

JAPAN PROGRESS REPORT ON SMALL CETACEAN RESEARCHES
May 2002 to March 2003

(compiled by)

Toshihide Iwasaki

*National Research Institute of Far Seas Fisheries,
 5-7-1, Orido, Shimizu, Shizuoka 424-8633, Japan*

This report summarizes small cetacean fisheries in 2002 and researches conducted during period from May 2002 to March 2003 by the National Research Institute of Far Seas Fisheries (hereafter NRIFSF) of the Fisheries Research Agency of Japan (hereafter FRA) and the Fisheries Agency of Ministry of Agriculture, Forestry and Fisheries, the Government of Japan (hereafter FAJ) with cooperation of other related organizations. This report covers information on small cetaceans which is not included in the Japan Progress Report on Cetacean Research May 2002 to March 2003 (submitted to 55th IWC/SC meeting).

1. Species and stocks studied

Following species and stocks of small cetaceans were studied by NRIFSF and FAJ:

| Common name | Scientific name | Area/stock(s) | Items referred to |
|--|-----------------------------------|--|--|
| Baird's beaked whale | <i>Berardius bairdii</i> | Off Pacific coast, Sea of Japan, Okhotsk Sea | 2.1.1, 4.2, 4.4, 6.1, 7 |
| Short-finned pilot whale | <i>Globicephala macrorhynchus</i> | Off Pacific coast, western North Pacific, East China Sea | 4.2, 4.3, 4.4, 6.1, 7 |
| False killer whale | <i>Pseudorca crassidens</i> | Off Pacific coast | 4.2, 6.1 |
| Striped dolphin | <i>Stenella coeruleoalba</i> | Off Pacific coast, Western North Pacific | 2.1.1, 3.1.3, 3.2, 4.1, 4.2, 4.4, 6.1, 7 |
| Dall's porpoise | <i>Phocoenoides dalli</i> | Off Pacific coast, Okhotsk Sea, Sea of Japan | 2.1.1, 4.2, 4.3, 4.4, 6.1, 7 |
| Bottlenose dolphin | <i>Tursiops truncatus</i> | Kagoshima Bay, off Pacific coast, East China Sea | 2.1.1, 2.2, 3.1.1, 4.2, 5, 6.1, 7 |
| Spotted dolphin | <i>Stenella attenuata</i> | Off Pacific coast | 2.1.1, 4.2, 6.1, 7 |
| Finless porpoise | <i>Neophocoena phocoides</i> | Coastal waters of Japan | 2.1.1, 6.1, 7 |
| Risso's dolphin | <i>Grampus griseus</i> | Western North Pacific | 2.1.1, 4.2, 4.4, 6.1, 7 |
| Additional species taken or sighted during dolphin fisheries or small type whaling operation | - | Off Pacific coast, Sea of Okhotsk | 2.1.1, 6.1 |
| Additional species sighted during the sighting cruise | - | North Pacific, Sea of Okhotsk, Southern Hemisphere | 2.1.1 |
| Additional species stranded | - | Around Japan | 7 |

2. Sighting data (this section overlap with description of sighting data in SC/55/Japan /Progrep.)

2.1 Field work

2.1.1 Systematic

Regardless of the target species of sighting cruises, sightings of small cetaceans were recorded. The NRIFSF and FAJ conducted a total of eleven sighting and related surveys from April 2002 to March 2003 in the North Pacific and the Southern Hemisphere, in cooperation with other scientific organizations such as Institute of

Cetacean Research (ICR) etc. Nine cruises were conducted in the former water and two in the latter. All of the vessels are equipped with a top barrel. Names of the vessels, scientists on board, and period of each cruise are given in Table 1.

Table 1. Name of vessels, scientists on board for the sighting and other survey in the North Pacific and the Southern Hemisphere by the Japanese vessels from April 2002 to March 2003.

| Name of vessel | Main objective | Period and region | Scientists on board |
|---|---|---|---|
| [North Pacific] | | | |
| <i>Kurosaki</i> (Japan-Korea joint survey) | Sighting survey for minke whales | April 10 – May 9, Western Sea of Japan | Saito,T.(temporary staff of FRA, here after TS/FRA), Sato,H. (TS/FRA), Okumura,T.(TS/FRA), Tanaka, Y.(TS/FRA) |
| <i>Shonan-maru No.2</i> (Japan-Korea joint survey) | Sighting survey for minke whales | May 13 – July 1, Sea of Japan | Yoshida,H.(NRIFSF; June 8- July 1), Saito,T.(TS/FRA; May 13 – June 7), Hirata,Y.(TS/FRA), Sohn, H. (R.of Korea; June 8 – July 1) |
| <i>Kurosaki</i> | Sighting survey for Baird's beaked whale and sperm whales | July 1 – Aug. 10, Off the Pacific coast of the northern Japan | Saito,T.(TS/FRA), Hayashi, T. (TS/FRA), Morino, K.(TS/FRA), Tanaka, Y. (TS/FRA) |
| <i>Kurosaki</i> | Sighting survey | Dec. 1-23, Around Iki and Goto Islands | Miyashita, T. (NRIFSF), Sato,H.(TS/FRA), Tanaka,Y. (TS/FRA), Okumura, T. (TS/FRA), Okumura, T. (TS/FRA) |
| <i>Shonan-maru</i> | Sighting survey for Bryde's whales | July 23-Sep 20, Eastern North Pacific | Shimada, H. (NRIFSF), Takei, J (TS/FRA) |
| <i>Shonan-maru No.2</i> | Sighting survey for Bryde's whales | July 23-Sep 20, Eastern North Pacific | Kitazawa, T. (TS/FRA) Tomizawa, Y. (TS/FRA) |
| <i>Shunyo-maru</i> | Acoustic and sighting survey for sperm whales | Oct. 7-16, Off the Pacific coast of Japan | Shimada, H. (NRIFSF), Takei, J. (TS/FRA), Arai, Y. (TS/FRA), Okumura, T. (TS/FRA), Endo, K. (TS/FRA) |
| <i>Kurosaki</i> | Small cetacean sightings, biopsy and marking | Oct. 16 – Nov. 28, Off the Pacific coast of Japan | Iwasaki, T.(NRIFSF; Oct. 16-29) , Minamikawa, S. (NRIFSF; Oct. 16-29), Noji, S. (TS/FRA; Oct. 31 - Nov. 28), Sato, H. (TS/FRA; Oct. 31 - Nov. 28), Tanaka,Y.(TS/FRA), Ryono, A.(TS/FRA) |
| <i>Seiwa - maru</i> | Diving time for Baird's beaked and sperm whales | July 18 – 31, Off the coast of Boso Peninsula | Minamikawa, S. (NRIFSF), Kishiro, T.(NRIFSF; July 18-19), Kawashima, M.(TS/FRA) |
| [Southern Hemisphere] | | | |
| <i>Kanou-maru</i> | Sighting survey for Bryde's whales | Jan.24-Mar.17, 2003 Lower latitudinal waters in the Pacific | Shimada, H. (NRIFSF; Feb 22 - Mar.18), Noji, S. (TS/FRA), Kijima, N. (TS/FRA), Okumura, T. (TS/FRA), Endo, K. (TS/FRA) |
| <i>Shonan-maru</i> (IWC/SOWER) | Sighting SOWER/Blue & Antarctic | Dec.17-Mar.3, 2003, Area V-east in the Antarctic | Ensor, P. (New Zealand), Tsunekawa, M.(Japan), Olson, P. (USA), Ljungblad, D.(USA) |
| <i>Shonan-maru No.2</i> (IWC/SOWER) | Sighting SOWER/Blue & Antarctic | Dec.17-Mar.3, 2003, Area V-east in the Antarctic | Matsuoka, K. (ICR, Japan), Ugarte, F. (Mexico), Stevick, P. (USA), Rankin, S. (USA) |

The IWC/SOWER Antarctic sighting cruise was conducted under auspices of the IWC/SOWER (Southern

Ocean Whale and Ecosystem Research) program from 17 December 2002 to 3 March 2003. This cruise consisted of the blue whale research component and the minke whale assessment component. The details of the cruise and results were separately reported at the 55th IWC/SC meeting.

Table 2. Small cetaceans sighted by Japanese dedicated sighting surveys (*Shonan-maru* and *Shonan-maru No.2*) in the Southern Hemisphere in the 2002/2003 austral summer season (including SOWER/Blue whale cruise, SOWER/Antarctic cruises and those before and after the cruises). The number is given by 10° square based on the noon position of vessels.

| 10° square | Distance (n.miles) | Number of individuals sighted | | | |
|------------|--------------------|-------------------------------|-------------------|---------------|--------------------|
| | | Southern right whale dolphin | Hourgrass dolphin | Dusky dolphin | Bottlenose dolphin |
| A 22 | 34 | - | 18 | - | - |
| B22 | 1,007 | - | 111 | - | - |
| 23 | 1,484 | - | 17 | - | - |
| 25 | 1,254 | - | 26 | - | - |
| D21 | 213 | 170 | - | 2 | 45 |
| 22 | 127 | 45 | - | - | - |
| Total | 4,119 | 215 | 172 | 2 | 45 |

In the North Pacific, of a total of nine cruises, six cruises were mainly engaged in sighting survey with skin biopsy at an opportunistic base. T. Miyashita (NRIFSF) and Shimada worked in planning, track designs, and searching methods of all the above cruises.

Total searching distances made during the sighting cruises were 6,537 n. miles and 13,218 n.miles for the Southern Hemisphere and the North Pacific, respectively. During these cruises, Bryde's whale sighting survey was led and oversighted by H. Shimada. In addition, systematic sighting data were also obtained during the biopsy and marking survey.

Miyashita took part in the Korean sighting surveys in May and September in the coastal waters off Korea for oversight task requested from the IWC/SC. The survey was conducted using *R/V Tamgu 3* to obtain the information on the distribution and density of common minke whales.

Under the cooperation among the NRIFSF, Kochi prefecture government (KPG) and the Whale Watching Association in Tosa Bay (WATB), the sighting surveys on Bryde's whales were conducted in the coastal waters off Kochi in August 2002, using 18 whale watching boats that belong to the WATB. The survey lasted six days and T. Kishiro (NRIFSF), five research assistants (Kochi University and Kasasa Ebisu Maritime Museum) and the total of 25 members of WATB acted as the researchers on board. A total of ten schools (1,128 individuals) of common dolphins, three schools (35 individuals) of Risso's dolphins were detected during the survey.

The sighting surveys on Bryde's whales were also conducted in the coastal waters off Kasasa, the southwest end of Kyushu, in August 2002, under the cooperation among the NRIFSF, Kagoshima prefecture government (KAPG) and Nomaiké Fishery Cooperative Union (NFCU). A total of 11 whale watching boats (belong to the NFCU) was used as the research vessels. The surveys lasted six days. Kishiro and 11 research assistants (Kasasa Ebisu Maritime Museum and Kagoshima University) acted as the researchers on board. A total of 14 schools (1,005 individuals) of spinner, one school (50 individuals) of spotted, two schools (110 individuals) of bottlenose and three schools (100 individuals) of rough-toothed dolphins were detected during the surveys.

Aerial sighting survey for Baird's beaked whales was conducted in the coastal waters off Boso Peninsula from 22 to 30 July 2002. Kishiro, Miyashita and Yoshida acted as the researchers on board. The survey included five flights and 944 n. miles of the total searching distances following the line transect lines. Researchers recorded sightings of eight schools (38 individuals) of Baird's beaked whales, two schools (eight individuals) of Risso's dolphins and five schools (13 individuals) of finless porpoises during the survey.

Table 3. Small cetaceans sighted by Japanese dedicated surveys (*Shonan-maru*, *Shonan-maru No.2* and *Kurosaki*) operated in the North Pacific during 2002 summer season (April to September 2002) in addition two local sighting surveys off Kochi and Kagoshima in August. The number is given by 10 ° square based on the noon position of the vessels.

| 10° Square | Distance (n.miles) | Number of individuals sighted | | | | | | | |
|---------------|-----------------------|--|--------------------------------|-----------------------------------|--------------------|--------------------|------------------------------|--------------------|-----------------------|
| | | Dall's porpoise (<i>dalli</i> -type) | <i>Delphinus</i> <i>sp.</i> | Pacific white-sided dolphin | Spotted dolphin | Striped dolphin | Rough- toothed dolphin | Spinner dolphin | Bottlenose dolphin |
| L 26 | 423 | - | - | - | - | 14 | 35 | - | - |
| 27 | 669 | - | - | - | - | - | - | 630 | - |
| M 19 | 135 | - | - | - | - | - | - | - | 15 |
| 20 | 2,079 | - | - | 1,627 | - | - | - | - | 190 |
| 21 | 1,702 | 4 | - | 450 | - | 585 | - | 35 | 15 |
| 22 | 951 | - | 50 | - | 15 | 420 | - | - | - |
| 24 | 433 | - | 80 | - | - | - | - | - | - |
| 25 | 1,103 | - | 280 | - | 113 | 340 | - | - | - |
| 26 | 522 | - | - | - | - | 50 | - | - | 120 |
| 27 | 625 | - | - | - | - | 10 | - | - | - |
| N 20 | 825 | 88 | - | 789 | - | - | - | - | - |
| 21 | 386 | 114 | - | 5 | - | - | - | - | - |
| 26 | 122 | - | 431 | - | - | - | - | - | - |
| Total | 9,975 | 206 | 841 | 2,871 | 128 | 1,419 | 35 | 665 | 340 |

Table 4. Small cetaceans sighted by Japanese dedicated sighting surveys (*Kurosaki*, *Kano-maru* and transit cruises of the SOWER by *Shonan-maru* and *Shonan-maru No.2*) in the North Pacific in 2002/2003 autumn-winter season (November 2002-March 2003).

| 10° Square | Distance (n.miles) | Number of individuals sighted | | | | | | | | |
|---------------|-----------------------|--|---------------------------------|--------------------------------|--------------------|--------------------|------------------------------|--------------------|---------------------|-----------------------|
| | | Dall's porpoise (<i>truei</i> -type) | Northern right whale dolphin | <i>Delphinus</i> <i>sp.</i> | Spotted dolphin | Striped dolphin | Rough- toothed dolphin | Spinner dolphin | Fraser's dolphin | Bottlenose dolphin |
| G 23 | 298 | - | - | - | - | - | 150 | 170 | - | - |
| H 22 | 511 | - | - | - | - | - | - | 170 | 485 | - |
| 23 | 659 | - | - | - | - | - | - | 465 | - | - |
| J 21 | 144 | - | - | - | 143 | - | - | - | - | - |
| 22 | 343 | - | - | - | - | 32 | - | - | - | - |
| L 21 | 441 | - | - | - | - | 7 | - | - | - | - |
| M 21 | 1,097 | 216 | 52 | 4,981 | - | 11,702 | - | - | - | 26 |
| Total | 3,493 | 216 | 52 | 4,981 | 143 | 11,741 | 150 | 805 | 485 | 26 |

Aerial sighting surveys for finless porpoises were conducted to obtain information of their abundance and distribution in Ise-Mikawa Bays, in Ariake Sound and Tachibana Bay, and in western parts of the Inland Sea and Hibiki-Nada. Yoshida and Minamikawa conducted the surveys under collaboration of three aquaria (Minamichita Beachland Aquarium, Shimonoseki Marine Science Museum, Toba Aquarium). In Ise-Mikawa Bays, three surveys were carried out on November 2002 and 174 schools (225 individuals) were detected during the flight of 1869.4km

in total. In Ariake Sound and Tachibana Bay, a total of 487.6 km was searched and 39 schools (57 individuals) were sighted in a survey conducted in January 2003. A survey carried out in western parts of the Inland Sea and Hibiki-Nada in January 2003 was resulted in sightings of 18 schools (24 individuals) under the 735.6km flight.

Aerial sighting surveys for small cetaceans were conducted in the waters around Iki Island, to the northwest of Kyushu Island. Shimada planned and joined the surveys conducted by Nagasaki prefecture government. Through this attempt, he gave survey skills to the prefecture staffs. Three flights were carried out using an airplane CESSNA 172P on 14 December 2002, 13 February and 14 March 2003. Paying 814n.m of total searching effort, no cetaceans were detected. Above aerial sighting data are not included in the Table 4.

The NRIFSF and ICR supported the Guinean scientists to conduct the sighting survey in the coastal waters from Guinea to Senegal, western North Africa, from 7 to 20 December 2002, using the research vessel “ITAF DEME” of Senegal. Scientists of other five countries of western Africa (Capo Verde, Senegal, Guinea Bissau, Benin, and Gabon) were also on board and they searched cetaceans from the upper bridge of the vessel. H. Yoshida (NRIFSF) joined to the survey. Searched distance was 901.6nm. The researchers recorded 71 schools of cetaceans including 14 of the short-finned pilot whales (431 individuals), 23 of the bottlenose (346 individuals), nine of the common (2,315 individuals), and eight of the spotted dolphins (111 individuals). It is expected that cruise reports of this survey will be submitted by respective countries through appropriate way.

2.1.2 Opportunistic, platforms of opportunity

Opportunistic sighting data have been collected during operations by the small type whaling and by dolphin fisheries.

2.2 Analyses/development of techniques

Using satellite tags, Iwasaki estimated surfacing time ratio of the bottlenose dolphin at approximately 5% of the tracked period. This attempt will be useful for simulation of diving/surfacing behavior of the species and therefore will improve the school size estimates.

3. Marking data

3.1 Field work

3.1.1 Natural marking data

Many photographs were taken through the dedicated sighting cruises above-mentioned and these were stored for future analysis. Photographs were also collected from local sighting cruises for the coastal Bryde’s whales off Kochi and Kasasa. A cumulative total of 29 bottlenose dolphins have been individually identified mainly by shape of dorsal fin. Identified characters have been deposited in NRIFSF under the cooperative program.

3.1.2 Artificial marking data

Iwasaki, Minamikawa (NRIFSF), S. Noji (FRA) and H. Sato (FRA) succeeded in “dart-tag” marking on 266 striped dolphins during the *Kurosaki* cruise, in a total (Table 5). No marks were retrieved during the period from May 2002 to March 2003.

Table 5. Artificial marking data released by NRIFSF, May 2002-March 2003.

| Species | Area | No. marked |
|-----------------|-----------|------------|
| Striped dolphin | N.Pacific | 266 |

3.1.3 Telemetry data

Using the further improved attachment system, Iwasaki conducted satellite tracking of three bottlenose dolphins. The dolphins were released on 6 December 2002 from Taiji. At the maximum, the dolphins were tracked for 46 days and moved westbound along the Pacific coast to the Kyushu Island, southwestern part of Japan. Moving direction is opposite to previous tracking attempts in January or February. Iwasaki interpret that the bottlenose dolphins along the Pacific coast of Japan move westbound in early winter and eastbound in late winter.

Minamikawa and Iwasaki attached the pop-up archival transmitting tags (Wildlife Computers, Inc.) to three free-ranging striped dolphins using small harpoon heads in the western North Pacific. One tag was relieved after popping-up and one-week length data in time series of water temperature, light level, and depth in 5 seconds intervals were obtained. The results indicate clear diurnal and nocturnal pattern of diving behavior. Diving depth in the daytime was 22.6 ± 17.5 m (mean \pm S.D.), whereas that in the nighttime was 126.7 ± 120.9 m and the maximum was 705 m.

3. 2 Analyses/development of techniques

For longer period of satellite tracking of dolphins, Iwasaki made up a new attachment “boot” for cylindrical Argos transmitter and obtained results referred in 2.1.2 and 3.1.3. Iwasaki also tried to construct satellite tag attachment system for free-ranging dolphins, however, this preliminary attempt resulted in approximately one-week tracking of a striped dolphin.

Minamikawa and Iwasaki have been developing the system to attach a data logger to a whale using an air gun. This system would be effective for the whales difficult to approach such as beaked whales.

4. Tissue/biological samples collected

4.1 Biopsy samples

Skin biopsy was tried during the cruises mentioned in 2.1.1. All of the biopsy samples collected during the cruises are listed in Table 6.

Table 6. Biopsy samples collected through Japanese research, May 2002 - March 2003.

| Species | Area | No. Collected | Archived (Y/N) | No. Analyzed | Total holdings | Contact Institute |
|-----------------|------------|---------------|----------------|--------------|----------------|-------------------|
| Striped dolphin | N. Pacific | 2 | Y | 0 | 2 | NRIFSF |

4.2 Samples from direct catches or bycatch

The national quota of Baird's beaked whales was 62 individuals, with permitted operation periods of 10 May to 30 June for one land station at Hakodate on the Sea of Japan coast, 1 July to 31 August for two land stations at Ayukawa and Wadoura on the Pacific coast and 25 August to 9 September for Abashiri station on the Okhotsk coast. A total of 62 whales (eight off Hakodate, two off Abashiri, 26 off Ayukawa and 26 off Wadoura) were taken using four catcher boats (*Kohei-maru* #75, *Taisyō-maru* #28, *Katsu-maru* #7 and *Sumitomo-maru* #31). Kishiro organized the field data collection from the fishery and all of the catch were examined and sampled by following four biologists; Kishiro, T. Hayashi (FAJ), T. Hara (FAJ), S. Tabata (FAJ). The national quota of northern form short-finned pilot whales for the small-type whaling was 50 whales with a permitted season of 16 October to 15 December for two boats (*Kohei-maru* #75 and *Taisyō-maru* #28). A total of 47 whales were taken by the two vessels using one station in Ayukawa. All of the catches were examined and sampled by Kishiro and Hayashi. The national quota of southern form short-finned pilot whales for the small-type whaling was 50 whales with permitted operation period of 1 May to 30 September. A total of 36 whales were taken using three catcher boats (*Katsu-maru* #7, *Sumitomo-maru* #31, and *Seiwa-maru*) and two land stations (Taiji and Wadoura). All of the catches were examined and sampled by Kishiro, Hara, Tabata, H. Sato (FAJ), T. Isoda (FAJ) and M. Kawashima (FAJ). The FAJ also set a national catch quota of 20 Risso's dolphins for the small-type whaling in Taiji for period from 1 May to 30 June and 1 August to 30 September. A total of 12 individuals were taken by *Katsu-maru* #7, *Sumitomo-maru* #31 and *Seiwa-maru*, and examined by Hara, Sato, Isoda and Kawashima. In Taiji during May-August 2002, the researchers also collected samples from the hand harpoon catches at an opportunistic base, including 22 bottlenose, 17 spotted, seven Risso's, one striped and one rough-toothed (accidentally shot) dolphins.

Iwasaki and his colleagues (Y. Tomizawa (TS/FRA), T. Kimura (TS/FRA), T. Hara (TS/FRA), S. Saino (TS/FRA) and H. Sato (TS/FRA)) collected samples for life history and genetic studies from catches of drive and hand harpoon fisheries in Taiji during operations through 1 October to 20 December 2002 and 7 January to 10 February 2003. They examined a total of 1,776 individuals composed of 565 bottlenose, 455 striped, 399 spotted, 295 Risso's dolphins, 55 southern form short-finned pilot and seven false killer whales. Under contract with FRA and supervised by NRIFSF, sample collection for life history and genetic studies of dolphin fisheries was performed in Hokkaido, Iwate, Wakayama and Okinawa Prefectures. M. Tsutsui of Iwate Fisheries Technology Center (hereafter IFTC) and his colleagues collected samples from 48 *dalli*-type Dall's porpoises (18 in the Pacific off southern Hokkaido in 2-5 June 2002 and 30 in the Pacific off eastern Hokkaido during 25-26 October 2002, respectively) and 30 *truei*-type Dall's porpoises (off Iwate during 11-17 February 2003). During April and November-March, K. Onodera (IFTC), K. Miura (IFTC) and Tsutsui recorded color type, sex and body length and collected DNA samples from Dalls' porpoises landed to the Kamaishi Fish Market including 1,182 *truei*- and 202 *dalli*-types. H. Miyahara and N. Higashi of Okinawa expo aquarium conducted sampling for life history and genetic studies, onboard the crossbow fishing boats, from 34 southern form short-finned pilot whales. Details of biological materials collected through above activities are given in Table 7.

H. Ohizumi (University of Tokyo), Kishiro, Hara and R. Okamoto (TS/FRA) collected stomach contents of 32 Baird's beaked whales caught by small-type whaling, including six individuals at Hakodate in May, 24 at Wada from July to August, and two at Abashiri in September, respectively in 2002. Y. Morita (TS/FRA) collected stomach contents of four southern form short-finned pilot whales, 11 Risso's, five bottlenose, three spotted and one striped dolphins which

were coaght by small-type whaling and local hand harpoon fishery at Taiji in May 2002. Morita and Ohizumi recorded prey items and weight of stomach content of 22 northern form short-finned pilot whale caught by small-type whaling at Ayukawa in November 2002.

Table 7. Samples collected during operations by small-type whaling and dolphin fisheries and samples from bycatch, May 2002-March 2003.

| Species | Area | Type of fishery | No. collected | Archived (Y/N) | Tissue type(s) | Contact Institute | |
|--------------------------|---------------|----------------------------|-------------------------|----------------|--|-------------------------------------|--------|
| Striped dolphin | N.Pacific | Hand harpoon | 11 | Y | Tooth (To), skin (Sk), muscle (M), ovary (O), uterine horn (U) and testis (Te) | NRIFSF | |
| | | Driving | 445 | Y | To, S, M, O, U and Te | NRIFSF | |
| Spotted dolphin | N.Pacific | Hand harpoon | 17 | Y | To, S, M, O, U, Te and stomach contents (St) | NRIFSF | |
| Bottlenose dolphin | N.Pacific | Hand harpoon | 20 | Y | To, Sk, M, O, U, Te and St | NRIFSF | |
| | | Driving | 565 | Y | To, Sk, M, O, U and Te | NRIFSF | |
| Risso's dolphin | N.Pacific | Small-type whaling | 12 | Y | To, Sk, liver (L), M, O, U, Te, epididymis (E), vertebral epiphysis (V) and St | NRIFSF | |
| | | Hand harpoon | 11 | Y | To, Sk, L, M, O, U and Te | NRIFSF | |
| | | Driving | 291 | Y | To, Sk, L, M, O, U and Te | NRIFSF | |
| Short-finned pilot Whale | Northern form | N.Pacific | Small-type whaling | 47 | Y | To, Sk, L, M, O, U, Te, E, V and St | NRIFSF |
| | Southern form | N.Pacific | Small-type whaling | 36 | Y | To, Sk, L, M, O, U, Te, E, V and St | NRIFSF |
| | | | Driving | 55 | Y | To, Sk, L, M, O, U and Te | NRIFSF |
| | | E. China Sea | Hand harpoon (crossbow) | 34 | Y | To, Sk, L, M, O, U, Te and St | NRIFSF |
| False killer whale | N.Pacific | Driving | 7 | Y | To, Sk, L, M, O, U and Te | NRIFSF | |
| Rough-toothed dolphin | N.Pacific | Hand harpoon ¹⁾ | 1 | Y | To, Sk, L, M, O, U and Te | NRIFSF | |
| Dall's porpoise | dalli-type | N.Pacific | Hand harpoon | 48 | Y | To, Sk, L, M, O, U and Te | NRIFSF |
| | truei-type | N.Pacific | Hand harpoon | 30 | Y | To, Sk, L, M, O, U, Te and St | NRIFSF |
| Baird's beaked Whale | N.Pacific | Small-type whaling | 52 | Y | To, Sk, L, M, O, U, Te, E V and St | NRIFSF | |
| | Okhotsk Sea | Small-type whaling | 2 | Y | To, Sk, L, M, O, U, Te, E, V and St | NRIFSF | |
| | Sea of Japan | Small-type whaling | 8 | Y | To, Sk, L, M, O, U, Te, E, V and St | NRIFSF | |

1) accidentally shot and discarded to the sea.

4.3 Samples from stranded animals

No small cetacean samples were collected during the period from May 2002 to March 2003..

4.4 Analyses/development of techniques

In order to clarify stock structure of Baird's beaked whales in the Sea of Japan, Kishiro, Ohizumi and Yoshida continued to analyze the reproductive organs, external body proportion, stomach contents and genetic composition of Baird's beaked whales taken by the small-type whaling at Hakodate in 2001.

Ohizumi analyzed diet of northern form short-finned pilot whale observed in November. The pilot whales fed mainly on flying squids, especially Japanese common flying squids. Ohizumi and Okamoto analyzed stomach contents of Dall's porpoises caught by hand harpoon fishery in 2001. They found that Dall's porpoises off Sanriku area in spring fed mainly on myctophids. Ohizumi partly analyzed stomach content samples collected in 2002. Further analyses are ongoing.

Yoshida and I. Sugiura (Tokyo University of Fisheries) conducted the mtDNA sequence analysis to clarify stock structure of short-finned pilot whales inhabiting coastal waters of Japan. They sequenced 351 base pairs of the mtDNA control region for 79 animals taken by Japanese small-type whaling and hand harpoon fishery and analyzed them with sequences already determined for 54 animals. They detected 11 haplotypes and found that no haplotypes were shared between animals of northern and southern form short-finned pilot whales. The further analysis will be conducted.

5. Pollution studies

Iwasaki analyzed nonylphenol (NP), 4-octylphenol (4-OP) and bisphenol A (BPA) levels in the testis tissues of 30 adult bottlenose dolphins landed to Taiji and compared those levels with testosterone levels and sperm density (referred in the corresponding part in last year) in the same tissues. But no apparent correlations were detected.

6. Statistics for small cetacean

6.1 For the calendar year 2002

Target species, permitted operational period, quota, catcher boats and actual catches for small-type whaling were same as shown in 4.1.

For dolphin fisheries, as explained in the progress report presented to 52nd IWC/SC, FAJ introduced in 1996 new management season starting on 1 August and closing on 31 July for Dall's porpoise fisheries and from 1 October to 30 September of the next year for the other species. However, as in many previous years also following the modified guideline for IWC national progress report, the statistics covers catch of through 1 January to 31 December 2002 while FAJ carries out the management of dolphin fisheries by their own yearly season above. Thus there may be some cases the calendar yearly catch apparently exceed the seasonal (yearly) catch, but the seasonal catch should be well below the allocated catch quota. Such direct small cetacean catches are given in Table 8 by prefecture and type of fisheries, also summarized by species in Table 9 with incidental or non-natural mortalities. And statistics have been collected by the Far Seas Division of the FAJ based on report from the prefecture governments.

For the 2002/2003 season, the catch quota remains unchanged from the last year as 9,000 *dalli*-type Dall's porpoise, 8,700 *truei*-type Dall's porpoises, 1,300 Risso's dolphins (including 20 for the small type whaling), 1,100 bottlenose dolphins, 950 spotted dolphins, 725 striped dolphins, 450 southern form short-finned pilot whales (including 50 for the small-type whaling) and 50 false killer whales.

For corresponding operation months divided by prefecture in 2002 (January – September in 2002 and October – December of the 2002/2003 season) was as follows: Japanese hand harpoon fishery for porpoises was permitted for nine months (1 February to 31 October) in Okinawa Prefecture: seven months (1 January to 9 March, 1 May to 31 August, 20 to 31 December) in Wakayama; six months (1 January to 30 April and 1 November to 31 December) in Aomori, Miyagi, Iwate and Chiba: 4.5 months (1 May to 15 June and 1 August to 31 October) in Hokkaido. The drive fishery was allowed for seven months in Wakayama (1 January to 30 April and 1 October to 31 December) and Shizuoka (1 January to 31 March and 1 September to 31 December).

Table 8. Catch of small cetaceans by Japanese fisheries by type of fisheries by Prefecture, January-December 2002. Unless otherwise stated species and figures are those reported (provisional figures).

| Species | Prefecture ¹⁾ | Type of fishery | Direct catch ²⁾ | Incidental catch | Live capture |
|---------------------------------------|--------------------------|-----------------|----------------------------|------------------|--------------|
| Dall's porpoise <i>dalli</i> -type | Hokkaido ³⁾ | Hand harpoon | 1,328 | 0 | 0 |
| | Iwate ³⁾ | Hand harpoon | 6,057 | 0 | 0 |
| | Miyagi | Hand harpoon | 229 | 0 | 0 |
| | Total | | 7,614 | 0 | 0 |
| <i>truei</i> -type | Hokkaido | Hand harpoon | 89 | 0 | 0 |

| | | | | | |
|--|-----------|-----------------------|-------|---|----|
| | Iwate | Hand harpoon | 8,243 | 0 | 0 |
| | Miyagi | Hand harpoon | 3 | 0 | 0 |
| | Total | | 8,335 | 0 | 0 |
| Finless porpoise | Aichi | Trap net | 0 | 3 | 0 |
| | | Other coastal fishery | 0 | 1 | 0 |
| | Yamaguchi | Other coastal fishery | 0 | 1 | 0 |
| | Fukuoka | Other coastal fishery | 0 | 1 | 0 |
| | Nagasaki | Other coastal fishery | 0 | 1 | 0 |
| | Kagoshima | Trap net | 0 | 1 | 0 |
| | Total | | 0 | 8 | 0 |
| Harbor porpoise | Hokkaido | Trap net | 0 | 2 | 3 |
| Pacific white-sided dolphin | Hokkaido | Trap net | 0 | 0 | 2 |
| | Aomori | Trap net | 0 | 1 | 0 |
| | | Other coastal fishery | 0 | 1 | 0 |
| | Chiba | Trap net | 0 | 0 | 1 |
| | Ishikawa | Trap net | 0 | 0 | 3 |
| | Kyoto | Trap net | 0 | 0 | 1 |
| | Total | | 0 | 2 | 7 |
| Striped dolphin | Wakayama | Hand harpoon | 77 | 0 | 0 |
| | Wakayama | Driving | 565 | 0 | 0 |
| | Total | | 642 | 0 | 0 |
| Spotted dolphin | Wakayama | Hand harpoon | 18 | 0 | 0 |
| | | Driving | 400 | 0 | 0 |
| | Okinawa | Trap net | 0 | 1 | 0 |
| | Total | | 418 | 1 | 0 |
| Bottlenose dolphin | Wakayama | Hand harpoon | 38 | 0 | 0 |
| | | Driving | 688 | 0 | 72 |
| | Okinawa | Hand harpoon | 3 | 0 | 0 |
| | Total | | 729 | 0 | 72 |
| Risso's dolphin | Chiba | Trap net | 0 | 1 | 0 |
| | Wakayama | Hand harpoon | 154 | 0 | 0 |
| | | Driving | 220 | 0 | 1 |
| | | Small-type whaling | 12 | 0 | 0 |
| | Total | | 386 | 1 | 1 |
| Short-finned pilot whale northern form | Miyagi | Small-type whaling | 47 | 0 | 0 |
| Short-finned pilot whale southern form | Miyagi | Trap net | 0 | 1 | 0 |
| | Ibaraki | Other coastal fishery | 0 | 4 | 0 |
| | Chiba | Small-type whaling | 1 | 0 | 0 |
| | Wakayama | Small-type whaling | 35 | 0 | 0 |
| | | Driving | 55 | 0 | 0 |
| | Okinawa | Hand harpoon | 38 | 0 | 0 |
| | Total | | 129 | 5 | 0 |
| False killer whale | Wakayama | Driving | 7 | 0 | 0 |
| Baird's beaked whale | Hokkaido | Trap net | 0 | 1 | 0 |
| | | Small-type whaling | 10 | 0 | 0 |
| | Miyagi | Small-type whaling | 26 | 0 | 0 |
| | Chiba | Small-type whaling | 26 | 0 | 0 |
| | Total | | 62 | 1 | 0 |
| Unidentified dolphin | Chiba | Trap net | 0 | 1 | 0 |

- 1) Catches by small-type whaling, drive fishery and trap nets are recorded to the place of landing of products. And catches by hand harpoon fishery are recorded to the place of registration of vessels.
- 2) Statistics of small-type whaling are based on reports of biologists and gunners. Those of other fisheries are based on reports of prefecture governments to the Fisheries Agency, which are compilation of landing slips (hand harpoon fisheries in Iwate and Hokkaido) or reports from individual fishermen or fishery cooperative unions (other prefectures).
- 3) Catches by hand harpoon fishery off Hokkaido and landed as meat by fishermen were converted into individual number of *dalli*-type Dall's porpoise using a rate of 50kg/porpoise (c.f. Ishikawa et al. 1990) by prefecture governments.
- 4) Besides above records, following small cetaceans were incidentally taken but later released alive, 15 Pacific white-sided and six bottlenose dolphins in Kyoto (trap net), ten and five unidentified dolphins in Niigata and Kagoshima, respectively (trap net).

Table 9. Summary of small cetacean catches by Japanese fisheries and small cetacean strandings in 2002, by species and type of fisheries. For further details see Tables 8 and 10. D= direct take, I= incidental take. (provisional figures).

| Species | Small-type whaling [D] | Hand harpoon [D] | Driving [D] | Live capture [D, I] | Purse-seine [I] | Trap net [I] | Other coastal fisheries [I] | Strandings | Total |
|-----------------------------|---------------------------|---------------------|----------------|------------------------|--------------------|-----------------|--------------------------------|------------|--------|
| Dall's porpoise | | | | | | | | | |
| <i>dalli</i> -type | 0 | 7,614 | 0 | 0 | 0 | 0 | 0 | 2 | 7,616 |
| <i>truei</i> -type | 0 | 8,335 | 0 | 0 | 0 | 0 | 0 | 0 | 8,335 |
| Harbor porpoise | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 1 | 6 |
| Finless porpoise | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 86 | 94 |
| Short-beaked common dolphin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Long-beaked Common dolphin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Pacific white-sided dolphin | 0 | 0 | 0 | 7 | 0 | 1 | 1 | 6 | 15 |
| Striped dolphin | 0 | 77 | 565 | 0 | 0 | 0 | 0 | 5 | 647 |
| Spotted dolphin | 0 | 18 | 400 | 0 | 0 | 1 | 0 | 0 | 419 |
| Bottlenose dolphin | 0 | 41 | 688 | 72 | 0 | 0 | 0 | 5 | 806 |
| Risso's dolphin | 12 | 154 | 220 | 1 | 0 | 1 | 0 | 5 | 393 |
| Pygmy killer whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Melon-headed whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 94 |
| Short-finned pilot whale | | | | | | | | | |
| northern form | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| southern form | 36 | 38 | 55 | 0 | 4 | 1 | 0 | 1 | 135 |
| False killer whale | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 |
| Baird's beaked whale | 62 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 71 |
| Cuvier's beaked whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Stejneger's beaked whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 10 |
| Ginkgo-tooth whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Pygmy sperm whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 |
| Dwarf sperm whale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 |
| <i>Kogia</i> sp. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Unidentified dolphin | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 14 | 15 |
| Total | 157 | 16,277 | 1,935 | 83 | 4 | 12 | 5 | 257 | 18,730 |

6.2 Earlier years' statistics

There are no changes from the last year' statistics.

7. Stranding

Information of stranded cetaceans has been officially collected by the Far Seas Division of the FAJ, 1-2-1, Kasumigaseki, Tokyo 100-8907, Japan. The information is summarized in Table 10. In addition, the Institute of Cetacean Research, Tokyo Suisan Building, 4-18 Toyomi, Chuo-ku, Tokyo 104-0055, Japan; T. Yamada, National Science Museum, Hyakunin-cho, Shinjuku-ku, Tokyo 164, Japan voluntarily collected relevant information to the stranding.

Table 10. Strandings of small cetaceans in Japan, January-December 2002. Species and figures are based on reports of prefecture governments to the Fisheries Agency of Japan which are reports from individual fishermen, fishery cooperative unions or the general public (provisional figures).

| Species and stocks | Prefecture ¹⁾ | No. of individuals | Species and stocks | Prefecture ¹⁾ | No. of individuals |
|--|--------------------------|--------------------|--|--------------------------|--------------------|
| Dall's porpoise (<i>dalli</i> -type) | Hokkaido | 2 | Short-finned pilot whale (southern form) | Okinawa | 1 ²⁾ |
| Harbor porpoise | Hokkaido | 1 | Baird's beaked whale | Hokkaido | 6 |
| Finless porpoise | Miyagi | 3 | | Chiba | 2 |
| | Ibaraki | 4 | | Total | 8 |
| | Chiba | 3 | Cuvier's beaked Whale | Tokyo | 1 |
| | Aichi | 34 | | Kagoshima | 1 |
| | Mie | 21 | | Total | 2 |
| | Hyogo | 1 | Stejneger's beaked Whale | Hokkaido | 1 |
| | Yamaguchi | 13 | | Aomori | 1 |
| | Fukuoka | 7 | | Akita | 1 |
| | Total | 86 | | Tokyo | 1 |
| Short-beaked common Dolphin | Kanagawa | 1 | | Niigata | 2 |
| | Yamaguchi | 1 | | Ishikawa | 2 |
| | Total | 2 | | Yamaguchi | 1 |
| Long-beaked common Dolphin | Saga | 1 | | Miyazaki | 1 |
| | | | | Total | 10 |
| Pacific white-sided Dolphin | Aomori | 1 | Pygmy sperm whale | Miyagi | 1 |
| | Chiba | 1 | | Tokyo | 3 |
| | Kanagawa | 2 | | Kagoshima | 1 |
| | Toyama | 1 | | Okinawa | 2 |
| | Ooita | 1 | | Total | 7 |
| | Total | 6 | Dwarf sperm whale | Ibaraki | 1 |
| Striped dolphin | Chiba | 3 | | Miyazaki | 2 |
| | Shizuoka | 1 | | Okinawa | 1 |
| | Ooita | 1 | | Total | 4 |
| | Total | 5 | <i>Kogia</i> sp. | Okinawa | 1 |
| Bottlenose dolphin | Hokkaido | 1 | Ginko-tooth whale | Ibaraki | 1 |
| | Niigata | 1 | Unidentified dolphin | Hokkaido | 1 |
| | Nagasaki | 1 | | Chiba | 1 |
| | Kumamoto | 1 | | Kanagawa | 1 |
| | Kagoshima | 1 | | Niigata | 3 |
| | Total | 5 | | Shimane | 1 |
| Risso's dolphin | Iwate | 1 | | Yamaguchi | 1 |
| | Ibaraki | 1 | | Kochi | 1 |
| | Chiba | 1 | | Nagasaki | 2 |
| | Miyazaki | 1 | | Kumamoto | 1 |
| | Kagoshima | 1 | | Miyazaki | 1 |
| | Total | 5 | | Okinawa | 1 |
| Pygmy killer whale | Okinawa | 2 | | Total | 14 |
| Melon-headed whale | Ibaraki | 93 | | | |
| | Chiba | 1 | | | |
| | Total | 94 | | | |

1) Recorded to the prefecture where strandings occurred.

2) rescued and sent to aquarium.

3) Besides above records, following cetaceans were stranded or accidentally entered the harbor but were safely driven

to the sea, two pygmy sperm whales (Tokyo), two dwarf sperm whales (Ibaraki), six melon-headed whales (Chiba), 50 rough-toothed dolphins and four pygmy killer whales (Okinawa).

8. Other studies and analyses

No other studies or analyses on small cetaceans were conducted during the period from May 2002 to March 2003.

9. Publications on small cetacean

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- Kato, H. 2003. Cetacean surveys in the Hoppou Yontou (southern Kril Islands). Abstract. The Hoppou Yontou Symposium. Sapporo, March 2003 (in Japanese)
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