yushin-Maru* and *Yushin-Maru No.2* were engaged for this survey.

The research area was set between 35° N and 52° N and between 157° E and 170° E. The research area was divided into eastern and western strata by 163°30'N longitude. The survey was conducted between 29 April and 30 May. The vessels were assigned to cover pre-determined transects in these areas by the passing with abeam closing mode. Two experienced researchers were assigned to work on board each vessel.

**Oversight method and period**

The research activities of the vessels were oversight by e-mail communication and by examining the daily report prepared by each researchers on board. In some instances Inmarsat satellite telephone calls were made for further clarification of the activities, procedure and sightings made. Further, geographical positions and weather information of each vessel were tracked each other per day. Over sight activity were carried between 23 April and 3 June.

**Brief narrative of the oversight vessel**

Research vessels (YS1 and YS2) departed from Shimonoseki, Japan on 23 April and started the survey in the research area on 29 April. The YS1 surveyed in the western stratum, and YS2 surveyed in the eastern stratum. The vessels left the research area on 30 May and arrived at Tokyo on 6 June.

**Post-cruise meeting**

I participated in a post-cruise meeting held on 7 June 2015. Survey organizers, researchers and the Captain participated in that meeting. Apart to discuss and assess the results of the surveys, the researchers engaged in the verification and checking of data.

**Conclusion**

All equipment and the survey method of each vessel were the same as in the past sighting surveys. The design of the survey strata and track lines were improved to cover each strata completely. The planned sighting procedure was in accordance with the guideline agreed by the SC (IWC, 2012). Objectives and procedure of the survey were explained to the captains, officers, crew and researcher in advance. I then endorse the information and data obtained during the 2015 Japanese dedicated sighting survey in the western North Pacific.

**Reference**

IWC. 2012. Requirements and Guidelines for Conducting Surveys and Analysing Data within the Revised Management Scheme. J. Cetacean Res. Manage. (Suppl2.) 11:507-18.

IWC. 2015. Report of the Scientific Committee. Annex G. 23pp. San Diego, USA, 2015. [Paper available at the IWC Office].

Matsuoka, K., Hakamada, T. and Miyashita, T., 2015. Research plan for a cetacean sighting surveys in the Western North Pacific in 2015. SC/66a/IA11. 3pp. [Paper available at the IWC Office].