SC/68A/ASI/12 Rev1

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INTERNATIONAL WHALING COMMISSION

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**ABSTRACT**

The cetacean survey was conducted in the north western part of the Sea of Okhotsk in 2018. The vessel is a stern trawl type research vessel with a barrel for observation. The objective of the survey is to obtain information on distribution and abundance of large whales using the normal closing mode. The period of survey was from 5 August to 7 September (35 days), and the vessel covered the research area (north of the Sakhalin Island to 57°N, west of 142°E including the Shantar Islands. During the research distance of 1308,7 n.miles by closing mode for large cetaceans and the research area to 819,26 n.miles by passing mode during transit, the following species were sighted – common minke whale (17 schools – 17 animals), killer whale (7-31), dalli type Dall's porpoise (19-76), unidentified type Dall's porpoise (49-166), white whale (3-94), bowhead whale (2-2), unidentified large cetacean (6-8),
KEY WORD: SIGHTING SURVEY, SEA OF OKHOTSK

## INTRODUCTION

### Research objectives

The plan of 2018 survey was presented to the last IWC/SC meeting (Gushcherov *et al*., 2018). The survey was conducted in the north-west Sea of Okhotsk by Russian scientists of Marine Mammals Laboratory of the TINRO-Center.

The main objective of the survey was to record the information on distribution and abundance of cetaceans based on the IWC standard sighting survey method. When sightings of humpback, northern right whale, grey and killer whales were made, photo identification was tried. Distance and angle estimation training and experiment were conducted.

### Research area and cruise track

The 2018 research area is set in the north-west Sea of Okhotsk north of the Sakhalin Island including the Russian territorial waters around the Shantar Islands (Figure 1). The northern and the eastern boundary is 57°N and 142°42'E (northern tip of the Sakhalin Island), respecitively. The research area was divided into two large areas, namely, eastern and western areas. The coordinates of waypoints are given in Table 1 (WP1 – WP40). There were minor changes in the route due to restricted areas and adverse weather conditions. In general, this did not affect the overall picture of the plan presented previously to the last IWC/SC meeting.

**SHORT INFORMATION ON THE CRUISE**

**Cruise itinerary**

| | Activity | Dates | Number of days |
|---|---|---|---|
| 1 | Pre-cruise meeting. Preparation for the survey, embarking the equipment | 01-03.08.2018 | 3 days |
| 2 | Departing from Vladivostok | 05.08.2018 | - |
| 3 | Transit from Vladivostok to research area | 05 - 11.08.2018 | 6 days |
| 4 | Sighting survey in research area | 11 - 29.08.2018 | 19 days |
| 5 | Observers' distance and angle estimation training with a bouy | 17.08.2018 | - |
| 6 | Experiment on observers distance and angle estimation with a buoy | 25.08.2018 | - |
| 7 | Transit to Vladivostok | 29.08. – 07.09.2018 | 10 days |
| 8 | Vessel arrived to Vladivostok | 07.09.2018 | |
| 9 | Post-cruise meeting in Vladivostok | 10.10.2018 | |

**Research vessel**

The TINRO-Centre research vessel *ВЛАДИМИР САФОНОВ* (*VLADIMIR SAFONOV*) was used during the survey. It is equipped with a barrel where two observers can conduct searching. On the upper bridge, scientists can also observe and record sighting, effort and weather information. Number of crew was 17. Specification and photo of the vessel is shown in Appendix 1.

**Attending scientists**

Five scientists from Russia and one from Japan participated in the cruise. All scientists have much experience in the marine mammal research survey. Names and responsibilities are as follows;

1. Pavel S. Gushcherov (TINRO-Centre) Cruise leader/Chief Scientist - sighting, photo-ID
2. Petr A. Tiupeleev (TINRO-Centre) – sighting
3. Igor A. Naberezhnykh (TINRO-Centre) - sighting
4. Sergey V. Makrak (TINRO-Centre) - sighting
5. Nikita O. Voloshanskiy (TINRO-Centre) – sighting, meteo specialist

**Pre-cruise meeting**

On 3 August, the pre-cruise meeting was held in the TINRO-Center, Vladivostok, chaired by Evgeniy V. Yakush (Deputy Director, TINRO-Center). Meeting participants were: Evgeniy V. Yakush (TINRO-Center), Bek-Bulat (Lead Manager, Research fleet base of TINRO-Center), P.I. Kazantsev (deputy of head of the Marine expeditions department, TINRO-Center), O.N. Katugin (Head of the International department of Relations, TINRO-Center) and all scientists on board. IWC/SC document of cruise plan (Gushcherov *et al*., 2018), an extract of the last IWC/SC report about the cruise plan, and survey manual for researchers which was originally based on that for the

IWC/POWER cruise were distributed. At the meeting issues related to the preparation of the vessel and equipment for the forthcoming expedition were discussed.

**Survey method**

In the research area, the normal closing mode was primarily used for large cetaceans and killer whales, but the vessel passed for other small cetaceans. Two scientists conduct searching mainly by naked eye, sometimes using binocular (15x50 with stabilizer or 7x50) as supplementary measures. Three observer teams with determined members operated in two hours shifts. The survey was conducted for a maximum of 14 hours per day (from 6 a.m. to 20 p.m.) when the weather conditions were suitable for observations: visibility better than 1.5 n.miles and the wind speed less than 7.5m/s. The vessel speed was about 9 knots with slight adjustment to avoid vibration of vessel, and about 10 knots while closing.

During the transit, the normal passing mode survey was conducted.

In general, research effort began from 6 a.m. and ended to 20 p.m. (maximum 14 hours), but considering the time of sunrise and sunset, the period was changed to keep enough brightness. Time-zone was kept the same as that of Vladivostok (GMT +10 hours) throughout the cruise.

When a sighting was made, the initial sighting information such as estimated distance and angle to the sightings, species and school size etc. was reported to a researcher on the upper bridge for record. The angle was estimated using the angle board in front of each researcher (Figure 2). The effort record was recorded by a researcher on the upper bridge. The hourly weather record was made by a scientist. Sea surface water temperature (SST) was measured from water drawn using a small bucket. Wind information was quoted from the sensor in the bridge.

When a sighted animal seemed to be large cetacean, one of the researchers on the barrel made instructions to the officer in the bridge about speed and/or course change using a transceiver. After the sighting was approached, the species, group size, estimated length, number of calves present and behavior were determined and recorded. All record sheets (sighting, effort and weather) were originally the same forms as those for IWC/POWER cruises.

**Species identification**

Guidelines of species identification were based on the IWC-POWER methods for classification of identification (Anon., 2014). Whale body, shape of blow, surfacing and other behavioral pattern were potential cues for species identification. Because of not closing for small cetaceans except for killer whales during the normal closing mode in the research area and passing mode in transit, it was difficult to identify color type of Dall's porpoises and thus the proportion of unidentified type of the species became large (see below).

**School size estimation**

Guidelines for school size estimation were also based on the IWC-POWER methods (Anon., 2014). For estimation of school size, a binocular was potentially used. School size was estimated after approaching within 1.0 n.miles for large cetaceans, but for small cetaceans it was estimated when the school was at the closest distance during passing. When it was difficult to determine the school size, especially for small cetaceans, the minimum, the maximum and the best estimate of school size were recorded.

**Effort coverage and weather conditions**

Some statistical data on meteorological conditions during the period from 05 August to 06 September 2018 are given in Tables 2 to 5. The air temperature varied from 9,0 ° C to 28,0 ° C, and the surface temperature of the water from 11,0 ° C to 24,0 ° C (Table 2). The minimum water temperature of 11,0 ° C was recorded on August 16, with the drift of the «Vladimir Safonov» in the fog north of the coast near Bolshoy Shantar island.

Unsuitable conditions for studies due to high waves were observed for 4,8% of the survey period (Table 3). Of the total number of observations, 83,8% were made under good weather conditions (clear, cloudy and overcast), and 16,2% were made under bad weather conditions (rain, drizzle, fog) (Table 4).
There were few days of calm wind — 2.8% of the survey period, northeast winds prevailed for 33.7% of the time, and southeast winds were observed for 21.3% of the survey (Table 5).
The overall length of accounting tacks passed in the survey area in normal closing mode with the observations was 1349,3 nautical miles by (Table 6). For objective reasons, 5 nautical miles of the accounting tack were not passed. In addition, 819,26 nautical miles were tracked during passing mode.

## RESULTS OF SIGHTINGS

### Sighting summary

Table 7 shows the summary of sightings recorded in the research area and during transit. Two baleen whales (common minke whale and bowhead whale) and three toothed whales (killer whale, Dall's porpoise and white whale) were confirmed. Sighting positions of species identified were plotted in Figures 4a-f.

### Detailed sightings of each species

*Common minke whale*

A total of 17 schools (17 animals) of common minke whales was sighted throughout the survey (Figure 4 a). 14 schools (14 animals) in the research area – and 3 schools (3 animals) on transit. The whales met only in single. Compared to previous years, a greater number of minke whales were recorded in the current season.

*Bowhead whale*

Only 2 bowhead whales were met (2/2) in the Ayan-Shantar region (Figure 4 b).

*Killer whale*

During the voyage, killer whales were more common in open waters than near the shore. Generally, those were groups of 3-4 animals, although large groups with calves were seen several times. Most often the group consisted of an adult male, female, and several calves. It should be noted that it is rather difficult to distinguish a female from a male among the young individuals, since the dorsal fin specific to males grows slowly. It is difficult to notice a cub next to a female, as he often presses against the side of the mother and therefore is not clearly visible.

Killer whale groups avoided meeting with the vessel. However, individual animals, mainly males, actively moved closer to the vessel, examined it and quickly went aside. In this regard, it was difficult to make photographs of animals suitable for photo-identification, due to the large distance. Killer whales were noted only in the research region of the Sea of Okhotsk during this survey. In total, 31 animals (7 schools) were registered in the survey area (Figure 4 c).

*White whale*

During the vessel passing in transit mode to the survey area, a white whale gathering was observed in the Amur estuary. White whale was scattered throughout the visible area. We observed both singles and small groups. In total, 94 animals (3 schools) were counted during the voyage (Figure 4 d).

*Dall's porpoise*

Dall's porpoises in the survey area were found only in open waters, far from the coast. They avoid coastal waters, apparently due to muddy waters, strong currents and a number of floating objects (grass, branches, logs, trees, etc.). The sights of of the Dall's porpoises identified by type are shown in Figure 4e, and sightings of Dall's porpoises of unidentified type are given in Figure 4 f. Total number of sighted unidentified type Dall's porpoises – 49 schools/166 animals, the total number of Dalli type Dall's porpoises – 19 schools/76 animals.

**PHOTO-IDENTIFICATION**

An attempt was made to photograph all the large whales encountered during the cruise. Unfortunately, the bowhead whales could not be photographed due to the large distance and short observation period. No pictures of killer whales suitable for photo ID were made due to poor sunlight, strong coastal currents and animals actively avoiding the vessel approach.

**Estimated angle and distance training**

Distance and angle estimation training was carried out on August 17$^{th}$ prior to sighting in the research area. Time elapsed – 1 hour 46 min (Figure 5).

**Estimated angle and distance experiment**

Experiment was carried out on August 25$^{th}$ prior to sighting in the research area. Time elapsed – 2 hours 23 min. The data are filled into the table and handed to the Japanese side. The time spent on the training and experiment is given in the table 6.

**DISCUSSION AND RECOMMENDATIONS**

According to previous data (Melnikov, 2006; Burdin et all., 2009), bowhead whales stay mainly in the high sea, and can also be found in the areas of the Shantar Islands and the Penzhina bay. When conducting survey in Ayan-Shantar region, we registered only 2 bowhead whales in the eastern sub-block. The animals were sighted in high sea, however, the whales were not encountered in shallow waters near the coast, the whales were not encountered on shallow depth.

In the current expedition, minke whales were encountered both on the pre-determined tacks in the Sea of Okhotsk and on transit in the Sea of Japan. In the research area, minke whales preferred to keep near open spaces, far from the coast. During the transition from the Sea of Japan to the Sea of Okhotsk, it was registered 1-2 miles from the coast. The recorded animals were solitary, which is typical for this species of cetaceans.

In the current season, the killer whale was registered only in the research area. Animals were registered both in the coastal and in the open parts of the sea. The killer whale was found in several groups from 2 to 15 animals. Gender identified - 6 males, 9 females and calfs. 31 killer whales were registered during the entire expedition.

In the current expedition we noted white whales during transit from the Sea of Japan to the Sea of Okhotsk in the Sakhalin Bay. The mammals were recorded only for half an hour during passing of their main concentrations in the Zotov bank.

The Dall's porpoise still prevails in terms of occurrence among other cetaceans, both this year and in past years.

In August-September 2018, cetaceans were unevenly distributed in the Ayan-Shantar region of the Sea of Okhotsk. Total 394 cetaceans of various species registered. Apparently, Ayan-Shantar district is unproductive in terms of cetacean observations. Many tidal currents and protected areas make it difficult to conduct research. However, the data obtained are unique and valuable for estimating the total number of cetaceans in the waters of the Sea of Okhotsk.

For the future cruise, the following matters are recommended for improvement:

a. Light binocular without image stabilizers to be constantly held in hand using mono pole.

b. Powerful telephoto lens with focal length longer than 500 mm required to take more valuable photographs for photo ID.

## CONCLUSIONS

2018 year was the fourth year when the systematic sighting survey was carried out on R/V «Vladimir Safonov». Marine mammals lab specialists have gained necessary experience to carry out similar surveys based on the method authorized by the IWC/SC.

## ACKNOWLEDGEMENTS

TINRO-Center Marine mammals lab staff would like to express their gratitude to Japanese scientists and especially to Dr. Tomio Miyashita for constant help, valuable advice and consultations while gathering the scientific materials on R/V «Vladimir Safonov» in Okhotsk Sea in 2015-2018.

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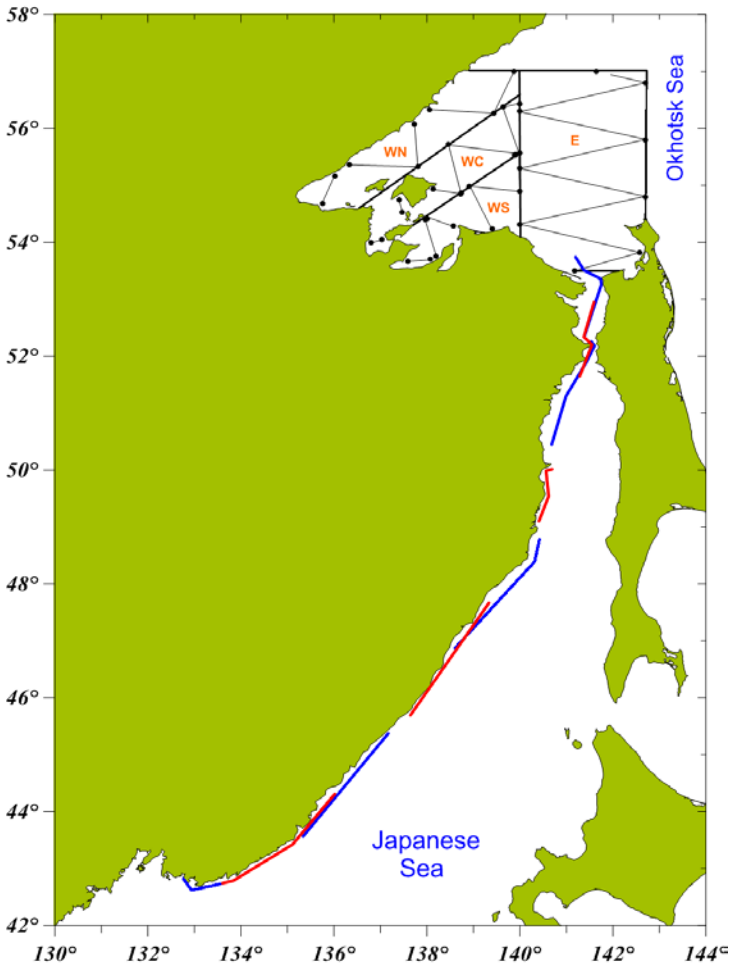


Figure 1. Research area and transit route for *ВЛАДИМИР САФОНОВ* (*VLADIMIR SAFONOV*) in the 2018 Okhotsk cetacean sighting survey. The blue line indicates the ship's route to the research area, the red line – indicates.

Table 1. Waypoints and distance for the 2018 sighting survey in the Sea of Okhotsk

| WP | From | | | | WP | To | | | | Distance (nmi) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Latitude (N) | | Longitute(E) | | | Latitude (N) | | Longitute(E) | | |
| | deg | min | deg | min | | deg | min | deg | min | |
| **Block E** | | | | | | | | | | |
| 1 | 57 | 0.00 | 141 | 39.01 | 2 | 56 | 48.39 | 142 | 42.00 | 36.4 |
| 2 | 56 | 48.39 | 142 | 42.00 | 3 | 56 | 18.52 | 140 | 0.00 | 94.3 |
| 3 | 56 | 18.52 | 140 | 0.00 | 4 | 55 | 48.65 | 142 | 42.00 | 95.4 |
| 4 | 55 | 48.65 | 142 | 42.00 | 5 | 55 | 18.78 | 140 | 0.00 | 96.5 |
| 5 | 55 | 18.78 | 140 | 0.00 | 6 | 54 | 48.90 | 142 | 42.00 | 97.7 |
| 6 | 54 | 48.90 | 142 | 42.00 | 7 | 54 | 19.03 | 140 | 0.00 | 98.8 |
| 7 | 54 | 19.03 | 140 | 0.00 | 8 | 53 | 49.24 | 142 | 34.87 | 95.8 |
| 8 | 53 | 49.24 | 142 | 34.87 | 9 | 53 | 30.00 | 141 | 11.34 | 70.1 |
| | | | | | | | | | Subtotal | 685.0 |
| **Block WN** | | | | | | | | | | |
| 10 | 57 | 0.00 | 139 | 52.22 | 11 | 56 | 16.97 | 139 | 26.99 | 45.2 |
| 11 | 56 | 16.97 | 139 | 26.99 | 12 | 56 | 20.07 | 138 | 3.39 | 46.6 |
| 13 | 56 | 5.51 | 137 | 44.97 | 14 | 55 | 20.01 | 137 | 48.17 | 45.5 |
| 14 | 55 | 20.01 | 137 | 48.17 | 15 | 55 | 22.25 | 136 | 20.65 | 49.9 |
| 16 | 55 | 10.76 | 136 | 0.93 | 17 | 54 | 41.01 | 135 | 45.31 | 31.1 |
| | | | | | | | | | Subtotal | 218.3 |
| **Block WC** | | | | | | | | | | |
| 18 | 56 | 26.43 | 140 | 0.00 | 19 | 56 | 23.49 | 139 | 38.30 | 12.4 |
| 19 | 56 | 23.49 | 139 | 38.30 | 20 | 55 | 32.70 | 139 | 54.26 | 51.6 |
| 21 | 55 | 32.64 | 139 | 54.15 | 22 | 55 | 43.13 | 138 | 28.28 | 49.7 |
| 22 | 55 | 43.13 | 138 | 28.28 | 23 | 54 | 51.96 | 138 | 43.34 | 51.9 |
| 24 | 54 | 52.80 | 138 | 44.79 | 25 | 54 | 56.37 | 138 | 8.66 | 21.1 |
| 26 | 54 | 45.87 | 137 | 24.03 | 27 | 54 | 32.73 | 137 | 28.52 | 13.4 |
| 28 | 54 | 3.41 | 137 | 2.62 | 29 | 54 | 0.37 | 136 | 48.98 | 8.6 |
| | | | | | | | | | Subtotal | 208.6 |
| **Block WS** | | | | | | | | | | |
| 30 | 55 | 34.57 | 140 | 0.00 | 31 | 55 | 32.07 | 139 | 53.15 | 4.6 |
| 31 | 55 | 32.07 | 139 | 53.15 | 32 | 54 | 54.13 | 140 | 0.00 | 38.1 |
| 32 | 54 | 54.13 | 140 | 0.00 | 33 | 54 | 59.04 | 138 | 55.67 | 37.4 |
| 33 | 54 | 59.04 | 138 | 55.67 | 34 | 54 | 14.79 | 139 | 24.70 | 47.4 |
| 35 | 54 | 17.32 | 138 | 34.04 | 36 | 54 | 25.38 | 138 | 0.81 | 21.0 |
| 37 | 54 | 24.57 | 137 | 58.71 | 38 | 53 | 45.59 | 138 | 12.88 | 39.9 |
| 39 | 53 | 42.28 | 138 | 4.34 | 40 | 53 | 40.90 | 137 | 35.89 | 16.9 |
| | | | | | | | | | Subtotal | 205.3 |

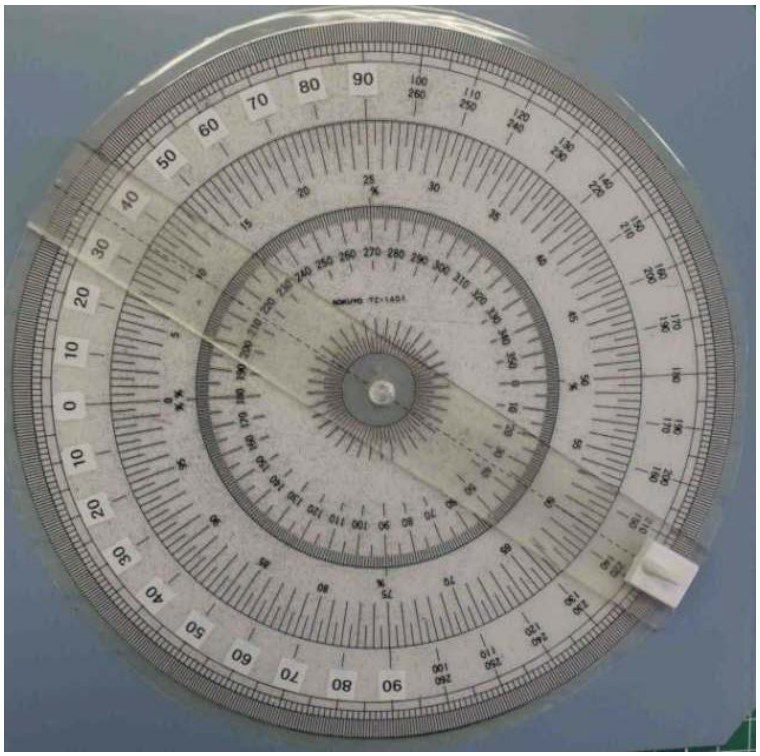

Figure 2. Angle board to support the angle estimation.

Table 2. Air and SST temperatures during to 2018/8/6 – 9/6

| Item | Air temperature | SST |
|---|---|---|
| Maximum | 28,0 | 24,0 |
| Minimum | 9,0 | 11,0 |
| Average | 15,0 | 16,1 |

Table 3. Observation of the sea state during to 2018/8/6 – 9/6

| Sea state | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Observation | 22 | 163 | 174 | 79 | 42 | 19 | 3 | 0 | 502 |
| % | 4,3 | 32,4 | 34,6 | 15,6 | 8,3 | 3,7 | 1,1 | 0 | 100 |

Table 4. Observation of weather condition during to 2018/8/6 – 9/6

| Weather | Clear | Slightly cloudy | Cloudy | Mainly cloudy | Rain | Fog | Total |
|---|---|---|---|---|---|---|---|
| Observation | 72 | 72 | 96 | 181 | 45 | 36 | 502 |
| % | 14,3 | 14,3 | 19,1 | 36,1 | 9,0 | 7,2 | 100 |

Table 5. Observation of wind speed and direction during to 2018/8/6 – 9/6

| Wind speed (knots) | Wind direction | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | breeze | E | SE | N | NE | S | SW | W | NW | Total | % |
| breeze | 14 | - | - | - | - | - | - | - | - | 14 | 2,8 |
| 1-3 | - | 3 | 3 | - | 9 | 3 | 8 | 1 | 4 | 31 | 6,3 |
| 4-6 | - | 3 | 36 | - | 37 | 11 | 44 | 4 | 26 | 161 | 32,2 |
| 7-10 | - | 8 | 32 | - | 41 | 4 | 13 | 2 | 18 | 118 | 23,3 |
| 11-16 | - | 7 | 14 | - | 41 | 1 | 7 | - | 7 | 77 | 15,4 |
| 17-21 | - | 5 | 11 | - | 24 | 1 | 6 | - | 7 | 54 | 10,8 |
| 22-27 | - | 8 | 5 | - | 6 | - | 1 | - | 1 | 21 | 4,2 |
| 28-33 | - | 2 | 4 | - | 8 | - | 3 | - | 3 | 20 | 4,0 |
| 34-40 | - | - | 2 | - | 3 | - | - | - | - | 5 | 1,0 |
| Total | 14 | 36 | 107 | - | 169 | 20 | 82 | 7 | 66 | 501 | |
| Total, % | 2,8 | 7,2 | 21,3 | 0 | 33,7 | 4,0 | 16,4 | 1,4 | 13,2 | | 100 |

Table 6. Summary of search effort of in 2018 cruise by «Vladimir Safonov»

| Area | Start | End | Normal Closing mode | | Normal Passing mode | | Estimated angle and distance estimation training/ experiment |
|---|---|---|---|---|---|---|---|
| | Data/ Time | Data/ Time | Time | Distance (nmi) | Time | Distance (nmi) | |
| Vladivostok to research area | 6-Aug. 14:15 | 13-Aug. 10:55 | - | - | 57:54 | 533,45 | - |
| Research area | 14-Aug. 15:18 | 29-Aug. 17:50 | 168:8 | 1308,7 | - | - | Training 1:46/experiment 2:23 |
| Research area to Vladivostok | 02-Sep. 14:00 | 06-Sep. 19:00 | - | - | 30,3 | 285,81 | - |
| Total | - | - | 168:8 | 1308,7 | 87:84 | 819,26 | 4:09 |

Table 7. Number of sightings during the eastern Sea of Okhotsk sighting survey in 2018

| **Species** | **Research area** | | | | **Transit** | | | | **Total** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primary | | Secondary | | Primary | | Secondary | | Primary | | Secondary | |
| | Sch. | Ani. | Sch. | Ani. | Sch. | Ani. | Sch. | Ani. | Sch. | Ani. | Sch. | Ani. |
| Dall's porpoise (dalli-type) | 18 | 70 | 1 | 6 | 0 | 0 | 0 | 0 | 18 | 70 | 1 | 6 |
| Dall's porpoise (unidentified type) | 47 | 160 | 0 | 0 | 2 | 6 | 0 | 0 | 49 | 166 | 0 | 0 |
| Killer whale | 6 | 29 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 29 | 1 | 2 |
| White whale | 3 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 94 | 0 | 0 |
| Common minke whale | 14 | 14 | 0 | 0 | 3 | 3 | 0 | 0 | 17 | 17 | 0 | 0 |
| Bowhead whale | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 |
| Unidentified large cetacean | 5 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 6 | 8 | 0 | 0 |

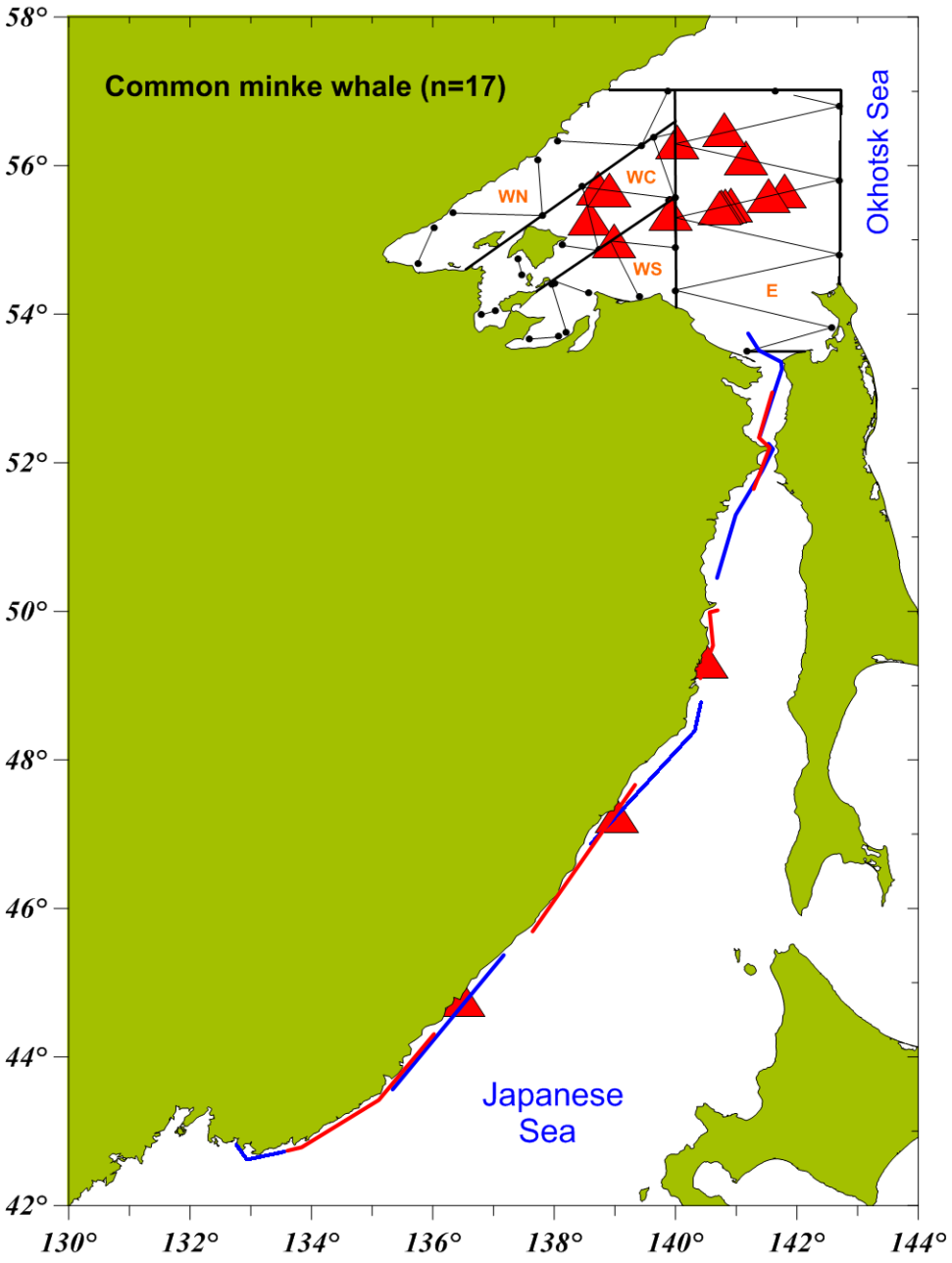


Figure 4a. Sighting positions of common minke whale schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

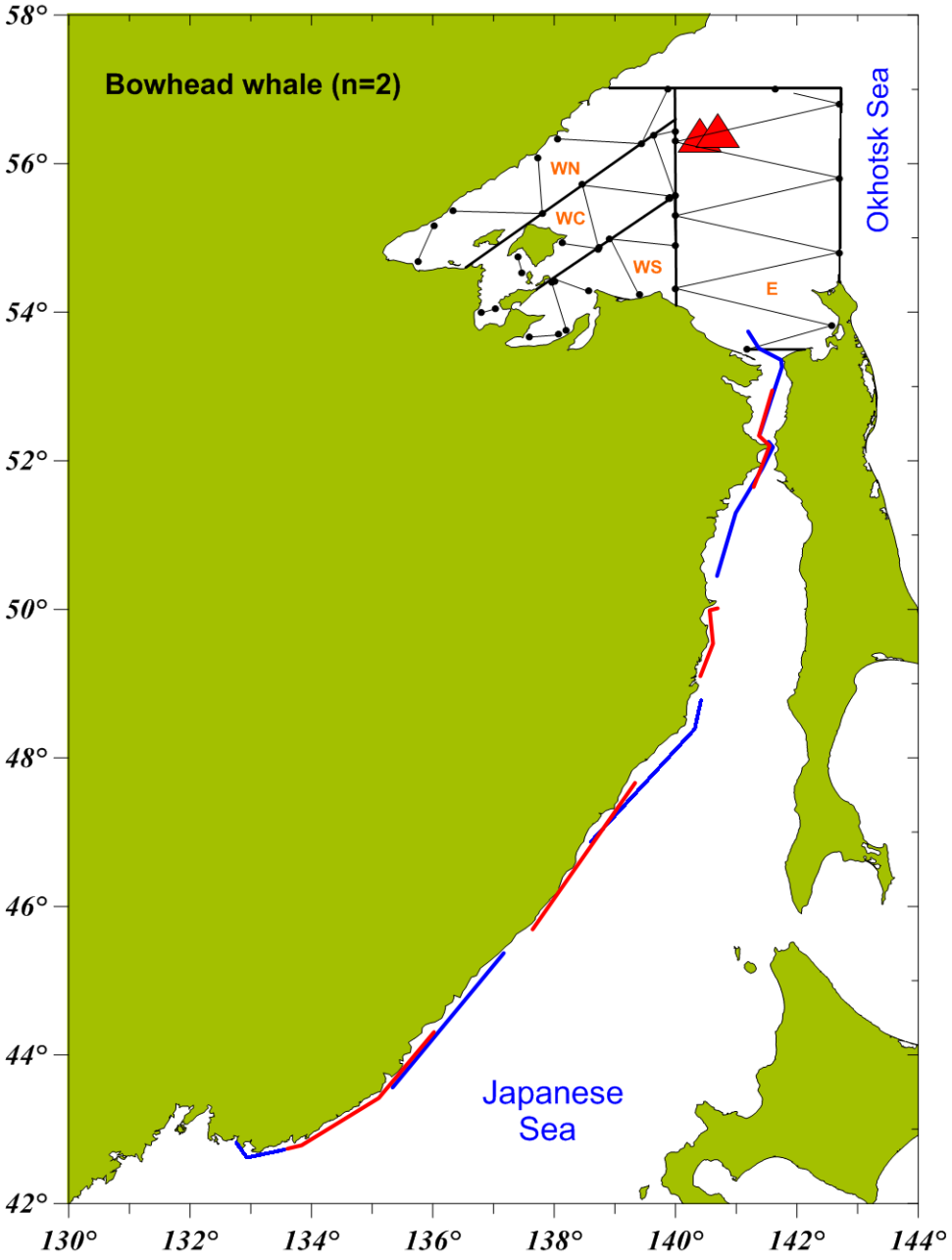


Figure 4b. Sighting positions of bowheaf whale schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

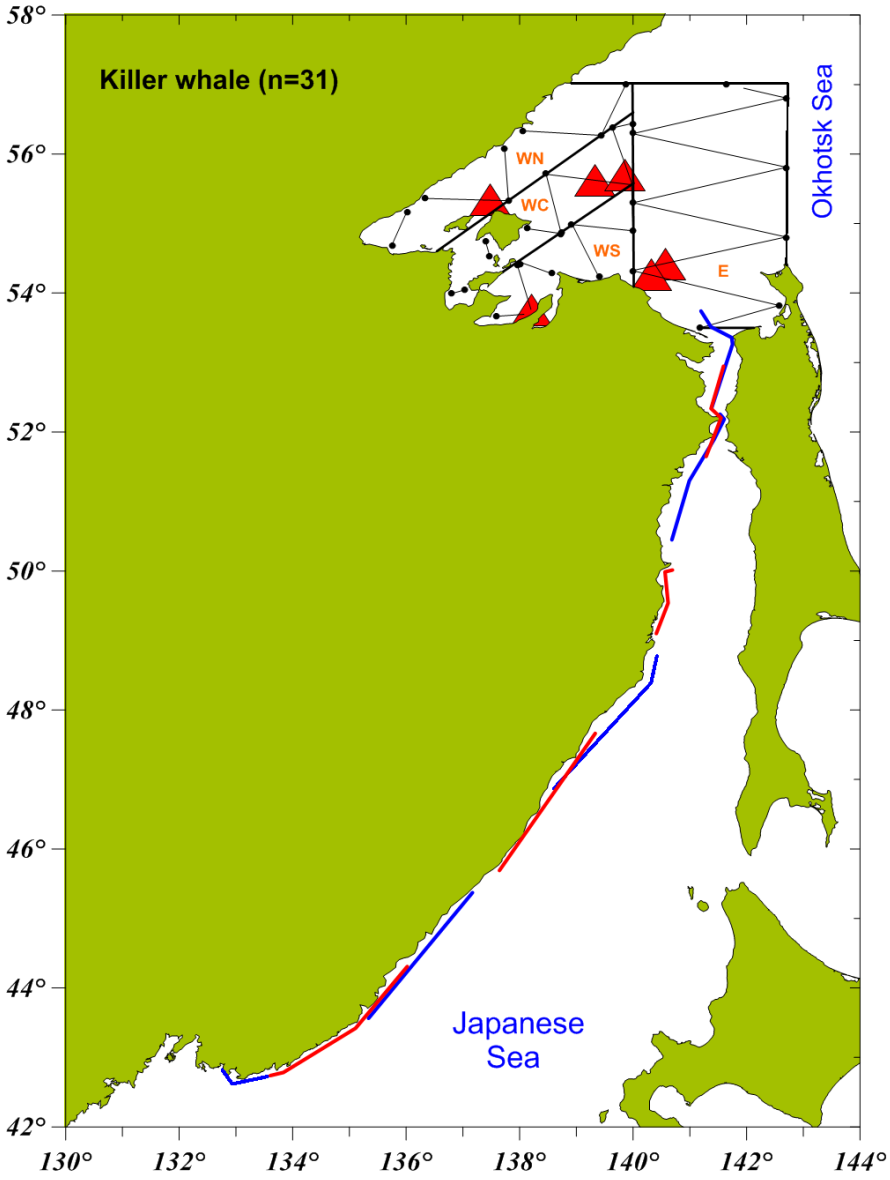


Figure 4c. Sighting positions of killer whale whale schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

Two female killer whales with a calf photo's by Gushcherov (19 August 2018)

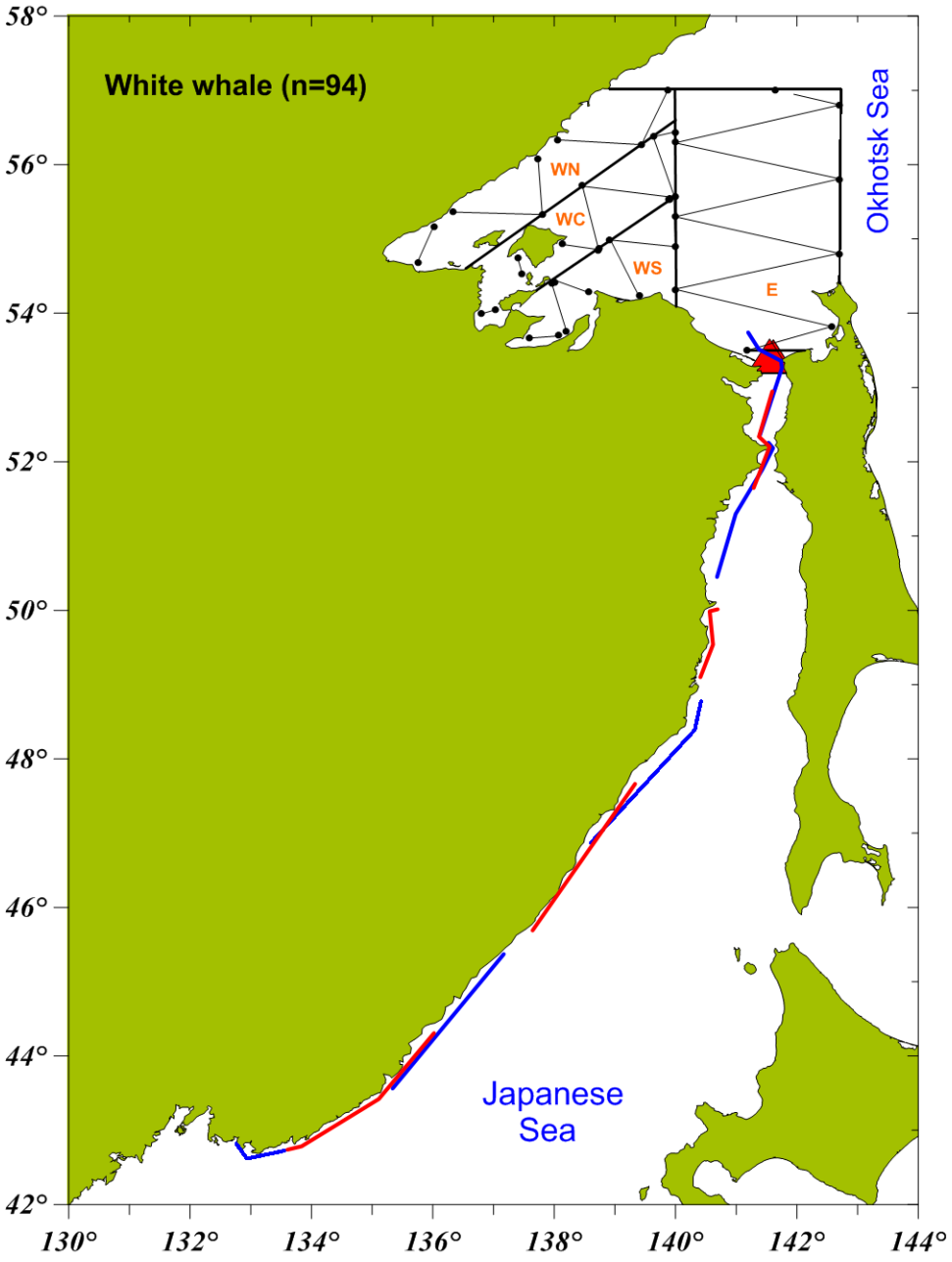


Figure 4d. Sighting positions of white whale schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

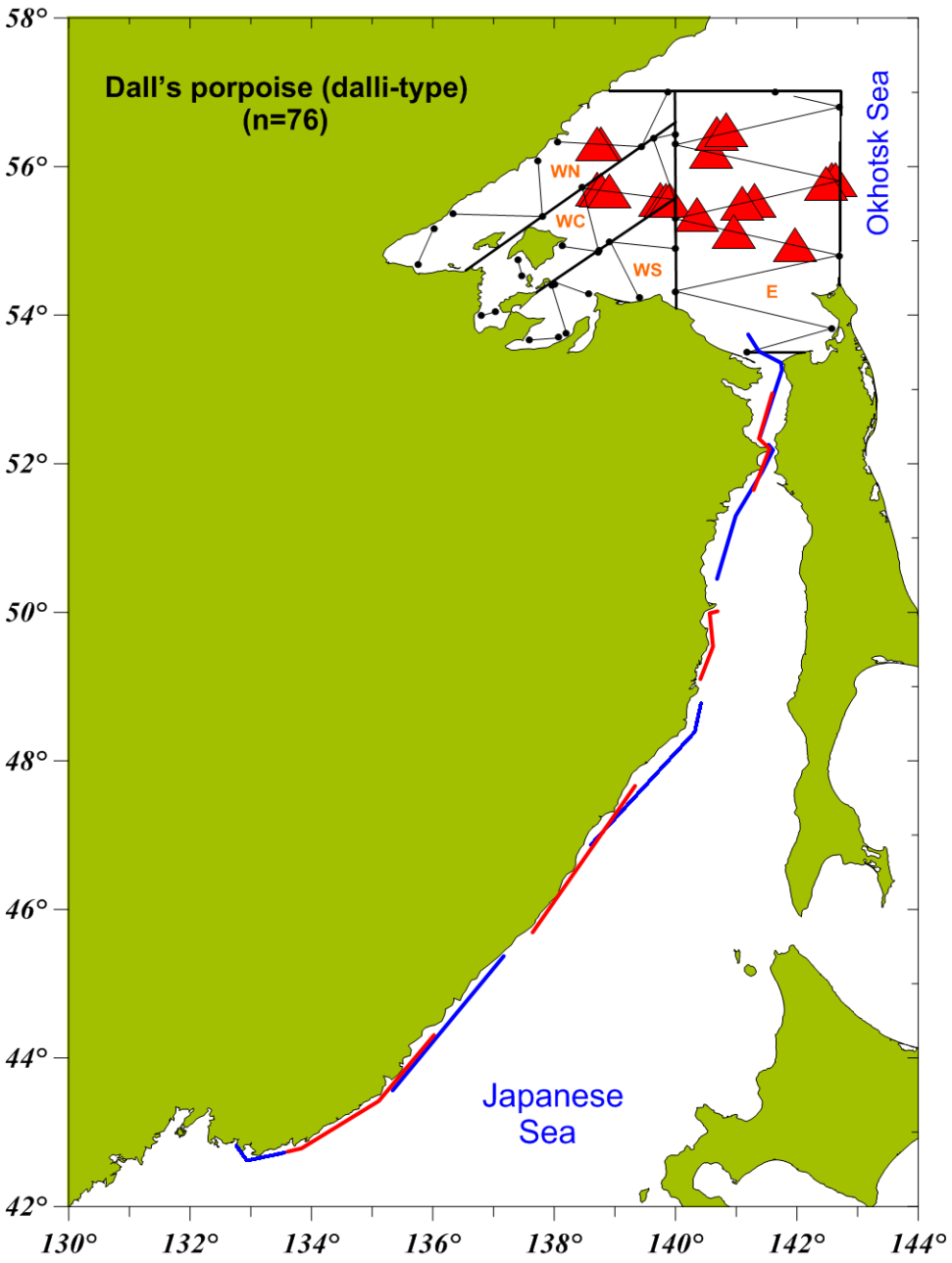


Figure 4e. Sighting positions of Dall's porpoises (Dalli type) schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

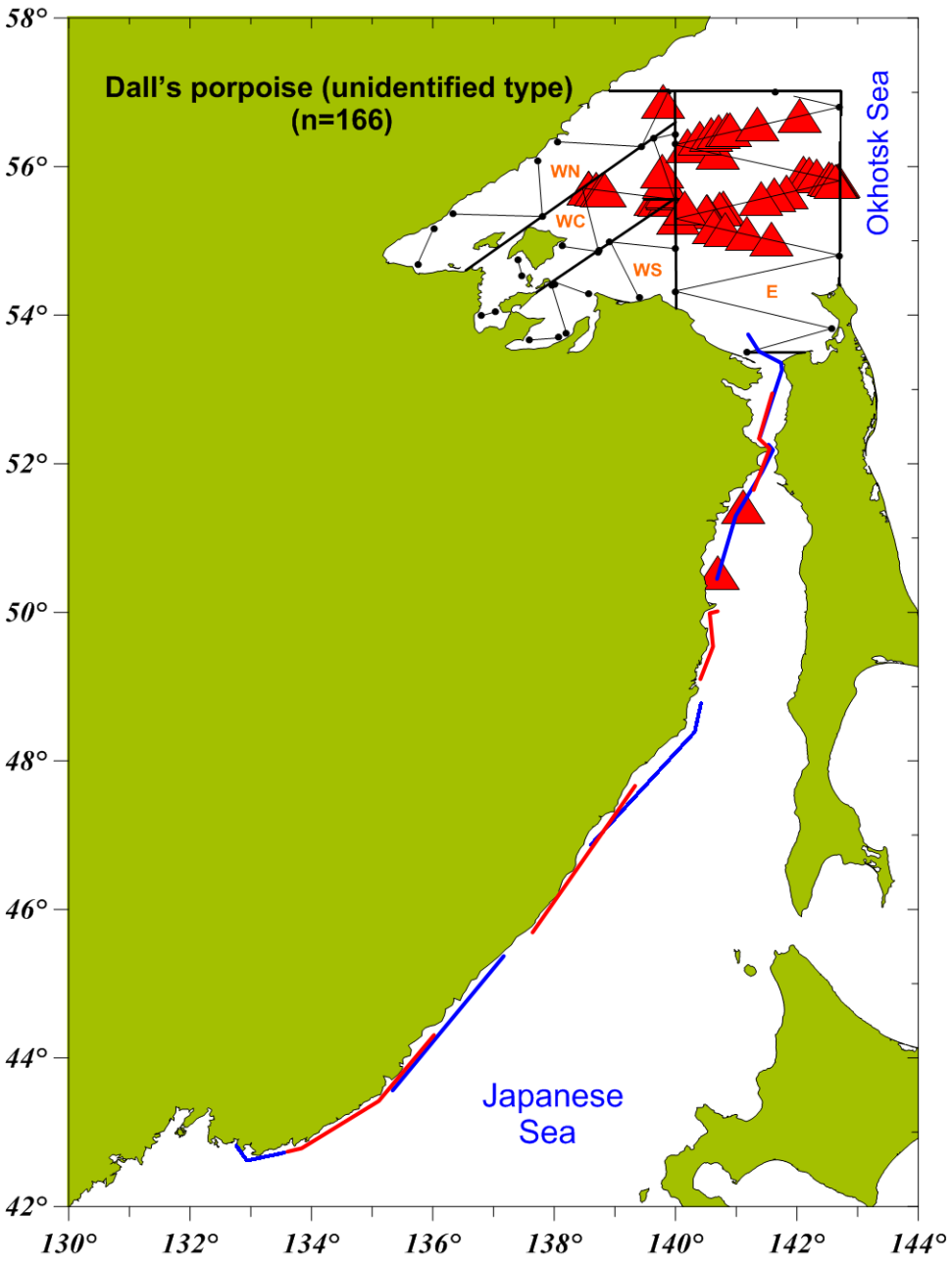


Figure 4f. Sighting positions of Dall's porpoises (unidentified type) schools. Red triangles show the sighting position. The blue line indicates the ship's route to the research area, the red line – indicates.

Figure 5. Radar reflecting buoy for estimated angle and distance training and experiment.

Appendix 1

R/V ВЛАДИМИР САФОНОВ (VLADIMIR SAFONOV)

Table 8. Specification of the research vessel *ВЛАДИМИР САФОНОВ* (*VLADIMIR SAFONOV*)

Length overall [m] 48.12
Molded breadth [m] 10.50
Gross tonnage (GT) 4 6 2 . 0
Barrel height [m] 15.0
Upper bridge height [m] 12.0
Engine power [ kW] 970

# Oversight report for the cetacen sighting survey in the Sea of Okhotsk in 2018

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I participated in the pre-cruise meeting in Vladivostok in early August 2018 and confirmed the preparation for the survey by TINRO-Center. We confirmed the objectives and the methodology of survey and other logisitic matters. Because this cruise is the fourth time to conduct the sighting survey, the Russian scientists and the main crew members of the research vessel have been quite familiar with the survey method. Also it was confirmed that the vessel can enter the Russian territorial waters because of onboarding of foreigner.

During the whole period of the cruise, I checked the behavior of the vessel and the progress of the survey based on the detailed daily report from the cruise reader. The contesnts of daily report were research distance, total moving distance, position to start and finish survey, noon position, weather information (at noon, start and finish positions), sighting information and remarks. When there was uncertainty or questions, I have asked the cruise leader and got resolution.

Good weather has been relatively continued in the research area, almost all track line was covered on effort. Then I think this cruise has been successful and has given us fruitful information such as sighting of bowhead whales. In the very coastal waters including the territorial waters, the sighting effort was limitted because of zig-zag type transect line design. To get more information in these waters, another narrower block covering coastal waters is candidate to be considered.

To get more usefull photograph for photo identification, as the cruise leader mentioned, more powerful camera lenz should be used in the future cruise. Also another possibility such as using drone should be taken into account.

There are some points to be consdered in the future cruise, but the survey in 2018 had been conducted in an orderly maner under the leadership of Dr. Gushcherov through the cruise based on the sighting method following the IWC sighting survey guideline.

I would like to give my sincere thanks to the Russian scientists, the captain and crew for their hard works during the survey.